CYPRUS UNIVERSITY OF TECHNOLOGY

Course Catalogue
2013 / 2014

ΤΕΧΝΟΛΟΓΙΚΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΚΥΠΡΟΥ

2004

Faculties and Departments
Faculty of Geotechnical Sciences and Environmental Management
Department of Agricultural Sciences, Biotechnology and Food Science
Department of Environmental Science and Technology
Faculty of Management and Economics
Department of Hotel and Tourism Management
Department of Commerce, Finance and Shipping
Faculty of Communication and Media Studies
Department of Communication and Internet Studies
Faculty of Health Sciences
Department of Nursing
Department of Speech and Language Therapy
Faculty of Fine and Applied Arts
Department of Multimedia and Graphic Arts
Faculty of Engineering and Technology
Department of Electrical Engineering, Computer Engineering and Informatics
Department of Mechanical Engineering and Materials Science and Engineering
Department of Civil Engineering and Geomatics
Language Centre

GENERAL INFORMATION

A New Public University

Cyprus University of Technology (CUT), founded by state law in 2004, is a public University based in Limassol. CUT has admitted its first undergraduate students in September 2007.

The first Graduation Ceremony was in 2011 while the university now offers a significant number of graduate master level programs and doctoral degrees in all its Departments.

Vision and Mission

CUT aspires to become a modern pioneering University, capable of offering education and high level research in leading branches of economy and science. With its orientation towards applied research, Cyprus University of Technology aims to have a prominent position and a leading role in all areas of science, and technology in a knowledge-based and research driven society. Plus CUT seeks to balance the educational and scientific lack in the landscape of higher education in Cyprus.

Administration

As a Public Entity Cyprus University of Technology is administered by the University Council, which bears the responsibility for the management, administrative and financial control of the University and its property; as well as by the Senate, which is, the highest ranked academic instrument.

Faculties and Departments are administered by the respective Deans and Presidents of each Department

Administrative Services

The operation of the University supports the following administrative services :

- Human Resources,
- Property Management
- Research and International Cooperation
- Finance
- Academic and Student Affairs
- Information Systems and Technology
- Library

The Administrative Services ensure that Council and Senate decisions are implemented effectively and accordingly to the decisions taken while the Director of administration and Finance has the overall responsibility for the implementation organization, coordination and control of the administrative services and their effective management.

Academic Staff

The academic staff is elected by the electoral bodies which consist of Cypriot and foreign academics. The procedures are continuous, while the minimum qualifications for the elected academic Staff are the doctorate title and the ability of university level teaching and research. The academic staff already appointed has high academic research and teaching experience in universities both in Cyprus and abroad.

Furthermore, the teaching needs of CUT are covered by Visiting Professors by special Scientist and other appointed Teaching Staff.

Academic System of Studies

The academic year consists of two semesters and the expected time of completion of an undergraduate course is eight semesters. Cyprus University of Technology applies the ECTS academic transfer system to all its programs in order to give transparency to its recognition procedures. The ECTS programme of study comprises 60 ECTS per academic year, 30 ECTS per semester.

The Curricula is based on the European System Credit Transfer Units (European Credit Transfer

and Accumulation System), known as ECTS. One ECTS represents 25 to 30 hours of learning. The entire workload of the learner for an undergraduate program (four-years) is 6,000 to 7,200 hours. Attendance at all University programs is compulsory and continuous.

The 1st cycle degrees award 240 ECTS in 8 semesters. An undergraduate program of study may include up to five courses of optional choice, outside the main study area of the given program.

Second cycle degrees award 90 or 120 ECTS in 3 or 4 semesters.

Third Cycle degrees award 240 ECTS in minimum 6 semesters.

The official languages of the University are Greek and Turkish (as defined by the Constitution of the Republic of Cyprus).

Foreign Languages

An undergraduate curriculum includes two to three courses for the learning of a foreign language, measured in ECTS credits. The student's performance in Foreign language courses are recorded in a detailed score sheet and counted in his/her overall grade.

Tuition

The fee amount is € 1,700 per semester for Cypriot students and students who are nationals of Member States of the European Union, paid by the Republic of Cyprus. The tuition fee for students from countries outside the EU is € 3,400 per semester.

Academic Credit System and Methodology for Erasmus Students

Upon satisfactory completion of the period abroad, credits gained at the host institution are accredited as a success or failure (pass or fail) so as not to affect the overall grade at the end of the study period.

All activities indicated in the learning Agreement, signed prior to mobility on behalf of the student, the host and home HEI that have been satisfactorily completed by the student, are accepted and recognized.

Upon receiving the Transcript of Records on behalf of the Host Institution credits earned are apparent and visible in the student's final Transcript of records, whereby the original course followed at the host institution is indicated in its national language and English.

Mobility period for studies or placement is also made explicit in the Diploma Supplement alongside with the location of mobility activities.

The DS is provided to all students automatically free of charge in English.

Information on the Diploma Supplement both in English and Greek:

http://www.cut.ac.cy/erasmus/diploma/

The use of Europass is also recommended.

Cyprus University of Technology grading system

Program Requirements: The grading system is numeric from 0 to 10 rounded to the nearest half unit and 5 is the passing grade. A student must satisfy the program requirements as described in

the University's prospectus corresponding to the year of entry:

Grade Point	Meaning
9.5 – 10.0	Excellent with Distinction
8.5 – 9.49	Excellent
6.5 – 8.49	Very Good
5.0 - 6.49	Good
I	Incomplete
P	Pass
W	Withdraw

Calculation of Semester Grade Point Average (GPA)

For each course, the number of credits is multiplied by the numerical value of the ordinal grade received to obtain the Grade Points:(Number of ECTS) X (Numerical (European Value of the Ordinal Grade) = Grade Points

Then, calculate the semester grade point average by dividing the sum of grade points by the sum of the semester credits:(Sum of Grade Points) / (Sum of Semester Credits) = Semester Grade Point Average

Housing

Cyprus University of Technology rents a number of flats /rooms, through subsidized rent, to students based on socioeconomic criteria. Furthermore, CUT implemented a new housing policy the " Network of Associate Premises to CUT " since June 2012 a policy through which the University may be in specific cooperation to ensure rent to its current students . The Network supports fully equipped and furnished apartments evaluated by the University that meet specific conditions for ensuring CUT students a quality in residence standards and a defined amount of rent. The maximum rent is set to € 420 a month for an one bedroom apartment,€ 530 for a two-bedroom apartment while the rent for a three-bedroom apartment is €630amonth.

Finally , the University offers assistance and guidance to all students who need housing through a list of rental houses / apartments / rooms available for the period of their enrolment which is constantly renewed . The Student Welfare Service advises students to pay attention to issues such as health and safety of the building before signing any agreement .

Detailed information can be found on the website:
http://www.cut.ac.cy/studies/accommodation.

Student Clubs

Student Clubs at Cyprus University of Technology, cover a wide range of interests in matters of culture, arts and entertainment. The potential involvement of students with extra- academic interests like music , dance , journalism , theatre , etc. , provide them with rich learning experiences and unforgettable memories in their student life. The Student Welfare Service provides guidance for the establishment and operation of student clubs. Student clubs can only be established with the approval of the goals and activities of these groups from the University officials.

The establishment and operation of groupings depends on the initiative and interest of the same students. The approved groups have access to postal boxes, notice boards and electronic mail (e-mail). Each approved group is funded by the grant funds for student activity. Certificates of Participation are issued to all students during their studies who have had active participation in student groups. The certificates enhance the image of students in the labour market and when they apply for graduate studies.

Support for students with special needs

The University seeks to facilitate students with special needs, providing equal treatment and

access to programs and services.Students with disabilities are expected to cope with the academic level of University having access to diverse facilities. Students with the following health conditions are supported: Dyslexia and Learning Disabilities, Blindness or severe visual impairment, Deafness or severe hearing, Tethered to a wheelchair or emotional problems serious psychiatric \ psychological problems, serious health problem that affect their academic performance.

Insurance

Students are secured against accidents with their enrolment. Students pay the ¼ of the annual premium and the university the remaining 75%.

Language Policy for outgoing students and staff

Language courses are offered to students in order to assist them in satisfying the Council of Europe Language Education Policy, the university's language requirements, and their personal, social, educational, research and professional needs.

Language programmes are also offered to administrative and teaching staff. Outgoing participants are well prepared through course providers by the CUT Language centre in order to face linguistic as well as cultural challenges during mobility. The preparation includes cultural meetings and coordinated events between the Language Centre and Erasmus Office, as well as social networking discussions between former and future mobility participants. If a student does not speak the host language of the Host Institution he/she is encouraged to attend language courses at the Language Centre in order to attain the necessary level of knowledge of the language of the host university. The outgoing exchange staff members are expected to have an adequate level of knowledge of English or the language of the host university. In all cases the language of the training or teaching is agreed prior to departure.

Language Policy for incoming students and staff

CUT organizes EILC courses of Greek for incoming participants every August prior to students' studies. The Language Centre provides Greek Language courses annually, for all language levels, designed to offer adequate linguistic support to incoming students as well as staff interested to attend them. Courses are free of charge. Apart from Greek, incoming participants can attend English, French, Spanish and German language courses.

Language of Instruction

Greek is the official language of instruction. Incoming students are encouraged to attend the Greek Language intensive courses- EILC- offered by the Language School of the University. They may also attend free of charge Greek intensive courses offered during the semesters. Both options give 5 and 4 ECTS respectively.

Incoming students are also expected to have knowledge of the English language up to level B1 at least. They should include in their application documents official language examination certificates such as TOEFL, IGCSE or other similar. In case these are not available the students must present a certificate from their home university which verifies their knowledge of English Language up to level B1 and at the same time indicate the courses and level of English attended on their Transcript of Records. It is up to the host department to decide whether this certificate is considered enough for the student's acceptance.

Currently the Department of Communication and Internet Studies offers an English semester of 30 ECTS during the spring semester. Other CUT Departments may offer bibliography, assignments, tutorials and exams in English for certain courses that are pre-agreed with the academics in the relevant departments.

Courses

All courses taught at CUT are described in the official Language of the University, Greek. Course information can be also found in the web page of each department independently. A Course catalogue in English is updated on the website regularly so as to allow incoming participants to make well informed choices prior to mobility.

Recognition Procedure for Incoming and Outgoing Students

All Erasmus outgoing students must fill in a learning agreement before the start of their mobility period where the courses and corresponding credits at the host university are pre-agreed with their Departmental Coordinator. All courses taken by a student abroad are shown in the Transcript of Records and recognized in the same way as they would be recognized if the student was at the home university.

The Diploma Supplement (DS) is granted free of charge to all graduates of the Cyprus University of Technology. The DS, which is issued by the home university, describes the content and level of studies undertaken, but does not substitute for the official study title or the official transcript of courses taken / ECTS earned. Erasmus Placements are also recorded in the Diploma Supplement. Incoming students and their home university receive an original Transcript of Records with all the subjects, corresponding ECTS credits and grades that were achieved during the exchange period at Cyprus University of Technology.

http://www.cut.ac.cy/erasmus/

ERASMUS DEPARTMENTAL COORDINATORS

Multimedia and Graphic Arts	Dr. Despina Michael despina.michael@cut.ac.cy
Communication and Internet Studies	Dr. Dimitra Milioni dimitra.milioni@cut.ac.cy
Commerce, Finance and Shipping	Dr. Demetris Koursaros demetris.koursaros@cut.ac.cy
Hotel and Tourism Management	Dr. Constantinos Papadopoulos c.papadopoulos@cut.ac.cy
Nursing	Dr.Sokratis Sokratous sokratis.sokratous@cut.ac.cy
Agricultural Sciences Biotechnology and Food Science	Dr. Vassilis Fotopoulos vassilis.fotopoulos@cut.ac.cy
Environmental Management	Dr. Theodoros Zachariadis t.zachariadis@cut.ac.cy
Civil Engineering and Geomatics	Dr. Nicholas Kathijotes nicholas.kathijotes@cut.ac.cy
Electrical Engineering and InformationTechnology	Dr. Marios Kassinopoulos m.kassinopoulos@cut.ac.cy
Mechanical Engineering and Materials Science and Engineering	Dr.Georgios Costantinides g.costantinides@cut.ac.cy

ACADEMIC CALENDAR 2013-2014

	FALL SEMESTER	SPRING SEMESTER
Registration	26-30 August	13-17 January
Beginning of Study Period	2 September	20 January
Last day to add courses	13 September	31 January
Last day to drop courses	20 September	7 February
Last day to withdraw	18 October	7 March
End of Study Period	29 November	2 May
Exams Preparation	2-5 December	5-8 May
Easter (Holiday)		14-27 April
Examination Period	6-22 December	9-25 May
Christmas (Holiday)	23 December – 12 January	
Public Holiday	1 October 28 October 6 January	3 March 25 March 1 April 20 April 1 May

Faculty of Geotechnical Sciences and Environmental Management

Department of Agricultural sciences, Biotechnology and food science

Academic Staff

Vassilis Gekas
Professor, Dean of Faculty of Geotechnical Sciences and Environmental Management

Christakis Papachristoforou
Associate Professor, Department Chair

Andreas Katsiotis
Professor

Nicolas Ioannou
Professor

Dimitris Tsaltas
Assistant Professor

George Manganaris
Assistant Professor

Vassilis Fotopoulos
Assistant Professor

Despoina Miltiadou
Assistant Professor

Chryssoula Drouza
Lecturer

Photis Papademas
Lecturer

Menelaos Stavrinides
Lecturer

Nikolas Tzortzakis
Lecturer

Ouranios Tzamaloukas
Special Teaching Staff

Loukas Kanetis
Special Teaching Staff

George Botsaris
Special Teaching Staff

Iakovos Pantelides
Special Teaching Staff

Vlasios Goulas
Special Teaching Staff

INTRODUCTION

The agricultural and food sector of Cyprus is in a state of transition due to the new socio-economic environment created by the EU membership of Cyprus. The new environment, together with the liberalization of the international trade, exert a strong competitive pressure on raw and processed agricultural products of the island, both in the European and the local market. In order to adjust to the new environment, and thus ensure its survival and further development within the EU, the agricultural sector of Cyprus must improve its competitiveness by reducing its costs of production and by improving the quality of its products. The same problems and challenges exist for the food and beverage industry, which at present, is the most important and dynamic sub-sector of the processing industry of Cyprus.

The required increased competitiveness of the agri-food sector can only be achieved through modernization and technological upgrading of agricultural and livestock enterprises, as well as of food and beverage units. In both the primary (agricultural) and secondary (industrial) food production sectors, it is absolutely essential to introduce new production methods that would ensure sustainable use of natural and biological resources, food quality and safety, mitigation of negative effects on the environment and biodiversity, animal health and welfare, as well as other requirements of the European market. Particular attention should be paid to the development of new products, the utilization of the competitive advantages offered by traditional products of Cyprus and the need for major improvements in storage, packing, standardization and transport of agri-food products. It is also important to carry out market research on a regular basis, in order to ensure timely response of production to continuously changing consumer preferences, and to adopt new and effective methods and practices for promotion and marketing of agri-food commodities.

Considering the problems, prospects and challenges resulting from Cyprus' membership to the EU and with the objective to contribute to the required modernization and technological transformation of the island's agri-food sector, the Cyprus University of Technology has established, for the first time in Cyprus, the Department of Agricultural Sciences, Biotechnology and Food Science. The Department offers a four-year B.Sc. degree in three basic areas of agricultural and food sciences: a) Crop Science and Technology, b) Animal and Dairy Science and

c) Food Science and Technology. The research programmes and the course curricula in all three Specialization options focus on the development and adoption of new scientific methods and technological applications. Particular attention is given to cutting-edge research areas, such as the field of modern biotechnology and its multiple applications in plant and animal production, the food industry, and the environment through an ecosystem services based approach.

Within the context of the Lisbon strategy, a new concept of Agricultural Economy has been developed in the EU, the "Knowledge-based Bio-economy", which integrates in a sustainable way modern crop and animal production, fisheries and aquaculture, food industry and biotechnology. In this regard, the Department's main role is to generate through its research programmes and to disseminate through its educational programmes the necessary knowledge base and technology required for the development and promotion of modern bio-economy in Cyprus.

The programme of study aims to prepare students for scientific careers in the public and the private sectors of Cyprus. Some examples of potential public employers of our graduates

include the Ministry of Agriculture, Natural Resources and Environment (MANRE) (Dept. of Agriculture, Agricultural Research Institute, Dept. of Fisheries and Marine Research), the Agricultural Insurance Organization, the Agricultural Payments Organization, and the State General Chemistry Laboratory.

In the private sector, graduates will be able to either develop independent professional careers (e.g. agricultural consultants, seed / plant protection companies, greenhouse units, nurseries, landscape design, micropropagation labs, aquaculture units, food labs). In addition, graduates could be employed by private companies or by large agricultural and livestock enterprises, and food and beverage industries, such as wineries and dairy industries.

In addition, graduates will be in a position to pursue careers abroad, for instance to seek suitable positions in the various services of the European Commission or as experts/delegates/attaches of the Republic of Cyprus in the EU, international organizations or foreign countries. Finally, they will be able to pursue post-graduate and doctoral studies and thus develop careers in research and academia.

VISION AND OBJECTIVES OF THE DEPARTMENT

The vision of the Department is to become an internationally recognized, research oriented Department, of top choice, for undergraduate and graduate education in Agricultural and Food Sciences and Biotechnology.

The main objective of the Department is to produce through high-quality research and disseminate through top quality education the necessary scientific knowledge and technological applications, enabling the sustainable development and improved competitiveness of Cyprus' agri-food sector. Sustainable rural development with respect to natural and biological resources, socio-economic development of the rural population and preservation of the environmental and cultural characteristics of Cyprus' countryside is also a major objective of the Department.

The Specific Aims of the Department are:

To attract and retain outstanding students, faculty and staff,

To provide high quality education in Agricultural and Food Sciences and Biotechnology for undergraduate and graduate students from Cyprus and neighbouring countries, including EU countries,

To perform innovative and relevant research that would advance the frontiers of Agricultural and Food Sciences and Biotechnology and ensure sustainable development of the knowledge-based bio-economy,

To maintain a close collaboration with the Agri-Food sector (public and private), including farmers associations, food industries and animal production units, at both the national and European level, with a view to develop into an internationally recognized research and education centre. To promote sustainable rural development that respects natural and biological resources

maintains and enhances ecosystem services, and protects the environment

To promote international cooperation and students / teachers mobility, especially in the EU

To provide the basis for the promotion of life-long learning.

The Department consists of three divisions, namely, Crop Science and Technology, Animal and Dairy Science and Food Science and Technology, which offer respective Specialization options. The Crop Science and Technology Division focuses on enhancing crop production quantitatively and qualitatively with the aim of achieving self-sufficiency in crop produce and increasing competitiveness at European and global level. The promotion of scientific knowledge and the development of research is directed towards two major areas:

(i) Improvement of production and quality of cultivated plants (fruit crops, vegetables, flowers

and ornamentals, vines and field crops) by the development and adoption of new, improved cultivars and cultural practices.

(ii) Development and implementation of effective and ecologically acceptable methods of crop production and protection.

The Animal and Dairy Science division aims to support the most important agricultural export of Cyprus, the halloumi cheese and other high quality animal products. The division is focusing on scientific research and high level education in animal breeding and genetics, reproduction, nutrition, hygiene and management of farm animals (cattle, sheep and goats, swine, poultry), as well as processing, chemistry and microbiology of animal food products. The advancement of basic and applied research for the development of know-how and technology that contributes to the profitability and competitiveness of the livestock industry and the quality of animal products is top priority.

The Food Science and Technology Specialization focuses on scientific research and high level education for producing safe, healthy and tasty food. Innovations and new practical processes that offer significant benefits to consumers, industry and society, either in the products or in the production chain will be sought. Significant directions are: (i) Food process and bioprocess engineering. (ii) Food chemistry, food physics and food microbiology. (iii) Product design and quality management studies.

All three divisions participate in an MSc programme in Biotechnology offering the possibility of specialization in Plant, Animal or Food Biotechnology. In addition, the Department offers Ph.D. programs in all three Specializations.

The programme of study provides a general foundation in natural sciences, basic education in agricultural biosciences and specialized scientific training in three Specialization options: a) Crop Science and Technology, b) Animal and Dairy Science and c) Food Science and Technology. The general foundation in natural sciences and the basic education in agricultural biosciences are mainly offered during the first three semesters, which are common to all students of the Department. In addition, during these semesters the curriculum includes introductory courses to the three specialization options, aiming at providing students with the background information and understanding required to choose their direction of study, depending on their interests and particular professional objectives. In the fourth year, students of all three options are required to take courses in Agricultural Economics and Management and to carry out a research project under the supervision of staff members of the Department

For award of the B.Sc. degree of the Department of Agricultural Sciences, Biotechnology and Food Science, students are required to complete 240 European Credit Units, in the context of the ECTS system. The B.Sc. degree requirements could be summarized as follows:

A. Courses common to all students (mainly the first three semesters)
General foundation in natural sciences: 27 ECTS
Basic education in agricultural biosciences: 62 ECTS
Foreign language: 8 ECTS.
B. Specialization options (4th to 8th semester)
Specialized scientific training: 96-102 ECTS *
Courses in economics and management: 10 ECTS
Elective courses: 18-24 ECTS *
Practical training (summer session between 3rd and 4th year): 5 ECTS
B.Sc. thesis (4th year): 10 ECTS
*There are slight differences between different Specialization options.

B.SC. DEGREE: AGRICULTURAL SCIENCES, BIOTECHNOLOGY and FOOD SCIENCE			
(Common courses for 1st , 2nd & 3rd Semester)*			
FIRST YEAR			
FALL SEMESTER		**SPRING SEMESTER**	
1st Semester		**2nd Semester**	
	ECTS		ECTS
ABF 100 General and Inorganic Chemistry	6	**ABF 104** Biochemistry	6
ABF 101 Organic Chemistry	6	**ABF 105** Microbiology	6
MAS 110 Mathematics	4	**ABF 106** Statistics/ Biometry	4
PHYS 101 Physics	5	**ABF 107** Plant Systematic	5
ABF 110 Plant Morphology & Anatomy	5	**ABF 150** Introduction to Food Science & Technology	5
ENG 122 English for Academic Purposes	4	**ENG 180** English for Agricultural Studies	4
TOTAL	30	**TOTAL**	30
SECOND YEAR			
Fall Semester			
3rd Semester			
	ECTS		
ABF 210 Genetics	5		
ABF 211 Plant Physiology	6		
ABF 212 Principles of Crop Production	5		
ABF 220 Introduction to Geotechnical	3		
ABF 230 Animal Biology	6		
ABF 200 Ecology & Conservation of Biodiversity	5		
TOTAL	30		

Bachelor of Agricultural Science

CROP SCIENCE AND TECHNOLOGY DIRECTION (Courses 4th – 8th Semester)

SECOND YEAR

		SPRING SEMESTER	
		4th Semester	
			ECTS
		ABF 213 Soils & Fertilizers	5
		ABF 214 Arboriculture	6
		ABF 215 Agricultural Zoology & Nimatodologia	5
		ABF 216 Molecular Biology and crafts	5
		ABF 218 Field crops / horticulture Plants	5
		ABF 219 Agricultural Meteorology	4
		TOTAL	30

THIRD YEAR

FALL SEMESTER		**SPRING SEMESTER**	
5th Semester		**6th Semester**	
	ECTS		**ECTS**
ABF 310 Plant Pathology	6	**ABF 312** Agricultural Hydraulics-	5
ABF 311 Vegetable Science	5	**ABF 315** Viticulture	4
ABF 313 Plant propagation and nursery production	4	**ABF 318** Diseases of Crop Plants	6
ABF 314 Plant Breeding and Genetics	5	**ABF 319** Greenhouse Technology &	5
ABF 317 Entomology & Acarology	6	**ABF 320** Integrated Insect and Mite	5
ABF 330 Animal Nutrition and Feeding	5	**ABF 336** Animal Breeding	4
TOTAL	31	**TOTAL**	29
ABF 390 Practical Training (summer	5		

FOURTH YEAR			
FALL SEMESTER		**SPRING SEMESTER**	
7th Semester		**8th Semester**	
	ECTS		**ECTS**
ABF 411 Weed Science	5	**ABF 414** Agricultural Machinery and Animal Husbandry Equipment	5
ABF 412 Pesticide Science	6	**ABF 415** Post Harvest Physiology & Technology	4
ABF 413 Sustainable Agriculture/ Animal	4	**ABF 470** Principles of Economics and	4
ABF 416 Floriculture and landscape Architecture	5	**ABF 471** Agricultural Economics and	6
Restricted Elective *	5	**ABF 490** Thesis	10
Free Elective **	6		
TOTAL	31	**TOTAL**	29

*Restricted Electives for the Science and Technology of Crop Production Specialization	
Course	**ECTS**
ABF 252 Food Quality and Management	5
ABF 332 Apiculture and Honey Technology	5
ABF 417 Aromatic, Medicinal and Forage Plants	5
**** Open electives can be selected from courses offered for the other two Specializations of the Department, from other Departments/Faculties of the University, as well as Language courses**	

B.SC. DEGREE: AGRICULTURAL SCIENCES, BIOTECHNOLOGY AND FOOD SCIENCE

Courses for the Science and Technology of Crop Production Specialization (Courses 4th – 8th Semester)

SECOND YEAR

		SPRING SEMESTER	
		4th Semester	
			ECTS
		ABF 216 Molecular biology & biotechnology	5
		ABF 219 Agricultural Meteorology	4
		ABF 250 Food Packaging	5
		ABF 251 Food Process Engineering	5
		ABF 253 Food Chemistry	5
		ABF 356 Food Safety	5
		TOTAL	29

THIRD YEAR

FALL SEMESTER		**SPRING SEMESTER**	
5th Semester		**6th Semester**	
	ECTS		**ECTS**
ABF 252 Food Quality and Management	5	**ABF 315** Viticulture	4
ABF 351 Food biotechnology	6	**ABF 333** Feed Science and Technology	4
ABF 352 Human Nutrition & Health	4	**ABF 334** Dairy & Meat Production (Ruminants)	5
ABF 354 Physiochemical analysis of Foods	5	**ABF 350** Oenology	5
ABF355 Food Microbiology	6	**ABF 353** Dairy Science & Technology	6
Free Elective	4	**ABF 358** Animal- origin Science & Technology	6
TOTAL	30	**TOTAL**	30
ABF 390 Practical Training (summer session) - 5 ECTS			

FOURTH YEAR			
FALL SEMESTER		**SPRING SEMESTER**	
7th Semester		**8th Semester**	
	ECTS		**ECTS**
ABF 335 Zoonoses and Food Crises	5	**ABF 415** Post Harvest Physiology &	4
ABF 431 Meat & Egg Production (Monogastric)	5	**ABF 454** Agri-industrial and Livestock Waste Management	6
ABF 450 Plant Origin food Science & Technology	6	**ABF 470** Principles of Economics and Management	4
ABF 457 Functionality Foods	4	**ABF 471** Agricultural Economics & policy	6
ABF 459 Science and technology of dairy products	6	**ABF 490** B.Sc.Thesis	10
*Elective compulsory course	5		
TOTAL	31	**TOTAL**	30

Restricted Electives for the Science and Technology of Food Production Specialization	
COURSE	**ECTS**
ABF 332 Agriculture and Honey Technology	5
ABF 417 Aromatic, Medicinal and Forage Plants	5

**** Open electives can be selected from courses offered for the other two Specializations of the Department, from other Departments/Faculties of the University, as well as Language courses**

B.SC. DEGREE: AGRICULTURAL SCIENCES, BIOTECHNOLOGY AND FOOD SCIENCE			
Animal and Dairy Science Specialization (Courses 4th – 8th Semester)			
SECOND YEAR			
		SPRING SEMESTER	
		4th Semester	
			ECTS
		ABF 215 Agricultural Zoology & Nematology	5
		ABF 216 Molecular Biology & Biotechnology	5
		ABF 218 Agronomy (Field Crops)	5
		ABF 219 Agrometeorology	4
		ABF 253 Food Chemistry	5
		ABF 356 Food Safety & Quality	5
		TOTAL	29
THIRD YEAR			
FALL SEMESTER		**SPRING SEMESTER**	
5th Semester		**6th Semester**	
	ECTS		**ECTS**
ABF 252 Food Quality and Management	5	**ABF 333** Feed Science and Technology	4
ABF 330 Animal Nutrition & Feeding	5	**ABF 334** Dairy & Meat Production (Ruminants)	5
ABF 352 Human Nutrition and Health	4	**ABF 336** Animal Breeding	4
ABF 355 Food Microbiology	6	**ABF 353** Dairy Science & Technology	6
Elective (compulsory)	5	**ABF 358** Animal- origin Food Science & Technology	6
Elective (free)	5	**ABF 251** Food Process Engineering	5
TOTAL	30	**TOTAL**	30
ABF 390 Practical Training (summer session) - 5 ECTS	5		

FOURTH YEAR			
FALL SEMESTER		**SPRING SEMESTER**	
7th Semester		**8th Semester**	
	ECTS		**ECTS**
ABF 335 Zoonoses and Food Crises	5	**ABF 414** Agricultural Machinery & Animal Husbandry Equipment	5
ABF 413 Sustainable Agriculture/Animal Husbandry	4	**ABF 454** Utilization and Waste Management agro-industrial and livestock waste	6
ABF 417 Aromatic, Medicinal & Forage Plants	5	**ABF 470** Principles of Economics and Management	4
ABF 431 Meat & Egg Production (monogastric)	5	**ABF 471** Agricultural Economics and Policy	6
ABF 459 Science and technology of dairy products	6	**ABF 490** Thesis	10
*Elective (compulsory)	5		
TOTALS	30	**TOTAL**	31

SCIENCE OF COURSE

*Restricted Electives for the Animal and Dairy Science Specialization	
COURSE	**ECTS**
ABF 332 Apiculture and Honey Technology	5
ABF 435 Animal Diseases	5

** Open electives can be selected from courses offered for the other two Specializations of the Department, from other Departments/Faculties of the University, as well as Language courses

*The five ECTS Summer Elective credits are shared 3:2 between the 6th and 7th.

DESCRIPTION OF COURSES

Courses are listed in ascending order by their code number.

ABF 100 General and Inorganic Chemistry (6 ECTS)

Introduction (atomic theory, atomic and molecular orbitals, periodic table). Chemical bonds (ionic, covalent, metallic and hydrogen bonds). Coordination compounds (nomenclature, magnetic properties, crystal field theory and biological importance of coordination compounds). Chemical equilibrium, ionic equilibria in aqueous solutions (acids and bases, hydrolysis, buffer solutions, precipitation, titration). Oxidation-reduction reactions, principles of electrochemistry. Chemical thermodynamics (entropy, enthalpy, free energy, Gibbs). Liquids and solutions, fraction distillation. Chemical kinetics (rate and mechanism of reactions, transition state theory, enzyme kinetics, catalysis). Nomenclature and properties of elements and inorganic compounds of agricultural interest (N, S, P, K, Na, Ca, Mg, Al, Fe, Cu, Zn etc.). The course includes lectures and laboratory exercises.

ABF 101 Organic Chemistry (6 ECTS)

Introduction. Nomenclature of organic chemistry. Classification of organic reactions (S nU Sn2, El, E2). Conformation of molecules-stereochemistry (enantioisomers, diastereoisomers, racemates, asymmetric syntheses). Spectroscopy (UV- vis spectroscopy, IR spectroscopy, NMR spectroscopy, mass spectroscopy). Saturated and unsaturated hydrocarbons (properties and reactions of alkanes, alkenes and alkynes, organometallic compounds). Carbonyl compounds (properties and reactions of aldehydes, ketones, acids, esters, and amides).

Lipids (glycerol derivatives, prostaglandins and prostacyclines). Nitrogen-containing compounds (amines, aminoacids, peptides, and proteins). Purines, pyrimidines and nucleic acids. Aromatic compounds. Sugars (oligo and polysaccharides). Vitamins, hormones, terpenes, and steroids. The course includes lectures and laboratory exercises.

PHYS 101 Physics (5 ECTS)

An introductory course in General Physics designed for students of the Department of Agricultural Sciences, Biotechnology and Food Science. It covers selected topics from the following areas of Physics: Fluid mechanics, Heat and Thermodynamics, Optics, Nuclear Physics with emphasis on biological effects of nuclear radiation. The course includes lectures, tutorials and lab demonstrations.

ABF 104 Biochemistry (6 ECTS)

An introductory course in General Biochemistry which is an essential foundation for all three Specialization options of the

Department. It covers the following subjects: Water, properties of solutions, buffers. Biological molecules and macromolecules. Proteins (levels of organization, interaction, post-translation synthesis, modifications, functions). Enzymes. Carbohydrates (structure and metabolism). Energy metabolism (Krebs cycle, oxidative phosphorylation, fermentations). Lipids (structure and metabolism, lipoproteins, lipid messengers). Nucleic acids. Vitamins. The course includes lectures and laboratory exercises.

ABF 105 Microbiology (6 ECTS)

An introductory course in General and Systematic Microbiology with special reference to microorganisms of interest to Agricultural and Food Sciences and Biotechnology. It covers the following topics: Definition and contents of Microbiology. History of microbial developments. Cellular structure and evolution. The role of microbes in our lives: positive and negative aspects.

The prokaryotes: Structure and function of bacterial cell. Cell division and multiplication. Bacterial taxonomy and Systematics. Major groups of bacteria: Cyanobacteria, Nitrifying bacteria, Sulfur and iron oxidizing bacteria, Methanotrophs, Sulfur reducing bacteria, Acetogenic bacteria, Nitrogen fixing bacteria, Hydrogen oxidizing bacteria, Hallophillic bacteria. Introduction to Virology: Viruses and their characteristics and classification. The eukaryotic microorganisms: Eukaryotic algae and Protozoa (Protista). The Fungi: General characteristics, anastomosis and mycelial pseudo tissues. Fungal reproduction. Classification of fungi Yeasts. The course includes lectures and laboratory exercises.

ABF 106 Statistics / Biometry (4 ECTS)

An introductory course in Statistics with special reference to its biological applications (Biometry). It covers the following subjects: Population and Sample. Descriptive Statistics (Tables and Graphs. Measures of Central Tendency and Dispersion). Probability Theory. Normal Distribution. Confidence Intervals for the mean value and for proportions. Hypothesis Testing for the means (independent sample or paired sample t-test). One Way Analysis of Variance (ANOVA). Simple Linear Regression and Correlation. Chi square test of association. The course comprises lectures, tutorials and applications using computers.

ABF 107 Plant Systematics (5 ECTS)

History of plant taxonomy. The basic units of classification. Nomenclature. Systems of classification (artificial, natural, phylogenetic). Brief reference to Cryptogama: Schizophyta, Phycophyta, Mycophyta, Lichenophyta, Bryophyta, Pteridophyta. In detail reference to Spermatophyta: Gymnospermae and in particular Angiospermae. Origin and evolution of Angiospermae. The course includes lectures, laboratory exercises and field trips for recognition of main families of the Cyprus flora (emphasis on cultivated plants and weeds).

ABF 110 Plant Morphology and Anatomy (5 ECTS)

Topics covered include plant cell, cellular organelles, cellular cycle/division, cell wall, histology, secretory cells and ducts, dermal tissues, ground tissues, vascular tissues, organs, leaves, roots, shoots, flowers and reproduction, fruits. The course includes lectures and laboratory exercises.

MAS 110 Mathematics (4 ECTS)

Euclidean spaces, linear spaces and applications. Matrices, linear equations. Vectors. Inner product, cross product. Sequences and series. Definite and indefinite integrals. Calculus, integration. Area of plane regions. Differential equations, linear differential equations of the first order or with constant coefficients. Application of differential equations in Physics and Biology. Multivariate functions,

the chain rule, partial differentiation, gradients and directional derivatives. Double and multiple integrals: definition and examples. The course includes lectures and tutorials.

ENG 122 English for Academic Purposes (4 ECTS)

ENG 122 concentrates on the learning of English for Specific Academic Purposes (ESAP). The course aims to enable students to acquire and use the English language efficiently and fluently in the performance of their duties as qualified agricultural and food scientists. This is accomplished through the use of a variety of topics and genre. Relevant material will be used to acquaint the students with different writing styles (comparison and contrast, cause and effect, and classification). Special effort will be made so that students exercise and improve their critical thinking abilities. Students are expected to develop sufficient range of language, phonological control and sociolinguistic awareness to be able to express themselves with a degree of clarity, fluency and spontaneity.

ABF 150 Introduction to Food Science and Technology (5 ECTS)

The course provides a general introduction to the basic concepts and Food Science and Technology and its main sub-disciplines, including: 1. Food chemistry, biochemistry and physics. 2. Food microbiology and biotechnology. 3. Food processing and engineering. 4. Fundamental concepts of food chain, focusing on food quality and safety issues. The course consists of lectures, case studies and practicals.

ENG 180 English for Agricultural Studies (4 ECTS)

ENG 180 concentrates on the learning of English for Specific Academic Purposes (ESAP). ENG 180 is particularly designed to meet the needs of university students studying in the field of Agricultural Sciences, Biotechnology and Food Sciences. The course intends to familiarise the students with relevant reading material. This will be used to acquaint the students with genre (reports, articles), and writing styles (classification, cause and effect, and comparison and contrast).

Furthermore, learners are expected to develop their listening skills and their speaking fluency by taking an active part in discussions, giving oral presentations, etc. Students are expected to develop sufficient range of language, phonological control and sociolinguistic awareness to be able to express themselves with a degree of clarity, fluency and spontaneity.

ABF 200 Ecology and Conservation of Biodiversity (5 ECTS)

Ecology and evolution of major groups of organisms. Natural selection. Functional relations of organisms with their biotic and abiotic environment. Adaptation strategies. Population dynamics. Ecological communities: species interactions and trophic networks. Ecosystem structure and function. Ecological succession. Biogeochemical cycles. Natural and semi-natural ecosystems (e.g. agro-ecosystems). Conservation of biodiversity. Major types of environmental pollution and their role in degrading and destabilizing the environment. Ecological restoration.

ABF 210 Genetics (5 ECTS)

Introduction to Genetics. Mendelian genetics and

extensions of Mendelian Genetics (dominance, multiple infertile and lethal alleles, epistasis, penetrance and expression). Cytogenetics (mitosis, meiosis, the discovery of linkage). The nature of the gene, DNA structure and function. Structure and function of eukaryotic chromosomes. Genetic recombination, linkage and mapping, gene and chromosome mutations. Sex determination and sex chromosomes. Extrachromosomal Inheritance. The course includes lectures and tutorials.

ABF 211 Plant Physiology (6 ECTS)

The course covers the function of cellular organelles, photosynthesis, respiration, phloem translocation, nitrogen metabolism, water relations, inorganic nutrition, plant growth and development, phytohormones, plant stress physiology, introduction to plant molecular physiology. The course includes lectures and laboratory exercises.

ABF 212 Principles of Crop Production (5 ECTS)

The course is separated into 2 Sections: a) Crop Science that deals with general cultivation and climatic aspects (climate and weather, water and air, soil properties, nutrition/fertilizers, cultivation techniques) for plant growth and b) Three interrelated sub-sections, regarding general aspects of annual, vegetable and fruit crops. Crop Science: Crop production and society, climate and weather, plant and soil water, crop improvement and transgenics, agricultural production systems, crop rotation, organic crop production. Annual and Vegetable Crops: Vegetables (introduction), types of vegetable and annual crop cultivation, propagation and seedlings, field preparation, crop start-up. Fruit crops: Pomology (introductory note), parts of fruit species, fruit bearing habit, pollination-fertilization, pruning, ecology, propagation, orchard design, cultivation techniques, aqueous relations-Irrigation, mineral nutrition-fertilization, fruit growth and fruit thinning, harvesting, fruit ripening.

ABF 213 Soil Science and Plant Nutrition (5 ECTS)

Overview of soil systems. Soil particle-size analysis. Soil minerals. Chemical properties of soils. Soil organic matter. Soil physical properties. Soil morphology (Cyprus soils, soil maps and description of soil map units). Introduction to plant nutrition and soil fertility (fertility evaluation, macro- and micro- nutrients). Fertilizers: characteristics, production and use. The course includes lectures, laboratory exercises and field trips.

ABF 214 Pomology (6 ECTS)

This course covers the major groups of fruit crops, including both deciduous (stonefruits, pomefruits) and evergreen (e.g. olive, citrus species) fruit crops that are being cultivated in temperate climates. In addition, nut trees and small fruit crops are analysed, as well as species of , subtropical and tropical origin. The general outline of the topics analysed per species is: Origin-spread, botanical classification, Economic importance-applications, Specific requirements for cultivation (soil management, fertilization, pruning, thinning, irrigation), Climate and soil, Propagation (rootstocks), Pruning, Pollination, Fertilization, Fruit growth, Harvest, Cultivars, Pests, Diseases, Physiological disorders. The course includes lectures and field trips.

ABF 215 Agricultural Zoology and Nematology (5 ECTS)

An introduction in General and Systematic Zoology with examples from animals of agricultural interest. It focuses on animal and plant parasitic nematodes but also covers all other important groups of animal pests infesting agricultural crops and livestock. Plant Nematology: An introduction to the classification, morphology, biology, and management of nematodes, with emphasis on plant-parasitic species damaging major agricultural crops of Cyprus. Agricultural Zoology: This part of the course is devoted to both invertebrate (e.g. molluscs) and vertebrate animal pests (rodents, birds etc.), which frequently decimate agricultural production in Cyprus, both in the field and during storage. The course includes lectures, field trips and lab practicals.

ABF 216 Molecular Biology and Biotechnology (5 ECTS)

Introductory course into Molecular Biology and Biotechnology with focus on applications in plant, animal and food sciences. The course provides an important background for the students of all three options and covers the central dogma of Molecular Biology (DNA replication and repair, transcription and translation), regulation of gene expression in prokaryotes and eukaryotes, genetic recombination in bacteria and viruses (conjugation, transduction, transfection), genetic engineering (recombinant DNA technology, gene promoter analysis and plasmids). Biotechnology and creation of high producing plants. Creation of resistant plants to disease, viruses, herbicides, insects or cold. Gene transformation protocols. Genetic engineering applications, usage of Agrobacterium for DNA transfer and creation of transgenic plants for pharmaceutical products, food production, resistance to herbicides, Lepidoptera and viruses. Transgenic Animals and genetically modified microorganisms used in food industry. Risks from genetically modified organisms. The future and ethics of biotechnology. The course includes lectures and lab practicals.

ABF 218 Agronomy (Field Crops) (5 ECTS)

This course covers the most important groups of field crops, including cereals (wheat, barley, oats rye, maize), legumes, tobacco, cotton, alternative crops (biofuel, medicinal, aromatic plants). For each of the above crops or group of crops the following topics will be discussed: Botanical classification, utilisation of the crop, plant morphology, adaptation, growth, climatic requirements. Cropping sequence and cultivation. Nutrient management and manuring. Varieties. Plant spacing, row width and seed preparation. Sowing and transplanting. Irrigation and Pest Management. Harvest, storage, yield and crop quality. Productivity and Production Economics. The course includes lectures, field trips and lab practicals. Industrial visits could also be arranged.

ABF 252 Food Quality Management (5 ECTS)

The course covers the following topics: Introductory concepts and definitions. Food products and food quality. Quality attributes. Influencing quality attributes in the agri-food chain. History of Quality Management. Principles of the techno-managerial approach. Concepts, systems and methods of quality design, quality control and quality improvement. Food quality systems: ISO 22000 (HACCP),

BRC, GMP. Quality policy and strategy. Total Quality Management. Evaluation quality management, quality costs and auditing. The course includes lectures and laboratory exercises. Industrial visits could also be arranged.

ABF 253 Food Chemistry (6 ECTS)

This course builds on the food chemistry knowledge acquired ιn previous courses. It covers the following topics: Review of essential nutrients in foods. Digestion. Energy values of foods. Proteins, Lipids, Enzymes, Carbohydrates, Water, Vitamins, Minerals. Structural and functional properties of nutrients in foods. Food Additives. Food Flavor and Taste. Browning reactions (enzymatic and non-enzymatic). Foods of plant and animal origin. Beverages. Novel foods. Effect of processing and storage conditions on the properties and organoleptic characteristics of foods. The course includes lectures and laboratory exercises. Industrial visits could also be arranged.

ABF 310 Plant Pathology (6 ECTS)

An introductory course aiming to provide students with an understanding of the basic principles and scope of Plant Pathology and a necessary foundation for all subsequent courses in Plant Protection and Pest Management. Topics to be covered include: Objectives, significance and history of plant pathology. Disease expression and symptomatology. Aetiology of plant disease and classification of diseases according to the nature of their causal agent. Parasitic or infectious diseases. Major groups of plant genic prokaryotes (bacteria, phytoplasmas, spiroplasmas) plant viruses and viroids, parasitic higher plants. For each of the above group of pathogens the following topics will be covered: General characteristics and taxonomy, morphology, reproduction, bio-ecology and pathogenicity.Production, release and dispersal of inocula. Aetiology, epidemiology and management of representative diseases. Non-parasitic disorders. Non-infectious diseases or physiological disorders caused by temperature and moisture extremes, nutritional deficiencies or toxicities, pollutants, environmental and other abiotic factors. Disease diagnosis and management. The course includes lectures, field trips and practicals.

ABF 311 Vegetable Science (5 ECTS)

The course covers the principles of vegetable crop production and the specific requirements and characteristics of vegetables grown in Cyprus. Topics covered include the origin, evolution and taxonomy of cultivated vegetables, economic importance and nutritional value of the principal annual and perennial vegetables cultivated in Cyprus. The possibilities for export. Types of vegetable enterprises. Vegetables and the natural environment. Selection of cultivation areas in relation to soil and climatic factors. Vegetable nutrition and fertilization, nutritional elements, soil analysis, fertilizer application programme, types of fertilizers, organic and green fertilization. Vegetable propagation, sexual propagation, sterilization and coating. Nurseries, substrates. Asexual propagation and micropropagation. Study of plant densities and cultivation programmes. Plant establishment, cultivation practices, vegetable irrigation, crop protection. The mechanization of vegetable

propagation. Harvest, storage and marketing of vegetables. Introduction to the hydroponic cultivation of vegetables. The principal annual and perennial vegetables cultivated in Cyprus. The course includes lectures, field trips and lab practicals.

ABF 312 Agricultural Hydraulics and Irrigation (5 ECTS)

Major topics of this course are the relationships between soil and water, the water requirements of plants and crop irrigation. This knowledge is required for the correct and rational water usage in agriculture. Other topics include: Hydrostatics (hydrostatic pressure, measurement of pressure, manometers). Hydrodynamics (introduction, definitions, continuity equation, Bernoulli's theorem, Venturi, Pitot devices). Fluid flow in pipes (type of flow, fluid velocity, linear and local head losses, nomographs). Hydrological cycle (soil water and solute balance). Water retention, moisture characteristic curve. Hydraulic conductivity. Irrigation systems: flooding, basins, borders, sprinklers, drip irrigation, furrows, mini-sprinklers. Drainage systems. Steady-state and transient state. Depth of water table. The course includes lectures, field trips and practicals.

ABF 313 Plant propagation and nursery production (4 ECTS)

The theoretical part of the course encompasses the following topics: Biology of plant propagation, the propagation environment, seed development, principles and practices of seed selection, techniques of seed production and handling, propagation from seeds, vegetative propagation (introductory note), propagation with cuttings, grafting, layering: , propagation by specialized stems and roots, micropropagation, principles and practices of clonal selection. Lab exercises are dealing with the following subjects: Seed dormancy, seed germination, preparation of stock solution and tissue media for micropropagation, application of micropropagation. The course also includes a certain number of field trips in nurseries and State propagation premises. The course additionally encompasses the testing of the students on a weekly basis through multiple-choice questions, adopted and translated by Hartmanand Kester's book 'Plant propagation'.

ABF 314 Plant Breeding and Genetics (5 ECTS)

This course builds on the course ABF107 Genetics. Major topics to be discussed are the genetic basis of crop plant evolution, crop plant reproduction germplasm introduction, the genetics of hybridisation, pure line breeding, the pedigree method, single seed descent, back crossing, multiline varieties, mass populations. Producing hybrids through incompatibility, male sterility and the sex mechanism. Synthetic varieties. Recurrent selection for one or two populations. Artificial polyploidization. Mutation breeding. Genetic engineering applications in plant breeding. Haploid breeding wide crosses. Heterosis. Variety maintenance and multiplication. Selection of quantitative traits. The course includes lectures and exercises on breeding, molecular genetics and bioinformatics with the use of computers.

ABF 315 Viticulture (4 ECTS)

The course covers primarily the scientific and technological

aspects of viticulture and to a small extent the socio economic background of grapevine cultivation in Cyprus. The course is dealing mainly with the following topics: Botanical classification, morphological and anatomical characteristics, physiology, vineyard design, means of propagation, cultural practices, pruning, rootstocks, main cultivars, irrigation, mineral nutrition and plant protection (control of pests and diseases, weed control), harvesting, ripening, maturity indices and postharvest maintenance of table grapes. Special attention is given to growth and development, dormancy and factors affecting it, sprouting, flowering and fruit setting . Ampelography (systematic classification, description of grapevine varieties) is a main topic dealt with in lab exercises. The course includes lectures, lab exercises and field practicals.

ABF 317 Entomology and Acarology (6 ECTS)

The course aims at familiarising students with the impressive world of insects and mites, their anatomy, physiology and life histories. In addition, the course teaches students the basic principles of Integrated Pest Management (IPM) with a strong focus on principles and strategies applied to major arthropod pests of economically important crops in Cyprus. Specific topics covered include: Importance of insects and mites for humans and the environment, internal and external anatomy, sensory organs and behaviour, reproduction, development and life histories, systematic classification of insects and mites, plant-feeding insects and mites, predation and parasitism, social insects, IPM methods and techniques, medical entomology, and urban pest management. The course includes lectures, lab practicals and field trips.

ABF 318 Diseases of Crop Plants (6 ECTS)

This course builds on the introductory Plant Pathology course taught in the 5tth semester. It covers the most important fungal, prokaryotic, viral and non-parasitic diseases affecting crops of major economic importance for Cyprus agriculture, including:

a) Diseases of field crops, including cereals, legumes, industrial, aromatic and medicinal crops. b) Diseases of vegetables (including potato) and ornamentals, grown both in the open field and under various systems of protected cultivation. c) Diseases of fruit trees and grapevines. For each disease the following aspects will be presented: description of symptoms, economic damage to the crop(s) concerned, host range, geographic distribution and aetiology of the disease, bio-ecology of the pathogen(s) involved, epidemiology, and control measures. The course includes lectures and practicals (lab and field) where the

b) student practices with diagnostics, yield loss assessment,

c) sampling and sample handling and finally pathogen identification in the lab. ABF 319 Greenhouse Technology and Hydroponics (5 ECTS)

The course covers the greenhouse structures, types as well as the interaction with the environment, greenhouse energy and mass balances, evapotranspiration under cover. Equipment for climate control: Heating systems, ventilation, cooling and shading systems. Climate control and decision making in greenhouses. Energy saving technologies: Thermal screens,

windbreaks, thermal insulation. Renewable energy sources for heating greenhouses. Emerging technologies for sustainable agriculture in greenhouses: Insect proof, photoselective and anti-drop cover materials. The second part of the course will deal with Hydroponic systems. It will discuss the substrates used for soilless greenhouse cultures and their chemical properties. Equipments, water and nutrient management in hydroponics. Composition of nutrient solution. Calculation of nutrient solutions for open systems. Calculation of nutrient solutions for closed systems. Horizontal and vertical systems. Disinfection in hydroponics. Hydroponics, product quality and integrated crop management in greenhouses. The course includes lectures and field practicals.

ABF 320 Integrated Insect and Mite Management (5 ECTS)

The course covers in depth the basic principles of Integrated Insect and Mite Management with a focus on species present on the island. In the first part of the course we focus on: Pests and their importance for human activities, applied ecology of pests, pest monitoring and forecasting, mechanical, physical and cultural control of pests, chemical control – problems and resistance management, biological control and integrated pest management, selectivity of pesticides to natural enemies, and invasive species management. The second part of the course discusses in depth the biology, ecology and control of insect and mite pests of vegetables, field crops, ornamentals, grapevine, stonefruits, pomefruits, citrus, olives and other crops. In addition, the course covers the biology, ecology and management of key pests of medical importance, such as mosquitoes and cockroaches, as well as the management of pests of stored products. The course includes lectures, laboratory exercises and field trips.

ABF330 Animal Nutrition and Feeding (5 ECTS)

The course examines the digestive system and metabolism of feeds in ruminants (cows, sheep and goats) and monogastric animals (pigs and poultry). Explains the metabolism of key feed ingredients (carbohydrates, proteins, lipids, vitamins and minerals) and gives information about the needs of animals during different stages of development, reproduction, gestation and lactation. Basic information on feed evaluation is given, while laboratory exercises are offered for chemical analysis and nutritional value of feedstuffs. The course includes lectures and laboratory exercises.

ABF 332 Apiculture and Honey Technology (5 ECTS)

Honeybee biology and behaviour, manipulation of honeybee colonies, honeybee pathology as well as the production and qualitative control of honey and other beehive products. Includes lectures, practicals and laboratory work, as well as educational visits at apiaries.

ABF 333 Feed Science and Technology (4 ECTS)

The course deals with the production, preservation and processing of feed and forages. The course focusing in common forage plants, concentrated feeds and industrial by-products used in Cyprus and abroad. Information is given describing the characteristics of the most common feeds and provides the necessary knowledge regarding their use

in different animal species. Particular reference is made to potential risks to the animal health as well as to food chain due to the feed characteristics and/or preservation methods. Subjects such as quality control, feed additives and legislation in Cyprus and European Union are also covered. Nutritional properties of major feed and their use in ration formulation is also practiced during hands-on tutorials. The course includes lectures and practical exercises.

ABF 334 Milk and meat production (Ruminants)

The course covers general aspects of ruminant species (cattle, sheep, goats) kept for milk and meat production as well as specialized topics including: production systems, herd management, growth, lactation and milking methods, reproduction, housing, feeding and animal welfare. Besides a strong theoretical part, the course includes practicals and field trips.

ABF 335 Zoonoses and Food Crises (5 ECTS)

The objective of this course is to offer basic knowledge of important production animal diseases that can be transmitted from animal to humans directly or through the food-chain. Risk factors for animal and human health are analyzed alongside epidemiological evidence, diagnostics, prevention and intervention strategies, and bioethics. Real examples from food crises outbreaks will be presented, dealing directly or indirectly with animal health and the hygienic condition of animal-origin products. Preventive measures and the management of food crises are emphasized.

ABF336 Animal Breeding (4 ECTS)

The course covers an Introduction to Animal Breeding aiming to provide a strong background of population and quantitative genetics and practical knowledge and understanding of animal breeding. The course is focusing on traits, phenotypes and genotypes important for animal breeders, population genetics (gene and genotypic frequencies, Hardy-Weinberg equilibrium, deviations from H-W with emphasis on natural and artificial selection), selection for simply inherited traits, quantitative genetics (the genetic model for quantitative traits, breeding value, gene combination value and producing ability), application of statistics to quantitative traits (mean, variation, covariation and prediction), heritability, repeatability and genetic correlation, estimation of animal breeding values, factors affecting the rate of genetic change, mating systems (inbreeding, outbreeding and hybrid vigor, the use of biotechnology in animal breeding. The course includes lectures and exercises.

ABF 350 Oenology (6 ECTS)

Grapes as a raw material for winemaking. Grape varieties for the most important regions for wine production in Greece and Cyprus. Prefermentive phenomena and treatments. Yeasts and alcoholic fermentation. Malolactic fermentation. Winemaking methods and techniques. Wine types (red, white, sparkling wines etc). Wine composition. The physical and chemical stability of wine. The maturation and ageing of wines. The fining and clarification of wines. Microbiological spoilage of wine and its control. The bottling and storage. The role of sulfur dioxide in wine. Wine and health. Wine legislation.

The course includes lectures and laboratory exercises.

Visits to local wine industries and regional wineries could also be arranged.

ABF 351 Food Biotechnology (6 ECTS)

Introductory concepts and definitions. Theory and application of micro-organisms and enzymes during the preparation of fermented foods. Theoretical background aspects of functional microorganisms and their behaviour as fermentation starters. Process engineering aspects of the formation of biomass and products, and of modern biotechnology in food fermentation will be dealt with. Differentiation of fermentation and bioconversion. Fermentable foods and application of industrial fermentations. Typical fermentations and bioconversions. Biochemistry and technology of microbial protein, microbial oil, alcohol, organic acids, aminoacids and polysaccharides. The course includes lectures and laboratory exercises.

ABF 352 Human Nutrition and Health (4 ECTS)

The course is primarily an introduction and gives students an overview of the field of nutrition. Students are introduced to: 1) Essential nutrients in foods: proteins, carbohydrates, fats, vitamins 2) Nutritional physiology: how macronutrients are absorbed, stored, and metabolized for energy 3) Food components and health: how different types of fats, carbohydrates

and proteins affect health. The specific role of vitamins and minerals. Effects of overnutrition or undernutrition and 4) Nutrition and lifestyle: specific dietary needs of certain populations (infants, children, elderly, and athletes).

ABF 353 Dairy Science and Technology (6 ECTS)

The Importance of the dairy industry for Cyprus, European and World economy is presented. Composition, properties and nutritive value of milk. Factors and processes influencing the composition and properties of milk. Biosynthesis and secretion of milk. Milk microorganisms. Growth and metabolism activities of microorganisms of milk. Mastitis-antibiotics. Production and quality control of clean and healthy pasteurized milk. Hygiene of dairy plants. Milk processing commonly used in the food industry. Dairy products, functional dairy products and dairy ingredients. The course includes lectures and laboratory exercises. Visits to dairy industries could also be arranged.

ABF 354 Physicochemical Analysis of Foods (5 ECTS)

Basic principles of Kinetic Theory and Thermodynamics. Relationship food-water. Phase changes, Physical properties of Foods. Definitions and Measurement. Viscosity Water activity, Texture. Basic principles of chromatography and spectrometry. Determination of food constituents with methods of physicochemical analysis.

ABF 355 Food Microbiology (6 ECTS)

This Food Microbiology course builds up on knowledge provided by previously offered courses focusing on the negative effects of microorganisms on food products and on practices required to prevent or resolve such problems. Particular topics to be covered include: Taxonomy of microorganisms associated with food

ecosystems. Factors affecting the growth and survival of microorganisms in food products (e.g. water activity, pH, added preservatives, heating, modified atmosphere packaging). Moreover, the main bacterial food borne pathogens will be reviewed. Cultural and enumeration techniques for microorganisms. The course includes lectures and laboratory exercises.

ABF 356 Food Safety and Quality (5 ECTS)

This course provides an overview of the most important bacterial toxins, mycotoxins and phycotoxins, their presence and mechanisms of toxic action, and detoxification mechanisms. Bacterial virulence mechanisms and host responses will be discussed, including interference of pathogen-host interaction with food components. The effect of processing (e.g. heating) on food safety, including survival of pathogens, formation of Maillard products, heterocyclic amines, PAK's, and oxidation products are reviewed. Microbiological and toxicological risk assessment will be discussed including genetic polymorphisms for detoxification in humans.

ABF 358 Animal-origin Food Science and Technology (6 ECTS)

The course focuses on meat and meat products but pays also attention to fish and fishery products. Composition, structure, properties and nutritive value, factors influencing meat quality. Post-mortem biochemical, physiological, microbiological and mechanical processes in muscles. Hygiene: parasites, zoonoses causing microorganisms, viruses, prions and contaminants. Principles of meat inspection. Processing and preservation methods for meat and fish products. ISO22000 (HACCP) and quality control of processed meats. Specific analytical aspects of meat products and fundamentals of their (inter) national legislation. The course includes lectures and laboratory exercises. Visits to meat industries and slaughterhouses could also be arranged.

ABF 390 Practical Training (Summer Session) following 6th semester (5 ECTS)

During the summer session between the 3rd and 4th year, the student works at an organized crop, animal or food production unit or research centre. The unit/centre must be relevant to the specialization option chosen by the students and must be approved by the Department. At the end of the training period the Head of the unit/centre supervising the student, must prepare and submit a report regarding the student's participation, degree of learning and performance. The student must orally present the experience and skills and the knowledge gained during the on-the-job practice before a two-member staff committee. The committee decides whether the student's Practical is "satisfactory" or "non satisfactory". In the latter case, the student is obliged to repeat the practical training in the following year.

ABF 411 Weed Science (5 ECTS)

Introduction to weed science. Definitions and basic concepts. Competition between crops and weeds. Weeds and their impact on crops. Critical weed thresholds for economic damage to crops. Morphology, taxonomy, identification, physiology and bio-ecology of the most important weeds affecting major crops in Cyprus. Weed management with mechanical and chemical methods, biological control,

genetic engineering (plant resistant to herbicides) and integrated weed management (IWM). The course includes lectures and lab practicals.

ABF 412 Pesticide Science (5 ECTS)

Introduction to Pesticide Science. Principles and concepts of pest and disease management during cultivation of crop plants. Chemicals for crop protection, a historical review. Chemistry and classification of the active ingredients of pesticides. Physicochemical and biological properties, biochemistry and toxicology of the main groups of pesticides, including insecticides, herbicides, fungicides, bactericides, nematicides and other plant protection products. Plant uptake, translocation and metabolism of pesticides. Biochemical modes of action and mechanisms of selective toxicity. Pesticide formulations: nomenclature, ingredients, formulation types and their advantages and disadvantages. Pesticide application: The choice of formulation and application method for maximum effectiveness and safety. Problems associated with the use of pesticides and measures to minimize their adverse effects. Mechanisms of pesticide resistance. Degradation of pesticides: biological and non-biological degradation. Pesticide-soil interaction. Residues and their origin, persistence and fate into the environment. Pesticide legislation: national, European and international regulatory aspects on pesticides. Principles of pesticide safety. The course includes lectures and lab practicals.

ABF 413 Sustainable Agriculture/Animal Husbandry (4 ECTS)

This course discusses the development of sustainable agriculture, as applied to both crop and animal production. The present state of conventional agriculture, and the impact of intensive agricultural production systems: an irreversible trend. Principles of sustainable agriculture, alternative sustainable agricultural production systems (organic, integrated and precision agriculture). Soil fertility and improvements. Principles of biological and integrated control of insects, diseases and weeds. Agro-biodiversity assessment and management. Implementing organic fruit and vegetable production. Sustainable management in post harvest preservation methods.

ABF414 Agricultural Machinery and Animal Husbandry Equipment (5 ECTS)

The course covers the most important types of agricultural machinery and equipment used in crop and animal production. Topics covered include: Mechanical cultivation of soil, planting, harvesting, sparying, e.t.c. For animal husbandry topics the issues covered include: milking systems, sorting and trapping systems, feeding systems, and basic information and animal needs regarding farm building design (ventilation systems, floor plans for barn and parlor structure, outbuildings etc). In addition the course discusses precision farming, with focus on GPS and GIS systems, and remote sensing. The course includes lectures and field practicals.

ABF 415 Postharvest Physiology and Technology (4 ECTS)

Theoretical part: Quality of horticultural products, Factors affecting postharvest life of horticultural products, maturity indices, ethylene and its inhibitors (1-methylycyclopropene), pre-harvest factors affecting

postharvest life of horticultural products, harvesting systems, preparation of horticultural products for the market, precooling and cooling systems, modified/controlled atmosphere storage, transportation of horticultural products, physiological disorders, postharvest losses due to fungi. Lab exercises: Sources of information about postharvest physiology and technology (introductory note), determination of ascorbic acid content, maturity indices (physical characteristics), maturity indices (chemical characteristics), maturity indices (physiological characteristics), organoleptic characteristics, determination of total phenol content, determination of total antioxidant capacity, determination of total carotenoids, cell wall preparation and fractionation, determination of neutral sugars and uronic acid content. The course also includes visits to packing houses and storage facilities.

ABF 416 Floriculture and Landscape Architecture (5 ECTS)

The course aims to provide advanced training in ornamental horticulture and landscape architecture, two closely related and interdependent fields with continuously increasing economic potential. Topics t covered include: Field and greenhouse commercial culture of cut flowers and potted plants. Specific information is given on environmental conditions, propagation methods, culture techniques, plant growth regulation, harvesting, grading, storage, packing and shipping. Morphological characteristics and culture conditions of nursery plants (annuals, perennials, shrubs, trees, climbers, bulbous plants). In Landscape Architecture topics will cover the collection of information, visual assessment, information analysis and information presentation. Design analysis: landscape type, factors affecting the design, factors affecting the function and use of the landscape, budget, maintenance. Landscape design: Introduction to design, methodology, design principles. The course includes lectures and field practicals.

ABF 417 Aromatic, Medicinal and Forage Plants (5 ECTS)

The course focuses on annual, perennial forage plants which are of particular importance for Cyprus and the Mediterranean area as well as the wild and cultivated aromatic and medicinal plants. For each plant species topics covered include: botanical characteristics, methods of cultivation, yields, nutritional value, extraction of valuable ingredients, robust metabolites and biological activity in humans and animals. Crop prospective of aromatic and medicinal plants in the context of sustainable and conventional farming. Distilleries and technologies for plant extracts and essential oils. Essential oils uses and properties. Includes lectures and study visits.

ABF 431 Meat and Egg Production (non-ruminants) (5 ECTS)

The course covers general aspects of pig and chicken production and to a lesser extent, production of the turkey and rabbit species. The course includes several topics such as growth and development, production methods, reproduction, genetics, product quality, technological aspects and

animal welfare. The theoretical part is supplemented by practicals and field trips.

ABF 435 Farm Animal Diseases

The course deals with animal health, hygiene and disease prevention and control of the productive animal at the farm level. The most significant animal diseases in different species are studied regarding their epidemiology of infection in Cyprus and Europe, their origin, diagnosis and methods of disease control. The course also examines veterinary medicines and vaccines used for prevention and treatment of different infections with special reference to the best practices regarding proper drug use, hygiene and drug storage in farms. Information is also given in relation to drug residues in animal products and the environment. The course includes lectures and practical exercises.

ABF 450 Plant-origin Food Science and Technology (6 ECTS)

The course focuses on the following topics of cereal olive and vegetable/fruit products: (1) Cereals: species and varieties of cereal. Composition and properties of the granules. gelatinization starch. Measurement of viscosity properties of starch suspensions. Production and packaging of bread and pastries. Yeasts and enzymes in bakery. (2) Olive: traditional and modern ways of olive oil production. Centrifugation: Two and three phases. Table olives. Plant origin oils. Phenolic compounds. Use of olive mill wastes and plant residues. (3) Fruit and Vegetables: properties and nutritional value OF fruit and vegetables. Treatment with scalding, making of sweets and jam. Specifications of fresh produce during packaging. Maintenance in a modified/controlled atmosphere. Fresh cut salads and edible coating membrane. New technologies.

ABF 454 Management of Agro-industrial and Livestock Wastes (6 ECTS)

Kinds of agro-industrial and livestock wastes, solid and liquid wastes. Primary treatment, centrifugation , sedimentation, flotation. Secondary treatment, trickling filters, aeration and active sludge. Recovery, water recycling. Valuable constituent recovery. Energy from biomass, Renewable energy sources, Anaerobic treatment, composting of solid wastes.

ABF 457 Functional Foods (4 ECTS)

This course studies the relationships between the structure of raw materials and ingredients and their functionality. Functionality comprises physical, bio-active (health-promoting) and sensory properties. For the most important ingredients and raw material constituents, their contribution to the characteristics of the complex food matrix will be indicated. For bioactive compounds the focus will be on their potential activity in the human body, as well as on methods to retain the activity in the food.

ABF 459

This course studies the science and art in cheesemaking. Introduction to cheesemaking, milk as a raw material, cheesemaking procedures (artisanal vs. industrial), required cheesemaking equipment, cheese categories and their characteristics, cheese maturation, cheese quality characteristics, and sensory analysis. The course includes lectures, laboratory exercises and industrial visits.

ABF 470 Principles of Economics and Management (4 ECTS)

This and the following two courses provide the necessary economic and management background required by all agricultural scientists. It covers the basic topics, terms and concepts of Economics and Management with special reference to agricultural economics. Economic functions of an agricultural enterprise. Basic principles of agricultural production. Production inputs. Cost of production. Economic results of agricultural enterprises. Demand, supply and marketing of agricultural products.

ABF 471 Agricultural Economics and Policy (6 ECTS)

This course is a follow up of ABF 470 Principles of Economics and Management. Economic functions of an agricultural enterprise. Basic principles of agricultural production functions with one variable input. Cost of production. Economic results of agricultural enterprises. Basic concepts and special characteristics of the marketing of agricultural products. Demand, supply and marketing of agricultural products. Marketing functions and services (standardization, packing, transit, information, market research, advertisement etc.). Marketing institutions and distribution networks. Competition, types, structure and organization of the markets of agricultural products. Consumer behaviour. Introduction to the international marketing of agricultural and food products. Decision making and marketing strategy. Marketing management in agricultural enterprises and industries. Cost, efficiency and evaluation of marketing systems. Case study: Preparation of an example of a marketing plan.

ABF 490 Thesis Project (10 ECTS)

The Thesis Project is mandatory for the bachelor degree in "Agricultural Sciences, Biotechnology and Food Science". The student begins to work on a given subject under the supervision of a faculty member at the beginning of 8th semester or earlier (7th semester). Emphasis is placed on literature review and on mastering relevant methods and techniques in the laboratory. At the end of the semester the student's performance is assessed by the supervisor and the grade "satisfactory" or "non satisfactory" is given. In the latter case, students need to improve their project the following year. In the former case, the student gives an oral presentation about his/her work.

Department of Environmental Science and Technology

Academic Staff

Constantinos Varotsis
Professor, Department Chair

Costas Costa
Associate Professor

Theodoros Zachariadis
Assistant Professor

Alexandros Charalambides
Assistant Professor

Evangelos Daskalakis
Assistant Professor

Despina Kyprianou Serghides
Assistant Professor

Ioannis Vyrides
Assistant Professor

Michalis Koutinas
Assistant Professor

Maria G. Antoniou
Lecturer

Kostas Andreou
Special Teaching Staff

Petros Savva
Special Teaching Staff

Constantinos Koutsoupakis
Special Teaching Staff

Marlen Vasquez
Special Teaching Staff

Department of Environmental Science and Technology

Both the environment and science/technology have attracted attention in recent years as themes addressing major needs of the industry and the society as a whole. The goal of the undergraduate programme of the Department of Environmental Science and Technology is to educate students in a combination of life and environmental sciences and technology to meet the worlwide needs in this area. The main feature of the program, which is unique in Cyprus, is its educational structure in which the Department's faculty work together to teach a variety of topics in the field of Environmental Science and Technology. After complementing lectures with practical education, students are assigned to laboratories in diverse fields during their senior year while undertaking research for their degree.

Bachelor of Environmental Science and Technology			
FIRST YEAR			
FALL SEMESTER		**SPRING SEMESTER**	
1st Semester		**2nd Semester**	
	ECTS		ECTS
EST 101 Introduction to Environmental Sciences	4	**EST 104** Sustainable Management of Environmental Resource	6
EST 102 General Chemistry I	4	**EST 105** Environmental Chemistry	6
EST 102E General Chemistry I Lab	2	**EST 106** General Chemistry II	4
EST 103 Biology - Biochemistry	4	**EST 106E** General Chemistry II Lab	2
EST 103E Biology - Biochemistry Lab	2	**MATH 201** Mathematics II (Differential Equations)	6
PHYS 101 Physics	6	**ENG 181** English II for Environmental Management	4
MATH 110 Mathematics	6		
ENG 122 English I for Academic Purposes	4		
TOTAL	32	**TOTAL**	28

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SECOND YEAR			
FALL SEMESTER		**SPRING SEMESTER**	
3rd Semester		**4th Semester**	
	ECTS		ECTS
EST 221 Aquatic Chemistry	4	**EST 222** Hydrology	4
EST 221E Aquatic Chemistry Lab	2	**EST 223** Principles of Engineering	6
EST 212 Ecology	4	**EST 225** Instrumental analysis	5
EST 202 Soil Science	4	**EST 206** Applied statistical analysis	5
EST 202E Soil Science Lab	2	**EST 224** Water Quality Analysis	6
EST 211 Environmental Biology-Microbiology	4	**EST 205** Principles of Thermodynamics and	6
EST 211E Environmental Biology-Microbiology	2		
EST 203 Material and Energy Balances	6		
EST 204 Built Environment (Elective)	4		
TOTAL	32	**TOTAL**	32

THIRD YEAR			
FALL SEMESTER		**SPRING SEMESTER**	
5th Semester		**6th Semester**	
	ECTS		ECTS
EST 331 Environmental Economics & Policy	5	**EST 303** Computational Environmental Models	4
EST 301 Environmental Physics	4	**EST 303E** Computational Environmental Models Lab	2
EST 301E Environmental Physics Lab	2	**EST 351** Renewable sources of Energy	5
EST 312 Ecotoxicology	5	**EST 343** Liquid Waste Management	5
EST 341 Solid Waste Management	5	**EST 344** Control and Prevention Air Pollution	5
EST 313 Toxicology I	4	**EST 314** Toxicology II	4
EST 313E Toxicology I Lab	2	**EST 314E** Toxicology II Lab	2
EST 311 Environmental Science & Technology	5	**EST 302** Environmental Monitoring and Remote Sensing Systems	5
TOTAL	32	**TOTAL**	32
FOURTH YEAR			
FALL SEMESTER		**SPRING SEMESTER**	
7th Semester		**8th Semester**	
	ECTS		ECTS
EST 431 Environmental Impact &Risk Analysis	4	**EST 404** Global Climatic Change	4
EST 401 Dispersion Models	5	**EST 403** Thesis Project	12
EST 402 Tools of Environmental management	4	**EST 412** Environmental Biotechnology II	4
EST 411 Environmental Biotechnology I	4	**EST 412E** Environmental Biotechnology II Lab	2
EST 411E Environmental Biotechnology I Lab	2	Elective	4
EST 441 Environmental Remediation	4	**EST 451** Design of Energy Systems	4
EST 405 Coastal Zone Management	5		
TOTAL	28	**TOTAL**	30

DESCRIPTION OF COURSES

EST 101 Introduction to Environmental Sciences
The nature of our planet and how did it form. Earth's internal structure and its dynamical character. Major environmental hazards (ozone depletion, hurricanes, global warming and depletion of water resources) as examples of risk management. The scientific principles underlying each hazard and examination how social and economic policies were or should be developed and implemented to mitigate the perceived risk. Environmental Risks and Disasters: Introduction to risks and hazards in the environment. Basic physical principles controlling the hazardous phenomena and simple quantitative methods for making scientifically reasoned assessments of the threats (to health and wealth) posed by various events, processes, and exposures. Methods of risk mitigation and sociological, psychological, and economic aspects of risk control and management.

EST 102 General Chemistry I Introduction (atomic theory, atomic and molecular orbitals, periodic system of elements) chemical bonds, nomenclature, physical and chemical properties of inorganic elements of environmental interest. Categories of reactions (oxidations, redox reactions, free radicals, etc). Chemical equilibrium, ionic equilibrium, acids, bases, hydrolysis, buffer solutions, precipitation, stoichiometric analysis. Titrations. Principles of Chemical Thermodynamics and Chemical Kinetics.

EST 103 Biology – Biochemistry
Characteristics of living organisms. Photosynthesis, respiration and transpiration in plants. Metabolism of animals. Reproductive processes in animals and plants. Geographical distribution of principal vegetation types. Plant and animal nutrition. Basic genetic principles. Morphology, life cycles, physiology, metabolism and ecology of micro-organisms. Beneficial and pathogenic micro-organisms. Laboratory classes on light microscopy: plant and animal tissues and micro-organisms.

EST 104 Sustainable Management of Environmental Resources Introductory course dealing with definitions of sustainability and sustainable development. The 3 pillars of sustainability – environmental, economic and social. Renewable and non Renewable Resources. The role of population, economic growth and technological progress on the global environment and the depletion of natural resources. Conventional and alternative ways to measure economic and social welfare. Introduction to economic principles for sustainable resource management. Environmental management methods and tools: Life Cycle Analysis; Ecological, Carbon and Water Footprint.

EST 105 Environmental Chemistry
Dealing with the following aspects: Geochemical cycles of elements, Water pollution, Wastewater characteristics and treatment, Atmospheric Chemistry, Air pollutants, Geochemistry and Soil Chemistry, Solid waste characteristics and treatment. Nature, sources and treatment of hazardous waste. Fundamentals of environmental Biochemistry and Toxicological Chemistry

EST 106 General Chemistry II
Principles of electrochemistry (electrolytic cell, galvanic cell, electrochemical potential, etc). Chemistry of Complexes. Chemistry of elements of the main groups of the periodic table. Inorganic quality analysis. Surface

chemistry. Catalysis (heterogeneous and homogeneous catalytic processes). Industrial chemical processes. Introduction to organic chemistry (nomenclature of organic molecules, organic pollutants, categories of organic reactions, etc).

EST 202 Soil Science This course introduces the student to basic concepts of soil science and fertilization of crops. During the course the following topics are covered: Soil as an independent physical system. Elements of soil mineralogy. Soil formation. Soil texture analysis. Soil solution and electrolytes. Soil acidity and soil buffering capacity. Soil organic matter. Physical, chemical and biological properties of soil. General aspects of soil fertility. Fertilization methods and tools. The course includes lectures, laboratory exercises and a field exercise. The soil science laboratory exercises aim to introduce the student to the practical aspect of soil sampling and soil physical and chemical analysis techniques. In the context of soil science practical the following topics are covered: Soil texture analysis. Soil density. Soil Porosity. Soil moisture content and soil organic matter. Determination of variety of chemical parameters in soils. Determination of Cation Exchange Capacity (CEC).

EST 203 Material and Energy Balances Review of engineered systems for prevention and control of pollution. Fundamentals of material and energy balances; use of overall and differential balances to develop fluid flow, heat, and mass transfer equations; introduction to chemical thermodynamics and kinetics; analysis of reactor systems to address environmental problems including solid and hazardous waste, air, water, soil and noise pollution.

EST 204 Built Environment I This lessons consists an integrated approach to the building from the stage of its conception, as a space of energy exchange between the internal and external environment. It provides guidelines for the requirements in heating, cooling in buildings. Basic scientific principles for the bioclimatic design. Special design strategies for the Mediterranean Area.

EST 205 Principles of Thermodynamics and Chemical Kinetics Basic problems of thermodynamics, systems and equilibrium. Ideal and real gasses. First law of thermodynamics and internal energy. Second law of thermodynamics, entropy and reversibility of reactions. Third law of thermodynamics. Thermodynamic equations, chemical potential. Phase transitions, equilibrium. Mixtures, phase diagrams, phases law.

EST 206 Applied Statistical Analysis This course is based on statistical introductory concepts. It includes descriptive statistics on data sequences and series, convergence of sequences of real numbers, comparison, root and ratio tests for convergence of series of real numbers. Standard Distributions: Binomial, negative binomial, geometric, Poisson, hypergeometric, uniform, exponential, gamma, beta and normal distributions. Poisson and normal approximations of a binomial distribution. Testing of Hypotheses: Basic concepts, applications of Neyman – Pearson Lemma for testing simple and composite hypotheses. Q- and t-tests. Likelihood ratio tests for parameters of univariate normal distribution. Applications for the above concepts will be introduced in lab classes with the software package SPSS. Also, basic principles of the software MATLAB are introduced with data manipulation in matrices.

EST 211 Environmental Biology - Microbiology Introduction to Microbiology. Cell biochemistry, DNA-RNA and their function. Introduction to biology and Environmental Microbiology. Growth of microorganisms and their metabolism. Biodiversity of microorganisms, bacteria, archaea, yeast, algae. Microorganisms in the environment and biofilm formation. Growth and loss processes in nature and role of microbes in the biogeochemical cycles of elements (carbon, nitrogen and sulfur). Extremophilic microorganisms, their mechanisms and applications (halophilic-halotolerant, thermophilic, psycrophilic microorganisms). Acidophilic microorganisms and metal bioleaching. Anaerobic microorganism and their applications. Bioremediation of soil and polluted environment (oil contamination). Cellulose, hemicellulose and Lignin biodegradation. Pathogens microorganisms and methods to measure them. Colony forming unit method. Techniques to isolate and to characterize microorganisms. Molecular microbiology techniques: PCR-DGGE.

EST 212 Ecology Ecosystem structure and function: energy flow (trophic levels / food webs) and materials cycling. Ecosystem development. Population biology / ecological interactions: competition and density – dependence; predation and hebivory; distribution and abundance of individuals and populations. Application of ecological knowledge to sustainable harvesting of plants and animals and restoration of degraded habitats.

EST 221 Aquatic Chemistry This course examines the chemical reactions and processes involved in both natural (lakes, oceans, rivers) and artificial (wastes) water systems. At first there is a brief introduction to general aspects of chemistry; solution chemistry, structure and properties of water and chemical thermodynamics. Next, we approach in a punitively way the chemistry of water solutions with emphasis on chemical equilibrium and kinetics. Major issues of the course are: acid-base equilibrium (pH, pC-pH diagrams), buffer solutions, acid-base titrations, salinity, deposition, metal complication, oxidation-reduction reactions (pe-pH diagrams).

EST 222 Hydrology Fundamentals of hydrologic analysis, emphasizing the components of the hydrologic cycle such as precipitation, evaporation and transpiration, runoff, infiltration and groundwater, and the interactions that are of environmental significance. Application of fundamental principles to quantifying the basic hydrologic processes occurring on watersheds. Darcy's law and groundwater flow equations for steady-state and transient conditions, application to flow nets, aquifer testing, groundwater resource evaluation, and groundwater protection. The role of groundwater in the hydrologic cycle is explored with emphasis on natural groundwater flow systems and their influence on streams, springs, and wetlands. Effects of topography and geology on regional and local flow systems. Physical processes controlling groundwater contamination are introduced.

EST 223 Principles of Engineering This is an introductory course to the basic principles of engineering. It includes the following topics: Introduction – Basic principles of fluid engineering. Fluid statistics. Fluid kinematics. Dynamics of perfect fluids. Dynamics of real fluids. Laminar and turbulence flow. Theory of the boundary layer. Energy balance in tubes/walls. Heat exchangers.

EST 224 Water Quality Analysis This laboratory-oriented course focuses on the measurement of the parameters that characterize the quality of water. This way the students will develop the ability to analyse samples from different origins like surface waters and wastes. In addition, through the study of the physicochemical processes we will achieve a better understanding of the taught analytical theory. The laboratory exercises are divided into five groups. At first we describe the natural characteristics of water (color, odor, taste and dimming). Next we examine the physical properties of water (conductivity, pH, alkalinity, salinity, total hardness). The third part includes the inorganic ingredients of water (metals, iron, ammonia, nitric and phosphoric ions, dissolved oxygen, sulphuric and silicon ions) and the fourth part studies the organic ingredients (COD, BOD, TOC, oils and fats). Last part is the microbiological examination of the water.

EST 225 Instrumental Analysis The main target of this course is to familiarize the students with the most important instrumental analysis methods used in the area of environmental sciences and in particular, chemical quantitative and qualitative analysis. The course includes lectures and laboratory exercises on the basic principles of operation (theoretical background), sample preparation methods and practical methods of analysis using basic analytical instrumentation. In particular, the following methods of analysis will be taught: High Performance Liquid Chromatography (HPLC), UV-Vis Spectrophotometry (UV-Vis), Infrared Spectrophotometry (IR), Polymerase Chain Reaction (PCR), Gas Chromatography (GC) and Atomic Absorption Spectrophotometry (AAS).

EST 301 Environmental Physics This course provides knowledge on the Atmospheric System (composition and distribution by height), Temperature profile, Atmospheric regions, Hydrostatic equation – atmospheric applications, deviations by height, humidity parameters, Atmospheric dynamics: Stability – Instability. Great importance will be given on the clouds: types, mechanisms of formation, condensation, and artificial condensation, also the equations of gas motion, the general atmospheric circulations and environmental impact

EST 302 Environmental monitoring and Remote Sensing Systems Specific topics include relationships of landscape morphology and water typology, hydrological cycle, interaction of groundwater and surface water, rainfall-runoff relationships in catchments. Use of such measurements in environmental modelling. Remote sensing images by air planes and satellites in the optical, thermal infrared as well as in the microwave (radar) region provide information from small to large scales at different time and places of type of land use, evapotranspiration, soil moisture and the like. As such it is an excellent method to scale the information from point scale up to the regional scale. Principles and methods for designing, building and testing systems to sense the environment. Monitoring the atmosphere, water bodies and boundary interfaces between the two. Sensor systems for monitoring heat and mass flows, chemicals, and biota. Measurements of velocity, temperature, flux and concentration in the field. The class will involve planning and execution of a study to sense a local environmental system.

EST 303 Computational Environmental Modelling This course will be combined with basic computational and programming knowledge. MATLAB software will be used for applications in environmental modelling. It provides lectures on

Computational model types, Fundamental Conservation Laws (mass, energy, momentum), Transport of Mass and Heat, Transport with Decay and Degradation, kinetics and equilibrium reactions, Transport and Sorption, Numerical and Analytical model solutions, parameter fitting, Compartments and Linear systems, Eutrophic modeling, Molecular Dynamics basics, the equations of motion, weather prediction modeling, Data analysis techniques and Model evaluation.

EST 311 Environmental Science and Technology The course includes the following topics: 1) Categories of pollutants, microbial metabolism, metabolism paths, destructive metabolism plasmids, Transformations-nitrogen cycle 2) Biological remediation 3) Environmental Biotechnology 4) Phytoremediation of metals 5) Bio-plastics, bio-polymers 6) Environmental biotechnology applications in the production of bio-fuels 7) Industrial applications of environmental biotechnology.

EST 312 Ecotoxicology **Ecotoxicology** studies the effects of pollutants on ecosystems and focuses on different levels of ecological organization. Covered topics in this course includes: Ecological risk assessment procedures and techniques, development of ecological models that provide ecological impacts on the environment, concepts and practices of water toxicology, including physiological responses to toxic substances. Bioconcentration. Biomagnification. Ecotoxicity testing (algae, invertebrate and fish) and developmental testing at population level. Description and prediction of ecological change resulting from various human activities resulting from the release of xenobiotics and other substances in the environment.

EST 313 Toxicology I Toxicology I introduces the student to basic principles of toxicology and environmental toxicology, quantification of toxicity, toxicokinetics and biochemical action of poisons. Other topics includes, acute and chronic effects of different types of poisons (eg, pesticides, pharmaceuticals, metals and industrial pollutants), typical routes of exposure to the environment and assessment methods in relation to their licensing regime. Toxicology I practical introduces the student to laboratory instruments used in toxicology testing, procedures and experimental methods for the identification and quantification of toxic substances and their transformation products in environmental and biological samples. Application of these methods for the isolation, detection and quantification of toxic substances in environmental samples.

EST 314 Toxicology II Toxicology II course aims to introduce concepts such as biochemical toxicology, control, regulation and activity of metabolic enzymes. Molecular and cellular mechanisms of toxic action of substances. Mode of action and kinetics of cholinesterase inhibitors. Biochemical and molecular biomarkers at organism level. Effects of mixtures of chemicals to organisms and ecosystems. Toxicology II practical introduces the student to the toxicity testing methods and evaluation of results. The topics in the practical includes: Evaluation of toxicity using bioluminescence bacteria in water and soil samples Soil and sediment toxicity assessment. Evaluation of toxicity in water using the organisms such as Daphnia magna.

EST 331 Environmental Economics and Policy Principles of economics: Demand, supply, market equilibrium under perfect

competition and monopoly. Welfare analysis: Consumer and producer surplus. Efficient allocation and pricing of scarce natural resources. Principles of cost-benefit and cost-effectiveness analyses of environmental issues. Valuation of non-market environmental goods. Economics of pollution control. Comparison of environmental policy instruments: regulations, emission taxes/charges and tradable emission permits. Economic growth, international trade and environmental quality. Evolution of environmental policy in the European Union.

EST 341 Solid Waste Management Categories and characteristics of solid waste (municipal, industrial, hazardous, nuclear and specific types of waste). Parameters for the characterization of solid waste. Household solid waste (composition, recyclable materials, packaging wastes, organic fraction). Technologies and practices for the management of solid waste. Recovery, recycling and reuse of materials. Aerobic treatment. Thermal treatment. Sanitary landfilling. Control and monitoring of solid waste management installations.

EST 343 Liquid Waste Management This course deals with treatment and management of liquid wastes and in particular: Categories of liquid wastes (municipal, animal, industrial). Physicochemical and microbiological characteristics, planning and treatment, treatment plans, use of treated liquid wastes, water enrichment of aquifer, irrigation, treated liquid wastes as a source of water. Sources of water pollution. Biodegradation - aerobic and anaerobic decomposition of organics in water. Heavy metals and toxic substances. Water quality related effluent limitations. Standard quality limits for the disposal of wastewater to water recipients. Water pollution prevention and control techniques and practices. Wastewater minimization at source. Methods and technologies for the treatment of wastewater prior to its disposal (physical, chemical, physico-chemical and biological methods). Advanced methods and systems for the treatment of wastewater. Water saving, recycling and reuse.

EST 344 Control and Prevention of Air pollution Historical review of air pollution. Current state of atmospheric pollution. Review of major air pollutants origin and health effects. Definition of air pollution prevention and control. Basic principles of designing pollution control systems. Categories of control systems and technologies. Analysis of major control systems including scrubbers, gravity chambers, cyclones, electrostatic filters, catalytic filters and converters, flue gas desulphurisation, low NOx burners and innovative technologies. Sources and characteristics of major indoor air pollutants. The Sick Building Syndrome (SBS). Categories of indoor air pollution prevention and control methodologies.

EST 351 Renewable resources of energy Renewable energy and sustainability. The advantages of renewable energy. Solar energy. Solar water heaters. Passive solar design for buildings. Energy conservation in buildings. Systems for conversion of solar energy to electricity. Photovoltaic systems. Energy from ocean and sea. Wind energy and systems. Hydroelectric energy and systems. Geothermal energy. Biomass and bio-diesel. Green fuels.

EST 401 Dispersion Models This course deals with the basics of atmospheric dispersion, space and time dispersion classes, computational modeling of dispersion, model types on

atmospheric pollution, a simple dispersion model, The Euler and Lagrange approaches, the 2D Dispersion equation, Gaussian dispersion, Instability of the atmosphere, Building effects and stack downwash, wind distribution by height, Chemical dynamics, gravitational settling, dry deposition, wet deposition and errors – reliability of the models.

EST 402 Tools of Environmental Management Historical perspective, Environmental Management Systems: ISO Series, EMAS. Environmental auditing and its uses. Life Cycle Assessment. Environmental Assessment. Evolution of pollution abatement: Carmand and Catrol; voluntary agreements, economic/fised instruments, including carbon trading. Clean Technology: nomenclature.

EST 403 Thesis Project The student is required to undertake, under the supervision of professors of the Department, a thesis project. The subject of the project should be relevant to the main specialization of the student. The student is required to identify the subject and prepare a detailed research proposal. The student should collect and analyze research data and prepare and present the thesis.

EST 404 Global climatic change Greenhouse gas emissions. Predicted and observed patterns of climate change. Effects of climate change on agriculture, forestry, fisheries, natural ecosystems and human health. Consequences of sea-level rise. Desertification. Particular problems faced by developing countries. The Kyoto Protocol and other mitigation strategies. Carbon reduction technologies. Stratospheric ozone depletion and the Montreal Protocol. Land use changes and loss of biodiversity/extinction.

EST 411 Environmental Biotechnology I Introduction to environmental biotechnology. Cell biochemistry. Microbial growth and substrate utilization mechanism (anabolism and catabolism). Recombinant DNA technology. Environmental pollution and biodegradation of organic compounds. Soluble microbial products. Growth of microorganisms in close and open systems. Basic types of bioreactors. Recently developed bioreactors (membrane bioreactor and aerated biofilm bioreactor). Introduction to design of bioreactor. Biofilm formation and its role in bioreactor. Biotechnological process: metal bioleaching, anaerobic digestion, production of bioethanol and biodiesel, production of biohydrogen, food process biotechnology.

EST 412 Environmental Biotechnology II Environmental biotechnology and biofuel. Industrial biotechnological process. Enzyme kinetics , Michaelis-Menten. Enzyme reaction and enzyme inhibitors. Mathematical models of microorganisms. Design of bioreactor. Microbial conditions and parameters to maximize the biotechnological processes. Biotechnological process: production of biopolymers, antibiotics and pharmaceutical product, production of proteins and microbial fuel cell. Extremophilic microorganisms and their use in biotechnological processes. Genetic engineering.

EST 431 Environmental impact and risk analysis This course reviews the methodology of environmental impact assessment (EIA) locally and internationally. The main elements of this course includes: Introduction to Environmental Impact Assessment, legislative framework (Projects and Programmes), Preliminary Study on Environmental Impact Assessment, Environmental

Impact Assessment case studies, Methodology regarding Projects and Programmes, Development cycle for EIA Studies, Strategic Environmental Assessment, Design for Social Impact Assessment, Introduction to environmental risk assessment, Legislative background and Methodological tools for environmental risk assessment, Risk Management, Communication and decision support tools.

EST 441 Environmental Remediation Surface and groundwater pollution. Physico-chemical, chemical and biological methods for water remediation. Soil pollution. Physico-chemical, chemical and bio-chemical methods for soil remediation. In-situ and ex-situ soil remediation techniques. Closure, restoration and aftercare of waste disposal sites. Control and monitoring of surface water, underground water and soil after the application of remediation measures.

EST 451 Design of Energy Systems The students will be taught the principles of thermal systems modeling, their simulation and optimization of their design. The course intends to use prior knowledge from other courses so that the student can convert their scientific knowledge into practical engineering applications. The course will include: Introduction to the design of energy systems; Feasible and optimal design; Heat Transfer and Fluid mechanics; Component analysis of thermal systems; Modeling of the thermal systems' components; Computer simulation of thermal systems; Introduction to economic analysis and cost/ thermal efficiency design as an optimization parameter; Practical applications.

MAS 110 Mathematics Euclidean spaces, linear spaces and applications. Matrices, linear equations. Vectors. Inner product, cross product. Sequences and series. Definite and indefinite integrals. Calculus, integration. Area of plane regions. Differential equations, linear differential equations of the first order or with constant coefficients. Application of differential equations in physics and biology. Multivariate functions, the chain rule, partial differentiation, gradients and directional derivatives. Double and multiple integrals: definition and examples. The course includes lectures and tutorials.

MAS 201 Mathematics II (Differential Equations) This is an introductory course to the various types of Differential Equations, methods of solution and their applications in Environmental Science and Technology. Topics: Simple Differential Equations (DE) of first order, application– Simple DE of second order, applications – General examination of linear DE – Special methods for constant coefficient equations – Eigen-values and Eigen-vectors of matrices – Systems of linear DE with constant coefficients, solution with matrices – Partial DE, problems with terminal values – Linear DE with variable coefficients

HYS 101 Physics An introductory course in General Physics specially designed for students of the Department of Agricultural Sciences, Biotechnology and Food Science. It covers selected topics from the following areas of Physics: Fluid mechanics, Heat and Thermodynamics, Optics, Nuclear Physics with emphasis on biological effects of nuclear radiation. The course includes lectures, tutorials and lab demonstrations.

Faculty of Management and Economics

Department of Hotel and Tourism Management

Academic Staff

Maria Kapardis
Associate Professor of Accounting , Deputy Dean of Faculty of Management and Economics, Department Chair

Yannis Yatracos
Professor

Konstantinos Andriotis
Associate Professor

Constantinos Kontoghiorghes
Assistant Professor

Andreas Petrou
Assistant Professor

Antonis Theocharous
Assistant Professor

Anastasios Zopiatis
Assistant Professor

Pavlos Symeou
Lecturer

Georgia Nathanael
Postgraduate Fellow

Iphigenia Pavlou
Postgraduate Fellow

Andreas Varnavas
Associate Professor (Entagmenos)

Alexis Saveriades
Assistant Professor (Entagmenos)

Constantinos Papadopoulos
Senior Lecturer (Entagmenos)

Savvas Sakkadas
Senior Lecturer (Entagmenos)

Marlen Vasquez
Special Teaching Staff

Department of Hotel and Tourism Management

The aim of the Department is the rational development and dissemination of the scientific knowledge and values on which are mounted in the Hotel and tourism industries and the education of scientists' high level that can serve the specific industry but also the culture and society of Cyprus. The curriculum of the Department offers a comprehensive knowledge of the issues and functions of the industry so that students , depending on their interests and future professional objectives, they can choose specialty in Hotel Management or Tourism Management.

BACHELOR OF HOTEL AND TOURISM			
FIRST YEAR			
FALL SEMESTER		**SPRING SEMESTER**	
1st Semester		**2nd Semester**	
	ECTS		ECTS
HTM 100 Introduction to Hotel and Tourism Industry	6	**HTM 111** Food and Beverage Management	6
HTM 140 Fundamentals of Accounting	6	**HTM 141** management Accounting	6
CFC 101 Finances I	6	**HTM 180** Statistics	6
CFC 110 Mathematics Methods I	6	**CFC 102** Finances II	6
ENG 122 English for Academic Purposes	4	**ENG 190** English for Hotel & Tourism Management	4
TOTAL	**28**	**TOTAL**	**28**
SECOND YEAR			
FALL SEMESTER		**SPRING SEMESTER**	
3rd Semester		**4th Semester**	
	ECTS		ECTS
HTM 201 Business Ethics	6	**HTM 202** Business Law	6
HTM 220 Management of Hotel Operations	6	**HTM 203** Social Psychology	6
HTM 260 Introduction to Marketing	6	**HTM 204** Business Environment	6
CFC 221 Financial I	6	**HTM230** Tourism Policy	6
ENG 240 English for Business Communication	4	**HTM 271** Information System in Hospitality industry and Tourism	6
TOTAL	**28**	**TOTAL**	**30**
THIRD YEAR			
FALL SEMESTER		**SPRING SEMESTER**	
5th Semester		**6th Semester**	
	ECTS		ECTS
HTM 322 Event Management Professional	5	**HTM390** Management Training in Hospitality and Tourism Industry	20
HTM 334 Sustainable Tourism Development	6	**HTM 351** Organizational Behaviour	6
HTM 350 Human Resource Management	6	Hotel and Tourism Specialization Course	6
HTM 361 Consumer Behaviour	5		
HTM 370 E-Commerce in Tourism Industry	6		
HTM 381 Research Methods	6		
TOTAL	**34**	**TOTAL**	**32**

FOURTH SEMESTER			
FALL SEMESTER		**SPRING SEMESTER**	
7th Semester		**8th Semester**	
	ECTS		ECTS
HTM 482 Project/Dissertation I	6	**HTM 483** Project/Dissertation II	6
HTM 453 Hospitality Leadership	6	**HTM 421** Management Income	6
HTM 462 Strategic Hospitality and Tourism Marketing	6	**HTM 426** Corporate Strategy	6
Hotel and Tourism Specialization Course	6	Hotel and Tourism Specialization Course	6
Restricted Elective Course	6	Restricted Elective Course	6
TOTAL	30	**TOTAL**	30

MAIN SPECIALIZATION COURSES (THIRD AND FOURTH YEAR)

HOTEL MANAGEMENT	
	ECTS
HTM 324 Service Quality and TQM	6
HTM 428 Risk Management in the Hospitality	6
HTM 441 Cost Management	6

TOURISM MANAGEMENT	
	ECTS
HTM 332 Tourism Planning and Development	6
HTM 431 Tourism Destination Management and	6
HTM 433 Cultural and Heritage Tourism	6

COURSES OF LIMITED CHOICE	
	ECTS
HTM 312 Oenology and Spirits The course examines the history, science and varieties of wines and spirits essential for today's hospitality manager as well as the fundamental principles of managing bar and beverage operations. Emphasis is given in the social concerns of alcohol, planning and marketing beverage operations, beverage controls, purchasing and storage practices, drink mixology, and related human resources challenges. A substantial part of the course will cover the different classifications of alcoholic beverages, including domestic and foreign wines.	6
HTM 352 Employee Development in the Hospitality Industry The course examines the strategic role of employee training and development, both personal and professional, in the hospitality industry. It includes needs assessment, designing a learning environment, learning theories, training techniques including e-learning and the use of technology, and measuring and evaluating training results.	6
HTM 409 Contemporary Issues in Hospitality and Tourism Apart from the examination of current events, trends and developments in the hospitality and tourism industry, this course complements the overall Hospitality and Tourism Management programme by covering awareness topics in hospitality and tourism which are currently of interest. The series of special topics for this course are decided and designed by the faculty members and are complemented by industry professionals as guest speakers.	6
HTM 436 Sociology of Tourism Definitions of types of tourism across the globe and in Cyprus; Methodology for social analysis in tourism; Contributions of the tourism sector to the economy of the country; Global development strategies and tourism; Enclave tourism in the developing world; Commercial sex and the tourist industry; Host culture and host communities; Tourism and livelihoods. In addition, this course provides a cross-disciplinary perspective on the issues, problems, and methods of Social Impact Assessment (SIA) of tourism. The course will also provide analytic approach and theoretical framework for the assessment of diverse events, including changes in the natural environment, the local economy, or dominant technology.	6
HTM 437 Special Interest Tourism The aim of this module is to introduce students to the main theories and concepts of special interest tourism as well as to examine alternative tourism in the context of special interest tourism. The module will examine various facets of special interest tourism in order to provide a better understanding of the dynamic nature of the niche tourism products offered under special interest tourism, such as ecotourism, agrotourism, mountain tourism, wellness tourism, sport tourism etc. Recent developments of special interest tourism will be analysed through the use of case studies.	6
CFS 222 Finance II	6
CFS 311 Business Forecasting	6
CFS 326 Financial Accounting II	6
CFS 327 Administrative Accounting II	6
CFS 342 Company Law	6
CFS 426 Financial Accounting III	6
Foreign Language (except English) I	6
Foreign Language (except English) II	6
A limited elective course(including a foreign language) from another department of the University (must be approved from the department)	

DESCRIPTION OF COURSES

HTM 100 Introduction to Hospitality and Tourism

The course aims at providing students a basic understanding of the hospitality and tourism industry. It provides a historical overview of the industry and explores the forces that shape its economic and social role in today's changing global environment. Special emphasis is given on hotel operations including typical functional areas; institutional and commercial food service operations; the dynamic relationship between hotels, restaurants and travel and tourism; concepts of service quality; and the economic and social significance of tourism, its organisation, and its global and local impact. Furthermore, travel motivators, the concepts of tourism demand and supply and basic planning and development principles are explored. The course also examines the role of tour operators, travel agencies, the public sector and tourism associations in promoting travel and tourism services in specific destinations.

HTM 111 Food and Beverage Management

The course explores the fundamental principles and functions of food and beverage management. Emphasis is given on the different types of food and beverage establishments; their structure, organisation and functional areas; career opportunities; food and beverage marketing (including public relations and merchandising); menu planning and analysis; modern principles used in product purchasing, receiving, storing, and issuing; and production (basic cooking methods) and service methods. In addition, the course covers applied foodservice sanitation principles and practices, including the Hazard Analysis Critical Control Point (HACCP) system, HR related issues including recruiting and turnover, and industry trends and developments including franchising and environmental issues.

HTM 140 Financial Accounting

In this introductory course the basic concepts of financial accounting as well as the nature of the assumptions underlying the conventional measurement techniques and reporting procedures will be examined. More specifically the topics to be covered will include: the nature of business and accounting, the accounting conventions and concepts, recording and posting of transactions, the adjusting process as well as completing the accounting cycle. The manual accounting systems and internal controls will also be learned. Finally, the topics of inventory valuation, cash and financial statement analysis and presentation will be covered.

HTM 141 Managerial Accounting

This course comprises a study of management accounting techniques relevant to the planning, analysis and control of hotel and tourism businesses (drawing upon the Uniform System of Accounting for the Lodging Industry, the international standard). Worked examples will be discussed and demonstrated using examples and case studies from the hospitality and tourism contexts and students will be encouraged to use spreadsheets to carry out financial work.
Prerequisite: HTM 140 Financial Accounting

HTM 180 Statistics

This course comprises an introduction to statistics and statistical theory, with an emphasis on fundamental concepts and basic techniques of statistical data analysis. Where possible techniques should be discussed and demonstrated using worked examples in hospitality and tourism contexts and students should be encouraged to use

computer software to carry out statistical work.

HTM 201 Business Ethics

Ethical issues in the context of business theory and practice will be studied in this course. More specifically students will study how businesses and corporations should operate in a social and ethical environment and their obligations to a range of stakeholders. The challenges of globalisation and its impact on business ethics as well as social and ethical behaviour of transnational corporations will be studied. In addition the course will cover the topics of corporate governance and codes of conduct.

HTM 202 Business Law

The course aims to familiarise students with today's legal business environment and enable them to manage legal issues relevant to the hotel and tourism industry. It covers topics such as torts and crimes, contracts, legal operating structures, employment relations, negotiable instruments, debtor/creditor relationships and safety and security issues.

HTM 203 Social Psychology

Social psychology is an area of study within sociology and psychology, which examines the relationship between the individual and society. In this course particular emphasis is on the social experience stemming from individual's participation in social groups, interaction with others, the effects of the cultural environment on both the social experiences and interactions with others and the emergence of social structures from these interactions. From this perspective the course touches upon several topics in social psychology including theories in social psychology, social cognition, socialisation, self and identity, attitudes and attitude change, attribution theory, social perception, language, social communication and group processes.

HTM 204 Business Environment

This module analyses the key elements of the external environment in which tourism and hospitality operates. These are: Political; Competitive; Economic; Socio-cultural; Environmental; and, Legal. The aim is to understand the impacts of changes in these environments on hospitality and tourism.

HTM 220 Management of Hotel Operations

The course provides students an understanding of the primary functions of room operations management, including both the Front Office and the Housekeeping Department. It examines the relationship between the two functional areas and explores topics relevant to front office and housekeeping operations and responsibilities, such as reservations, registration, check out and settlement procedures, the night audit, typical cleaning responsibilities, managing inventories, material selection criteria, and controlling expenses. The course will also explore human resources challenges, such as turnover.

HTM 230 Tourism Policy

The purpose of this course is for students to understand, apply, and critically evaluate the interaction between public and private actors in the field of tourism through the examination of tourism policies, tourism development plans and regulatory mechanisms in a variety of locations and political structures internationally. The course focuses on tourism policy and its relationship with economic, socio-cultural, environmental and political forces that can shape the policy of the tourism industry. This entails both discussions of general concepts and theories, and the application of these abstract approaches to concrete case studies of interaction between public and private actors within tourism in local, regional, national and international settings. In addition, the course aims to develop an understanding of

tourism policy-making processes, and to gain skills in the evaluation of tourism plans and policies

HTM 260 Marketing Management

This module aims at providing a basic understanding of marketing principles; it is specially designed for students that have no previous experience with marketing-related issues. The main topics which will be covered include the following: nature, definitions and objectives of marketing; the marketing environment in relation to demand and supply; customer needs, satisfaction and value; principles of marketing plans, market segmentation, targeting and positioning; principles of marketing information systems and market research; marketing mix and the 4Ps, promotion and communication mix; advertising, sales promotion, public relations, publicity, direct marketing, merchandising, and personal selling; product-related issues and decisions; distribution channels and intermediaries; pricing-related decisions; coordinating and organising all marketing efforts.

HTM 271 Management Information Systems in Hospitality and Tourism

The underlying aim of this course is to offer a thorough understanding of information technology systems in hotels, food and beverage operations and the tourism environment. Emphasis will be given on systems integration standards and interfaces as well as topics facing the industry such as data security and privacy, biometrics and wireless technologies, use of the internet and other industry technology issues and trends.

HTM 312 Oenology and Spirits

The course examines the history, science and varieties of wines and spirits essential for today's hospitality manager as well as the fundamental principles of managing bar and beverage operations. Emphasis is given in the social concerns of alcohol, planning and marketing beverage operations, beverage controls, purchasing and storage practices, drink mixology, and related human resources challenges. A substantial part of the course will cover the different classifications of alcoholic beverages, including domestic and foreign wines.

HTM 322 Event Management

The course examines the challenges associated with managing and servicing group business in the hospitality industry. Emphasis is given on the primary group business markets of conventions, conferences, incentive travel, expositions, tours, fairs, sports and other related segments. It explores budgetary issues, in-house planning and coordination, communication with the customer, marketing and other related Human Resources issues.

HTM 324 Service Quality and TQM

This course aims at providing an understanding of service quality issues and Total Quality Management principles; special emphasis is given in the tourism and hospitality industry. The main topics examined include the following: definitions and principles of quality; characteristics of service quality; theories and models for quality assurance; quality costs and development of quality systems; Gap model; SERVQUAL; SERVPERF; implementation of quality programmes; continuous improvement and KAIZEN; steps for implementing a comprehensive TQM system; examination of real-life case studies.

HTM 332 Tourism Planning and Development

The planning and development of tourist resources and programmes within a geographic region. Planning models are reviewed and analysed. The relationship among tourists, tourist developments, and the planning of tourist attractions and services is examined. In particular, this course offers a comprehensive review of the

tourism planning process used to develop or modify a travel destination area. Aspects of the strategic tourism planning process explored include: the development of goals and objectives; the identification of natural, cultural, social, and recreational resources; and the control procedures need to assure implementation and measure impacts.

HTM 334 Sustainable Tourism Development

This course aims at examining issues related to sustainable tourism development. The main topics examined include the following: definitions and principles of sustainability and sustainable tourism development; links between sustainability and tourism; theories and models for sustainable development; costs, advantages and problems of sustainable tourism; carrying capacity; stakeholders in sustainable tourism; tourism policy and sustainability; alternative forms of tourism and sustainability; agrotourism; ecotourism; and, examination of real-life case studies.

HTM 350 Human Resources Management

The course examines human resources practices in the dynamic and changing hospitality industry from a strategic perspective. It explores the role of human resources, leadership styles and motivation, human resources planning and its integration with the organisation's strategic management, the employment cycle, employee appraisals, compensation strategies, and current and future human resources challenges.

HTM 351 Organisational Behaviour

This course aims at providing an understanding of organisation theory and organisational behaviour; special emphasis is given in applications for tourism and hospitality firms. The main topics examined include the following: definitions and principles of organisation theory and organisational behaviour; characteristics of organisational behaviour in tourism enterprises; theories and practices of motivation; leadership theories and practices; organisational decision-making procedures; group dynamics; organisation structure and culture; delegation of authority and empowerment; change management; crisis management; and, examination of real-life case studies.

HTM 352 Employee Development in the Hospitality Industry

The course examines the strategic role of employee training and development, both personal and professional, in the hospitality industry. It includes needs assessment, designing a learning environment, learning theories, training techniques including e-learning and the use of technology, and measuring and evaluating training results.

HTM 361 Consumer Behaviour

Consumer Behaviour is an important field of study in the framework of Marketing Management. Consumer Behaviour focuses on topics related to: buying behaviour, buying decision-making process, buying behaviour models and theories, product involvement, branding and branding decisions, market segmentation, effective market targeting, consumer satisfaction, customer value creation, and buying behaviour in B2B markets.

HTM 370 E-Commerce in Tourism

The course examines the application of Electronic Commerce in hospitality organisations. Main topics include the e-commerce span and scope, e-marketing and e-information, e-commerce strategies and solutions, web technologies, alliances and consortia websites, internet hosting and building traffic and website development.

HTM 381 Research Methods

The course aims to familiarise students with the key elements of research methodology as required for the purpose of establishing the required technical foundation in completing a major scientific project. The course aims to enhance students' understanding of the relationship between measurement, theory construction and testing, and to outline the principle methods of data collection, their applications and limitations. Questionnaire design and validation, sampling and data analysis, both quantitative and qualitative, are emphasised along with applications in hypothesis testing and overall research design.
Prerequisite: HTM 180 Statistics

HTM 390 Hospitality and Tourism Management Internship

The aim of this course is to build upon the existing theoretical knowledge acquired through the courses studied over six semesters at the University by exposing students to a six month long internship training programme at supervisory and junior management level (on-the-job, at an actual hospitality or tourism environment). The utmost goal of this internship is to allow students to transfer and develop industry specific and business skills they acquire at University, as well as enable them to develop personal responsibility and gain a thorough an understanding of the work environment. This is a continuous assessment course where students are evaluated by faculty and their employers on a rigorous scheme which is based on clear learning objectives and involves frequent visits, reflective log books, diaries and reports.
Prerequisite: completion of at least 110 ECTS

HTM 409 Contemporary Issues in Hospitality and Tourism

Apart from the examination of current events, trends and developments in the hospitality and tourism industry, this course complements the overall Hospitality and Tourism Management programme by covering awareness topics in hospitality and tourism which are currently of interest. The series of special topics for this course are decided and designed by the faculty members and are complemented by industry professionals as guest speakers.

HTM 421 Revenue Management

Revenue Management is the act of skilfully, carefully and tactfully managing, controlling and directing capacity and sources of income, given the constraints of supply and demand. The purpose of a course in the emerging discipline of Revenue Management is to provoke the discussion on how Revenue Managers might improve the business and contribute to organisational objectives, through a range of skills and techniques needed to understand and practice revenue management. The course builds on the fields of Economics, Marketing, Psychology and Finance already studied in previous semesters. Initially, students will be exposed to the management science of Revenue Management with the necessary underpinning theory, knowledge and applications. Students will then be exposed to a series of case studies from different service sector industries (airline, cruise-ship, hotel, restaurant and conference), through which they will have the opportunity to understand the context of a situation and its implications so as to provide the best possible solution to a specific problem.

HTM 426 Strategy for Hospitality and Tourism

The aim of this module is to provide an opportunity for students to understand, apply and critically evaluate strategic analysis for hospitality and tourism in organisations, government authorities and destinations. The examination and analysis of these will provide a basis for understanding and critically evaluating the factors that can

contribute to successful strategy. Students will be able to evaluate strategies, their appropriateness and the issues that will determine whether or not they are successful. Key areas covered include: understanding the theory and practice of strategy in hospitality and tourism; developing appropriate strategies based on critical situation analysis; providing an evaluation of the strategies pursued in different and hospitality and tourism contexts; identifying and evaluating critical success factors.

HTM 428 Risk Management in the Hospitality Industry

The course provides an in-depth analysis of contemporary security concerns specific to accommodation and food and beverage operations. It includes development of security department organisations, fraud analysis, risk management, asset protection, loss prevention, disaster control, crisis communication, industrial safety, and emergency action planning.

HTM 431 Tourism Destination Management and Marketing

The course aims to offer students an in-depth understanding of destination management based on conceptual frameworks and practical cases. It is the goal to explain the phenomenon "destination" and understand how destinations work. Factors that influence the competitiveness of destinations are discussed. The following topics are included in the course: The phenomenon of tourism (definition, tourism demand, tourism supply, tourism market, development processes of tourism, sustainability in tourism, tourism politics); Destination and tourism organisation in a tourism system; Goals and principles for management of destinations (business models and management systems); Marketing of destinations; Touristic lobbying in a destination; Cooperative supply in a destination; Planning a destination; Financing a destination.

HTM 433 Cultural and Heritage Tourism

This course aims at examining issues related to cultural and heritage tourism. The main topics examined include the following: definitions and principles of cultural tourism and heritage tourism; demand characteristics for cultural and heritage tourism; expectations and perceptions of culture and heritage tourists and travellers; development of cultural tourism products; heritage interpretation, authenticity and post-modernity; promotion and marketing of cultural tourism packages; information and communication technologies' applications in cultural tourism; and, examination of real-life case studies.

HTM 436 Sociology of Tourism

Definitions of types of tourism across the globe and in Cyprus; Methodology for social analysis in tourism; Contributions of the tourism sector to the economy of the country; Global development strategies and tourism; Enclave tourism in the developing world; Commercial sex and the tourist industry; Host culture and host communities; Tourism and livelihoods. In addition, this course provides a cross-disciplinary perspective on the issues, problems, and methods of Social Impact Assessment (SIA) of tourism. The course will also provide analytic approach and theoretical framework for the assessment of diverse events, including changes in the natural environment, the local economy, or dominant technology.

HTM 437 Special Interest Tourism

The aim of this module is to introduce students to the main theories and concepts of special interest tourism as well as to examine alternative tourism in the context of special interest tourism. The module will examine various facets of special interest tourism in

order to provide a better understanding of the dynamic nature of the niche tourism products offered under special interest tourism, such as ecotourism, agrotourism, mountain tourism, wellness tourism, sport tourism etc. Recent developments of special interest tourism will be analysed through the use of case studies.

HTM 441 Cost Management

This course comprises a study of cost management techniques and control systems and procedures applicable to hospitality operations management, including the administration, production and delivery of diverse products and services. Systems and techniques will be discussed and demonstrated in a room and food & beverage management contexts.
Prerequisite: HTM 140 Financial Accounting

HTM 453 Hospitality and Tourism Leadership

The course will explore several different styles of leadership and management applied to the hospitality and tourism industry. Students will be exposed to real life concepts that aim to enhance their leadership style, problem solving capabilities, and emotional intelligence qualities. The course will discuss topics such as team dynamics, leadership types and fundamentals, motivation, conflict resolution, change management and ethics.

HTM 462 Hospitality and Tourism Marketing

This course aims at providing in-depth understanding of strategic hospitality and tourism marketing; emphasis is given in developing hospitality and tourism marketing plans. The main topics examined include the following: principles of marketing planning; marketing planning process; uses and value of hospitality marketing plans; development of corporate mission; marketing audit for hospitality organisations: SWOT analysis, competitor analysis, portfolio analysis and marketing effectiveness analysis; establishing marketing objectives; development and selection of marketing strategy; strategy implementation; implementation of tactics, marketing mix and the 4Ps for hospitality organisations; coordinating and organising all marketing planning efforts.

HTM 260 Marketing Management

This module aims at providing a basic understanding of marketing principles; it is specially designed for students that have no previous experience with marketing-related issues. The main topics which will be covered include the following: nature, definitions and objectives of marketing; the marketing environment in relation to demand and supply; customer needs, satisfaction and value; principles of marketing plans, market segmentation, targeting and positioning; principles of marketing information systems and market research; marketing mix and the 4Ps, promotion and communication mix; advertising, sales promotion, public relations, publicity, direct marketing, merchandising, and personal selling; product-related issues and decisions; distribution channels and intermediaries; pricing-related decisions; coordinating and organising all marketing efforts.

HTM 482 Project/Dissertation I

The course enables students to acquire analytical and problem solving skills with the application of academic knowledge in the investigation of a hospitality/tourism business problem or issue. The course requires students to undertake a major research relevant with their specialisation field during the last two semesters of study. Students are required to identify a research topic, define the research problem, and determine how to conduct the study via the preparation of a detailed research proposal.
Prerequisite: HTM 381 Research Methods

HTM 483 Project/Dissertation II
The course enables students to acquire analytical and problem solving skills with the application of academic knowledge in the investigation of a hospitality/tourism business problem or issue. The course requires students to undertake a major research relevant with their specialisation field during the last two semesters of study. Students are required to conduct the study, collect the data, analyse and interpret the data, write up the report, and present their research work to the examination committee.
Prerequisite: **HTM 482 Project/Dissertation I**

The course enables students to acquire analytical and problem solving skills with the application of academic knowledge in the investigation of a hospitality/tourism business problem or issue. The course requires students to undertake a major research relevant with their specialization field during the last two semesters of study. Students are required to identify a research topic, define the research problem, and determine how to conduct the study via the preparation of a detailed research proposal. Prerequisite: HTM 381 Research Methods

CFS 101 Economics I
This course is an introduction to microeconomics. Topics covered include household behaviour and consumer choice, business behaviour, market structure and pricing, markets and welfare, public goods, information and labour markets.

CFS 102 Economics II
This course is an introduction to macroeconomics. Topics covered include money and banking, monetary policy, inflation and unemployment, aggregate consumption and investment, monetary and fiscal policy, and long-run growth.

CFS 110 Mathematical Methods I
This is an introductory course on mathematical methods used in business. Topics include, the derivative, differentiation of a function of one or more than one variables, differentials and total derivatives, Taylor expansion, optimisation of functions of one or more than one variables, and optimisation with equality constraints

CFS 221 Finance I
This course is an introduction to fundamentals concepts in finance. It covers the concept of market efficiency and the valuation of assets such as stocks and bonds. It discusses investor preferences to risk and portfolio theory. Other topics covered include the Capital Asset Pricing Model, the term structure of interest and exchange rates and the pricing of financial derivatives.

CFS 222 Finance II
This course builds on the material covered in Finance I. It includes methods for calculating the cost of capital, the valuation of risky debt, capital structure and payout policy. It also discusses how companies are valued, the role of mergers and acquisitions and the structure of initial public offerings.

CFS 311 Business Forecasting
This course introduces students to a variety of forecasting techniques used in business practice. The course discusses the theoretical underpinning of the techniques but the emphasis is on applying these techniques to forecasting a variety of economic and financial variables using actual economic and financial data. Topics covered include data considerations, model selection, moving averages and exponential smoothing, regression analysis, time-series decomposition, Box-Jenkins (ARIMA) models, optimal forecast combinations and forecast implementation.
Prerequisite: **HTM 180 Statistics and Prior Consent of the CFS Department**

ENG 190 English for Hospitality and Tourism

This course focuses on the learning of English for Specific Academic Purposes (ESAP). It is specifically designed to meet the needs of university students studying in the field of Hospitality and Tourism Management. Course material will be used to acquaint the students with genre writing (CVs and cover letters, formal letters, reports, emails) and writing styles (comparison and contrast). Furthermore, learners are expected to develop their listening comprehension and speaking fluency by taking an active part in discussions, giving oral presentations, etc. Students are expected to develop a sufficient vocabulary, phonological control and sociolinguistic awareness to be able to express themselves with a degree of clarity, fluency and spontaneity.

ENG 240 English for Business Communication Skills

This course is designed to acquaint students to the various forms of written and oral communication skills. Students are expected to maximise their personal business communication skills, necessary both within the organisation and for communication with external audiences. They will develop public speaking skills (speaking to a group of people in a structured, deliberate manner intended to inform, influence or entertain the listeners). Students will also develop their communication skills in writing clear, concise, complete and correct business correspondence. Moreover, they will develop an understanding and compose a variety of business communication, including memorandums and formal reports. The course also looks at how new technologies are changing the way people in business communicate.

Department of Commerce, Finance and Shipping

Academic Staff

Panayiotis Theodossiou
Professor, Dean of Faculty of Management and Economics

Andreas Savvides
Professor

Erricos Kontoghiorghes
Professor

Photis Panayides
Associate Professor, Department Chair

Neofytos Lambertides
Assistant Professor

Christos Savva
Assistant Professor

Panayiotis Andreou
Lecturer

Christodoulos Louca
Lecturer

Demetris Koursaros
Lecturer

Christiana Gohari
Lecturer

Department of Commerce, financial and Shipping

The Department expects to connect with industry trade, financial and shipping, and provide adequate preparation to graduates for employment in these industries. The degree of the Department, also offers a strong basis for those graduates who want to follow post-graduate studies in business administration, finance, shipping and other industries in Economics and Management. The Department diploma is divided into two directions: Financial or shipping.

Common curriculum (1st and 2nd year)			
FIRST YEAR			
FALL SEMESTER		**SPRING SEMESTER**	
1st Semester		**2nd Semester**	
	ECTS		ECTS
CFS 101 Economics I	6	**CFS 102** Economics II	6
CFS 110 Mathematical Methods in Management and Economics I	6	**CFS 111** Introduction to Statistics	6
HTM 140 Principles of Financial Accounting	6	**CFS 141** Information Technology for Business	6
ENG 122 English for Academic Purposes	4	**ENG 191** English Topics for Commerce, Finance and	4
HTM 201 Business Ethics	6	**HTM 141** Managerial Accounting	6
TOTAL	28	**TOTAL**	28
SECOND YEAR			
Fall Semester		**Spring Semester**	
3rd Semester		**4th Semester**	
	ECTS		ECTS
CFS 221 Finance I	6	**CFS 222** Finance II	6
CFS 201 International Economics I	6	**CFS 202** International Economics II	6
CFS 231 Shipping I	6	**CFS 232** Shipping II	6
CFS 210 Mathematical Methods II	6	**CFS 211** Statistical Methods II	6
CFS 203 Commerce I	6	**CFS 204** Commerce II	6
TOTAL	30	**TOTAL**	30

DIRECTION: FINANCE			
THIRD YEAR			
FALL SEMESTER		**SPRING SEMESTER**	
5th Semester		**6th Semester**	
	ECTS		ECTS
CFS 310 Quantitative Methods	6	**CFS 143** Commercial Law	6
CFS 323 Financial Derivatives	6	**CFS 312** Financial Econometrics	6
CFS 330 Shipping Finance	6	**CFS 320** Corporate Finance	6
CFS 424 Financial Statement Analysis	6	**CFS 324** International Financial Markets	6
Elective Course (*see table below)	6	**CFS 420** Research Methods in Finance	6
TOTAL	30	**TOTAL**	30

FOURTH YEAR			
FALL SEMESTER		**SPRING SEMESTER**	
7th Semester		**8th Semester**	
	ECTS		ECTS
CFS 321 Banking Economics	6	**CFC 441** Thesis/ Internship *	12
CFC 322 Asset Valuation	6	**CFC 325** Investment Management	6
3 Elective Courses (*see table 1 below)	18	**ENG 491** English for Finance	4
		2 Elective Courses (see list next page)	12
TOTAL	30	**TOTAL**	34

*Internship may be replaced with the Diploma Thesis or with elective courses provided that the Department agrees

DIRECTION:FINANCE

Elective courses (students must choose at least 2 of the following courses)			Students must take a minimum of 12 ECTS offered by HTM		
		ECTS			ECTS
CFS 311	Business Forecasting	6	**HTM 260**	Principles of Marketing	6
CFS 326	Financial Accounting II	6	**HTM 350**	Managing Human Resources	6
CFS 327	Managerial Accounting II	6		any other course by HTM Department	
CFS 331	International Trade Product	6			
CFS 332	Principles of maritime insurance	6			
CFS 333	Maritime Law	6			
CFS 334	Management of Shipping Operations	6			
CFS 335	Chartering	6			
CFS 342	Corporate Law	6			
CFS 402	E-Commerce	6			
CFS 403	Administrative Gaming and Strategic Behaviour	6			
CFS 411	Computational Statistics and Econometrics	6			
CFS 412	Advanced Topics in Quantitative Methods in Management	6			
CFS 421	Risk Management and Derivatives	6			
CFS 423	Risk Management of Products	6			
CFS 425	Financial Predictions	6			
CFS 426	Financial Accounting III	6			
CFS 431	Supply and Chain Management and Distribution	6			
CFS 440	Thesis	12			

Direction: Shipping			
Third Year			
FALL SEMESTER		**SPRING SEMESTER**	
5th Semester		**6TH Semester**	
CFS 310 Quantitative Methods	6	**CFS 320** Corporate Finance	6
CFS 323 Financial Derivatives	6	**CFS 324** International Financial Markets	6
CFS 330 Shipping Finance	6	**CFS 143** Commercial Law	6
CFS 335 Chartering	6	**CFS332** Principles of maritime insurance	6
CFS 334 Management of Shipping Operations	6	**CFS 331** International products trade	6
TOTAL	30	**TOTAL**	30
Fourth Year			
FALL SEMESTER		**SPRING SEMESTER**	
7th Semester		**8th Semester**	
	ECTS		ECTS
CFS 431 Supply chain management and distribution	6	**CFS 333** Maritime Law	6
CFS 423 Risk management products	6	**CFS 492** English for Shipping	4
3 Elective Courses (see list next page)	18	2 Elective Courses (see list next page)	12
		CFS 441 Internship*	12
TOTAL	30	**TOTAL**	34
Internship * may be replaced with the Diploma Thesis or with elective courses provided that the Department agrees.			

DIRECTION: SHIPPING

Elective courses (students must choose at least 2 of the following courses)				Students must take a minimum of 12 ECTS offered by HTM	
		ECTS			ECTS
CFS 311	Business Forecasting	6	**HTM 260**	Principles of Marketing	6
CFS 312	Financial Econometrics	6	**HTM 350**	Managing Human Resources	6
CFS 321	Banking Economics	6		any other course by HTM Department	
CFS 322	Assets Valuation	6			
CFS 325	Investment Management	6			
CFS 326	Financial Accounting II	6			
CFS 327	Managerial Accounting II	6			
CFS 342	Corporate Law	6			
CFS 402	E-Commerce	6			
CFS 403	Administrative Gaming and Strategic Behavior	6			
CFS 411	Computational Statistics and Econometrics	6			

CFS 412	Advanced Topics in Quantitative Methods In Administration	6			
CFS 421	Risk Management and Derivatives	6			
CFS 424	Financial Statement Analysis	6			
CFS 425	Financial Forecasts	6			
CFS 426	Financial Accounting III	6			
CFS 432	Economics and Management of Ports	6			
CFS 433	Strategic Behavior in Shipping	6			
CFS 420	Thesis	12			

COURSE DESCRIPTION

CFS 101 Economics I

This course is an introduction to microeconomics. Topics covered include household behaviour and consumer choice, business behaviour, market structure and pricing, markets and welfare, public goods, information and labour markets.

CFS 102 Economics II

This course is an introduction to macroeconomics. Topics covered include money and banking, monetary policy, inflation and unemployment, aggregate consumption and investment, monetary and fiscal policy, and long-run growth.

CFS 110 Mathematical Methods I

This is an introductory course on mathematical methods used in business. Topics include, the derivative, differentiation of a function of one or more than one variables, differentials and total derivatives, Taylor expansion, optimisation of functions of one or more than one variables, and optimisation with equality constraints

CFS 111/HTM 180 Introduction to Statistics

Descriptive Statistics: Bar-graphs, pie-chart, frequency tables, stem and leaf, measures of data center (mean, median, trimmed mean) and variability (spread, variance), histograms.

Probability: Definition of probability, independent and incompatible events, additive and multiplicative rules, conditional probability, Bayes Theorem, discrete random variables (Bernoulli, binomial), continuous random variables (normal), linear functions of random variables, joint probabilities, mean and variance of random variables, Central Limit Theorem.

Statistical Inference: Parameter estimation, unbiasedness, efficiency, consistency, mean squared error, confidence intervals, tests of hypotheses, P-value.

Linear regression: Least squares estimates and their properties, confidence intervals, tests of hypotheses, prediction.

CFS 141 Information Technology for Business

This course provides the opportunity to students to tie together the information technology in their studies and future career. Students will learn and become expert with important computer applications such Microsoft Office (WORD, EXCEL, PowerPoint) that are essential for writing essays and analyzing data. They will learn also other statistical software essential in finance studies such as SPSS and Eviews. This is a primarily laboratory course.

CFS 143 Commercial Law

The course aims to familiarize students with the basic elements and basic concepts of corporate law, addressing issues such as legal contracts, labour relations, organization and functioning of legal persons, unfair competition, authorities negotiated contracts, franchising (franchise), contract management (Management Contract), timeshare (time sharing), and issues of privacy and security.

CFS 201 International Trade I

This course in an introduction to the theory and practice of international trade. The theories covered in this course include the classical model of trade, the factor endowments model, increasing returns and imperfect competition. The course covers international commercial policy, tariffs and nontariff barriers to trade such as quotas and voluntary export restraints, and export subsidies. The course also covers contemporary commercial agreements and the role of international organizations in the formulation of commercial policy.

CFS 202 International Trade II

This course examines the financial side of the international economy. The course focuses on the structure of the foreign exchange market, the balance of payments, exchange rate regimes and theories of the determination of exchange rates. The course

explains the functioning of international financial markets including the forward exchange market, futures markets for foreign exchange and options. The course also explains the principles and functioning of international banking markets.

CFS 203 Commerce I

This course applies economic theory and methodology for decision-making problems faced by private companies, non-profits and government agencies. The issues addressed include: demand analysis, production decisions and pricing, competitive and non-competitive market structures, strategic behaviour and pricing, business risks, uncertainty and incentives, and pricing factors.

CFS 204 Commerce II

The course focuses on the study of short-term linkages in macroeconomics. It explains the relevant theoretical backgrounds and models, the empirical foundation and the impact of macroeconomic factors in decision-making management decisions. The course emphasizes in basic concepts such as gross domestic product, national and personal income and the various ways of measuring inflation and unemployment, and how they affect economic decision making. Based on this knowledge the course analyzes various aspects of macroeconomic theory including overall supply and demand, international stock markets, cyclical fluctuations, policy analysis and forecasting.

CFS 210 Mathematical Methods in Economics and Management II

The course aims to expand on the methods developed in the course Mathematical Methods I, and includes theory of matrices, matrix operations, linear models and linear algebra, the defined, undefined and inept integrals, first-order differential equations and first-order equation differences.

Prerequisite: CFS 110

CFS 211 Probability and Statistics

Probability: Permutations, combinations, Axiomatic definition of probability, independent and incompatible events, additive and multiplicative rules, conditional probability, Bayes Theorem, discrete random variables (Bernoulli, binomial, Poisson), continuous random variables (normal, exponential, gamma, beta), linear functions of random variables, cumulative distribution functions, joint probabilities/densities for random vectors and their functions, moments and central moments of random variables, moment generating functions, Markov's inequality, Chebyshev's inequality, Weak law of large numbers.

Statistical Inference: Sufficiency, Neyman's factorization criterion, parameter estimation, unbiasedness, Rao-Blackwell theorem, efficiency, Cramer-Rao inequality, maximum likelihood estimates, moments' estimates, Central limit theorem, asymptotic properties of maximum likelihood estimates, Slutsky's theorem, convergence in distribution.

Other topics if time permits.

CFS 221 Finance I

This course is an introduction to the basic concepts of finance. It covers the concept of market efficiency and valuation of capital goods such as stocks and bonds. It also covers investors' preferences regarding risk and portfolio theory. Other topics covered include asset pricing model, the term structure of interest rates and exchange rates and the pricing of derivatives.

CFS 222 Finance II

The course aims to deepen the material covered in CFS 221. Finance II includes methods to calculate the estimated cost of capital, evaluation of bad debts, capital structure and dividend policy. It also covers issues such as the valuation of businesses, the role of mergers and acquisitions and the structure of Initial Public Offerings (IPO).

CFS 231 Shipping I

The course introduces fundamental principles of the maritime industry. Shipping is one of the leading industries

internationally as it facilitates international trade. Without international trade, the global economy would not have the form it has today. The course describes and explains issues about the characteristics and organization of global shipping, the types of cargo carried and the types of vessels and their characteristics as well as the organization of shipping operations.

CFS 232 Shipping II

The course introduces fundamental principles of maritime economics. The course examines the economic structure and behaviour of the main shipping markets including the new building market, the second-had market, the demolition market and the freight market. The shipping industry is analyzed from a supply and demand perspective with in-depth analysis of the factors influencing the workings of the industry. Focus is also given to economic structure of the dry bulk sector, the tankers sector and the containership sector (liner shipping) along with their operational characteristics, and the international regulations and policies that may affect these markets.

CFS 310 Introduction to Econometrics

The course covers simple linear regression, hypothesis testing, regression and multiple extensions (violations?) of the assumptions of the classical model. In addition, during the course the econometric methodology surrounding the long-term relations in economic and financial models will be discussed.

Prerequisite: CFS 111 and CFS 210

CFS 311 Business Forecasting

This course introduces students to various forecasting techniques used in the business world. The course studies the theoretical basis of the techniques but emphasis is given on the application of these techniques in predicting various economic and financial variables using real economic and financial data. Topics covered include: assessment of data, model selection, moving averages and exponential smoothing, regression analysis, time series decomposition, Box-Jenkins models(ARIMA), optimum combinations prediction and forecasting application.

CFS 312 Financial Econometrics

The course examines single and multiple variable statistics and their application to forming hypotheses and testing in financial markets. The course covers ARMA models, the formation of economic instability, ARCH and GARCH procedures, time series models with changes in regimes, VAR analysis, hypothesis testing, structural VARs and nonlinear time series models.

CFS 320 Corporate Finance

This course introduces concepts relating to the operations of financial business giving an overview of the basic analytical tools and explaining their applications to economic problems that companies face. The topics to be covered include the concept of economic rents, business planning use of capital, derivatives pricing in the financial business, financial options, bad debts, analysis of real opportunities, capital structure, dividend policy, mergers and acquisitions, corporate governance and compensation plan leaders.

CFS 321 Economics of Banking

The course aims to help the student to understand the theory and practice of modern banking. The student will be able to understand the special nature of banking operations, the structure of the banking industry, diversification of banking, insurance and banking, international banking and multinational banks. Specific topics covered include the regulation of the banking sector, the banking sector in emerging markets, banking reforms, the banking sector in Cyprus.

CFS 322 Valuation of Capital Assets

This course introduces the fundamental practices for the pricing of risky assets. The course

provides those tools and skills needed for finance students to perform research in asset pricing. The first half of the course develops some basic elements of single discount factor-based asset pricing theory. It reviews classical asset pricing theory, essentially portfolio choice theory, the CAPM and the APT. Main attention is given in modern asset pricing models such as Fama and French 3-factor, or Carhart 4 factor, and others. It covers also topics such as market efficiency, utility theory, stochastic dominance, term structure of interest rates. The second half of the course deals with stochastic calculus and contingent claims pricing.

CFS 323 Financial Derivatives

This course is an introduction to the global market for options and forwards. It describes and explains the factors that affect their value, how can one choose the right derivatives and certain hedging techniques, the various valuation techniques, the mark-to-market mechanism, as well as the determination of counterparty risk. Finally, the course also examines risk management in practice and the motives for companies to manage risk.

CFS 324 International Financial Markets

The course provides the opportunity for students to understand the foreign exchange markets and how the exchange rate fluctuations affecting a range of economic activities. The course examines how the foreign exchange markets, international financial institutions, the level of prices and exchange rates short and long term, and interest and exchange rates. It also examines the forecasting of exchange rates, models microstructure of foreign exchange markets, the choice of exchange rate regime and economic crises.

CFS 325 Investments and Portfolio Management

This course provides an overview of financial instruments and markets, international diversification, passive asset allocation of a portfolio, performance measurement, value management, active portfolio management, and the management of a portfolio of bonds. It also examines the use forwards, futures and rights in active management as well as decisions on hedging.

CFS 326 Financial Accounting II

The course develops knowledge and understanding of principles and concepts relating to financial accounting and technical proficiency in the preparation of financial statements. Topics covered include: context and purpose of financial reporting, the qualitative characteristics of financial information, recording of transactions and events, preparation of financial statements for freelancers and companies, and the record of events after the reporting period

CFS 327 Managerial Accounting II

The main purpose of the course is to expand on the topics covered in the Managerial Accounting I course. Topics to be considered include: cost analysis, cost allocation, budgets, marginal costing, investment appraisal, evaluation personnel accounting responsibility, costing of products and services, costing for decision making, inventory management, Just in Time, and backflush costing. Prerequisite: HTM 140 Management Accounting II

CFS 330 Shipping Finance

This course examines the fundamental principles of investment in the shipping sector. Topics covered include: mechanisms and products for ship finance, ship acquisition and investment analysis, feasibility studies maritime loans, credit analysis and risk management principles.

CFS 332 Marine Insurance

This subject aims to provide participants with a full understanding of advanced insurable risk management in shipping and freight transportation. Participants taking

this course will be able to integrate the concepts of marine insurance in order to develop theoretical and practical alternatives in controlling insurable risks in the shipping industry. The course focuses on the fundamental issues in marine insurance and presents the relationship between the Marine Insurance Act 1906, case law and the standard terms of the Institute Clauses (cargo and hulls). The course also addresses General Average, the war risk insurance and P & I Clubs.

CFS 333 Maritime Law

This course examines elements of maritime law. Topics covered include ownership and nationality of ships, (registration, ownership and admiralty jurisdiction), arrest and injunctions, international conventions of the International Maritime Organization (oil pollution), as well as issues relating to maritime liens, collisions, salvage and general average.

CFS 334 Shipping Operations Management

This module focuses on the management functions pertaining to the operation of ships and the activities/inter-relationships of the various stakeholders associated with it. Candidates taking this course will have the opportunity to gain a full understanding of the internal and external environments within which ships are managed. Candidates will be exposed to the workings, prospects and inter-relationships of ship management including, ship registration, the importance of classification societies, regulations for safety and environmental protection and on the basis of this background will appreciate the requirements for a successful ship-owning and ship management business. They will also be exposed to issues relating to the measurement of performance in ship management and the improvement in efficiency

CFS 335 Chartering

This course enables students to understand the various methods of chartering. It introduces students to different types of cargo, transportation, vessel types and suitability analysis of the charterparty. This course also covers voyage assessment and calculation, division of responsibilities and duties of the parties for each type of charterparty and calculation of laytime and demurrage.

CFS 342 Corporate Law

The course covers the legal framework of company law. It analyzes legal issues with companies from the formation and constitution of a company, the daily management of the company and the dissolution of the company.

CFS 402 E-Commerce

This course aims to help students to be able to successfully build the conditions for successful implementation of applications of electronic trade. The course deals with the selection of appropriate software, hardware and hosting services for business planning, assigning services to external suppliers, web hosting, outgoing Internet traffic as well as the processing and completion of orders. It also examines customer satisfaction in terms of easy access, quick product delivery and continuous improvement of the quality and content of electronic commercial website.

CFS 403 Games of Strategic Behavior

This course explains the concept of Game Theory and how one can apply strategic thinking. It also describes the various forms of games and the solution concepts of games in strategic form. It examines the Nash equilibrium in pure and mixed strategies and explains the concept of credible and non-credible threats and repeated games. All concepts are discussed in terms of their application to business decisions.

CFS 411 Computational Statistics and Econometrics

The purpose of this course is the study of linear regression models used in econometrics. The study of these models is particularly important for the effective

application of economic theory to real economic challenges. The course is tailored for students interested to enrich and deepen their knowledge in computational econometrics. The term computational econometrics, refers to the use of computational methodologies to solve problems encountered in economics and finance. The aim of the course is the application of advanced quantitative methods using basic computational methodologies or otherwise computational tools.

A prerequisite for the course is a good knowledge of quantitative methods.

CFS 412 Advanced Topics in Quantitative Methods in Management

The course examines in depth contemporary issues of quantitative methods which are useful in problem solving and study models in the fields of finance, management science, economics and shipping. Topics of research publications will be investigated and will be presented during the course. Upon completion of the course students will be able to identify, analyze and use the proper techniques needed to answer various questions in the areas of specialization as well as writing the thesis study.

Prerequisite: ECHN 310

CFS 420 Research Methods in Finance

This course offers an overview of some of the most important empirical facts and findings in the area of finance. The course focuses on the empirical techniques used most often in the analysis of financial markets and how they are applied in practice. It also examines the collection of actual business and financial data and econometric tools that can be used to analyze the data and it presents an overview of various research topics and key theoretical and statistical techniques used in them.

Prerequisite: CFS 111 and 210 CFS

CFS 421 Management of Financial Risk

This course covers the definition of the sources and the classification and measurement of financial risks. It also examines volatility, correlations and the definition and specification of futures and option pricing through speculation and the pricing of swaps and futures in practice. It also examines in more depth the role of derivatives for hedging or reduction of financial risk arising from investments in financial assets as well as other advanced methods for risk management.

CFS 423 Commodity Risk Management

This course examines the features and pricing structures of major commodity derivatives products. It describes and explains examples of how commodity derivatives are priced and marketed and examines how hedging instruments can be used to control price risk in terms of the producer and the user of commodities. The course also covers the technical analysis and trade in commodity markets.

CFS 424 Financial Statement Analysis

This course aims to effective business decisions by analyzing financial statements. The course provides an overview of financial statement analysis and an introduction to accounting and financial analysis, including analysis of equity financing and credit and valuation models in cash or dividends. The course presents the dynamic relationship between financial statement analysis and decision-making by managers through the use of case studies and excerpts from financial reports.

CFS 425 Financial Forecasting

This course aims to help the student understand the main quantitative methods used for judgment calling in economic forecasting. Besides the conventional technical forecasts, the course examines other techniques used today, such as technical analysis and Riskmetrics parametric method of calculation. The course covers the use of

statistical graphs for purposes of forecasting, modeling and forecasting trends, seasonality modeling and prediction, characterization, modeling and predicting economic cycles, prediction models and multiple regression evaluation and combination of forecasts. It also examines unit roots, stochastic forms, templates autocorrelation ARIMA and smoothing programs, forecasting volatility and technical analysis.

CFS 426 Financial Accounting III

This course develops knowledge and understanding of principles and concepts relating to financial accounting and technical proficiency in the use of double-entry accounting techniques, including the preparation of financial statements. Topics covered include: preparation of financial statements, company mergers and analysis and interpretation of financial statements.

CFS 430 Research Methods in Shipping

This course enables students to combine economic / financial theory with more advanced quantitative techniques and computer software in order to empirically investigate problems or help in decision-making in the field of shipping. This course examines the methodology, design, and data collection from sources shipping market, research methods and data analysis applicable to shipping markets, and the presentation and analysis of research work.

Prerequisite: CFS 111 and CFS 210

CFS 431 Supply Chain Management

The course examines supply chain management, referring to activities such as logistics management, supply chain integration, reverse logistics chain, intermodal transportation, international logistics and telematics technology applications. Particular emphasis is given to the role, strategy, evaluating supply chain and modern trends in supply chain management.

CFS 432 Port Economics and Management

This course examines the characteristics of modern ports in terms of structure, organization and financial management. The course includes political and economic factors and administrative functions that should govern a port to carry out its objectives, examines the methods that can be applied to increase port efficiency and productivity and also analyzes the role of ports in supply chain and shipping in general.

CFS 433 Strategic Behaviour in Shipping

The course examines strategic management practices applicable to maritime organizations and specifically to shipping companies that compete in a dynamic and volatile environment. The course introduces fundamental principles concerning the creation, implementation and management strategies in shipping and it includes the study of action plans for the implementation the objectives of a business that consists of decisions and well-designed movements that result in good performance of the business, and create long-term and sustained competitive advantage. It also examines how companies need to ensure that the business is always strong and flexible not easily affected by unforeseen developments.

CFS 440 Thesis

In this course the student is required to prepare a thesis study under the supervision of a professor of the Department. This study is done simultaneously with practice in a relevant workplace. The practice will lead to the preparation of a thesis study in the form of a case study during the final five weeks of the semester. The student may complete an independent investigation of an operational issue related to everyday life for which you must have the approval of the academic supervisor.

CFS 441 Internship

The internship will take place for about ten weeks in a business or a government department or other workplace that is relevant to the curriculum of each student. The work program will be approved by the academic supervisor of the student will be responsible for supervising the placement of a student in a workplace for practice.

HTM 140 Financial Accounting

In this introductory course the basic concepts of financial accounting as well as the nature of the assumptions underlying the conventional measurement techniques and reporting procedures will be examined. More specifically the topics to be covered will include: the nature of business and accounting, the accounting conventions and concepts, recording and posting of transactions, the adjusting process as well as completing the accounting cycle. The manual accounting systems and internal controls will also be learned. Finally, the topics of inventory valuation, cash and financial statement analysis and presentation will be covered.

HTM 141 Managerial Accounting

This course comprises a study of management accounting techniques relevant to the planning, analysis and control of hotel and tourism businesses (drawing upon the Uniform System of Accounting for the Lodging Industry, the international standard). Worked examples will be discussed and demonstrated using examples and case studies from the hospitality and tourism contexts and students will be encouraged to use spread sheets to carry out financial work.

Prerequisite: HTM 140 Financial Accounting

HTM 201 Business Ethics

Ethical issues in the context of business theory and practice will be studied in this course. More specifically students will study how businesses and corporations should operate in a social and ethical environment and their obligations to a range of stakeholders. The challenges of globalisation and its impact on business ethics as well as social and ethical behaviour of transnational corporations will be studied. In addition the course will cover the topics of corporate governance and codes of conduct.

HTM 260 Marketing Management

This module aims at providing a basic understanding of marketing principles; it is specially designed for students that have no previous experience with marketing-related issues. The main topics which will be covered include the following: nature, definitions and objectives of marketing; the marketing environment in relation to demand and supply; customer needs, satisfaction and value; principles of marketing plans, market segmentation, targeting and positioning; principles of marketing information systems and market research; marketing mix and the 4Ps, promotion and communication mix; advertising, sales promotion, public relations, publicity, direct marketing, merchandising, and personal selling; product-related issues and decisions; distribution channels and intermediaries; pricing-related decisions; coordinating and organising all marketing efforts.

HTM 350 Human Resources Management

The course examines human resources practices in the dynamic and changing hospitality industry from a strategic perspective. It explores the role of human resources, leadership styles and motivation, human resources planning and its integration with the organisation's strategic management, the employment cycle, employee appraisals, compensation strategies, and current and future human resources challenges.

FACULTY OF HEALTH SCIENCE

Department of Nursing

Academic Staff

Elizabeth Papathanassoglou
Deputy Professor - Department Chair

Anastasios Merkouris
Associate Professor - Department Deputy Chair

Vasilios Raftopoulos
Assistant Professor

Nicos Middleton
Assistant Professor

Ekaterini Lambrinou
Assistant Professor

Evridiki Papastavrou
Assistant Professor

Christiana Kouta
Assistant Professor

Maria Karanikola
Lecturer

Andreas Charalambous
Lecturer

Panicos Masouras
Senior Lecturer (Entagmenos)

Androula Ioannou
Senior Lecturer (Entagmeni)

Evdokia Athini
Senior Lecturer (Entagmeni)

Maria Demetriou
Senior Lecturer (Entagmeni)

Maria Papadopoulou
Senior Lecturer (Entagmeni)

Christiana Nicolaou
Senior Lecturer (Entagmeni)

Maria Aristidou
Senior Lecturer (Entagmeni)

Ioanna Frangou
Lecturer (Entagmeni)

Maria Hadjibalassi
Lecturer (Entagmeni)

Marianna Constantinou
Lecturer (Entagmeni)

Michael Mouroutis
Lecturer (Entagmenos)

Panayiota Tamana
Lecturer (Entagmeni)

Sokratis Sokratous
Lecturer (Entagmenos)

Tasos Xyrichis
Lecturer (Entagmenos)

Department of Nursing

The aim of the Department is the training of high level scientists and the promotion of research and related applications in healthcare and community support in prevention , treatment , rehabilitation and health promotion health . Nurses Graduates of the Department are able to offer their services primary , secondary and tertiary level nursing care.

The program is designed to be consistent with the relevant nursing and university education legislation. Additionally, the program is consistent with the European Union Directives for Nursing and has taken into account the politics of the country, including and those relating to the General Health.

NURSING BACHELOR			
FIRST YEAR			
FALL SEMESTER		**SPRING SEMESTER**	
1st Semester		**2nd Semester**	
	ECTS		ECTS
APH 111 Human Anatomy & Physiology I	7	**APH 112** Human Anatomy & Physiology II	7
PSY 116 Introduction to Psychology	4	**BIO 112** Biology- Biochemistry	6
NUR 123 Introduction to Nursing Science	3	**SOC 116** Introduction to Sociology	2
INF 141 Introduction to Health Informatics	4	**NUR 152** Fundamentals of Nursing II	7
NURS 151 Fundamentals of Nursing I	5	**BIO 110** Biophysics	3
NURS 121 Communication in Nursing	4	**FAI 162** First Aid	2
ENG 122 English for Academic Purposes	3	**ENG 150** English for Nursing	3
Total	30	**Total**	30

SECOND YEAR			
FALL SEMESTER		**SPRING SEMESTER**	
3rd Semester		**4th Semester**	
	ECTS		ECTS
PATH 218 Pathophysiology I	4	**PATH 219** Pathophysiology II	5
MIC 219 Microbiology & Infection Check	4	**NUR 217** Pharmacology in Nursing	4
NUR 225 Health Promotion	3	**INF 241** Health Informatics	4
NUR 251 Fundamentals of Nursing III	5	**NUR 253** Pathological Nursing & Specialties II	7
NUR 252 Medical Nursing Specialties I	7	**NUR 255** Surgical Nursing & Specialties II	7
NUR 254 Surgical Nursing and Specialities I	7	Elective: **OHE 261** Occupational Health or **NUR 266** Principles and Practice of Holostic	3
Total	30	**Total**	30

FALL SEMESTER		SPRING SEMESTER	
5TH Semester		6th Semester	
RES 342 Nursing Methodology Research	5	**NUR 331** Administration of Nursing Services	4
EPE 344 Epidemiology	3	**NUR 354** Mental Health Nursing I	6
PSY 316 Health Psychology	3	**NUR 353** Child Care Nursing	6
STA 343 Biostatistics	4	**NUR 350** Midwifery	7
NUR 355 Gerontological Nursing	6	**NUR 333** Morality, Ethics and Law in Nursing	4
NUR 356 Community Nursing	6	Elective: **NUR 365** Family Nursing or **NUR 368** Evidence-based nursing practice or **NUR 366** Palliative care	3
Elective: **GEN 364** Genetics or **INF 367** Surveillance of infections in health facility	3		
Total	**30**	**Total**	**30**

FOURTH YEAR

FALL SEMESTER		SPRING SEMESTER	
7th Semester		8th Semester	
	ECTS		ECTS
NUR 452 Nursing of Intensive Care Units	7	**NUR 424** Intercultural Nursing	3
NUR 457 Oncology Nursing	7	**NUR 414** Nutrition and Special Diets	3
NUR 454 Mental Health Nursing II	3	**NUR 432** Quality Management in Nursing	3
RSC 435 Principles of Teaching and Learning in Nursing	3	**NUR 459** Specialties / Consolidation (clinical sites - ICU cardiac, Accident and Emergency Departments, Surgical theatres)	21
PRO 400 Undergraduate Project (Thesis)	10		
Total	**30**	**Total**	**30**

COURSES DESCRIPTIONS

Semester 1

APH 111 Human Anatomy and Physiology I

The purpose of this course is to provide a comprehensive study of the anatomy and physiology of the human body, dealing with the structure and function of the human body and mechanisms for maintaining homeostasis within it. Topics include: the language of medicine, organization of the body the study of cells and tissues. The body systems covered include: skeletal, muscular, cardiovascular, lymphatic and immune, digestive system (including metabolism). Within each body system, students learn the normal anatomy and physiology of the system as well as some diseases associated with each system. Upon completion, students should be able to demonstrate an in-depth understanding of principles of anatomy and physiology and their interrelationships. Human skeletons, human models, and animal organs are used in lab as representatives of human anatomy.

PSY 116 Introduction to Psychology

The aim of this course is to provide the student with the basic understanding of the human behavior and human interaction. The course includes subjects of the history of psychology, personality theories, cognitive and developmental psychology theories, and counseling theories. At the end of the course the student will have a basic understanding of human behavior and cognition and psychosocial development.

NUR 123 Introduction to nursing science

The aim of the module is to introduce students to the conceptual, theoretical, epistemological and philosophical background of nursing. A historical overview of the development of nursing as a profession and its scientific growth will be explained. It also aims to present and critically discuss the general theoretical framework of nursing, nursing theories and nursing models guiding the practice of nursing

INF 141 Introduction to Health Informatics

The objective of the course is to introduce students in the basic principles of computer science and the applications of information and communication technologies (ICT) in health care. It includes topics on the effects of ICT in the society, computer systems architecture, software and hardware, the operating system and information systems. The alignment and convergence of computing and communications is also emphasized through topics on communications, networks and the internet. The risks that arise from the use of technology are also extensively covered. Students are also introduced to the concepts of digital images and digital sounds. As part of the practical sessions, students gain hands-on experience with tools useful both for their university and professional practice such as professional document preparation, presentations development and the internet for advanced information searches.

NUR 151 Fundamental principles of nursing I

The aim of the module is to introduce students to the fundamental concepts and principles of Nursing Science so that they will be able to understand nursing as a caring process focusing on the individual and aiming to the promotion of health. The module includes the analysis of concepts such as health, wellness and illness during the life span as well as the factors that influence these concepts and the consequences on the person's life. The concept «person» will analyzed as a multidimensional construct and as a unique bio, psycho, social, spiritual and cultural entity and human needs will be discussed according to Maslow's hierarchy of needs. The module will also introduce students to issues related to nursing ethics, to the legislation related to nursing

practice, health services, and the role of the nurse in the hospitals, other institutions and the community. The laboratory part includes consolidation of theory through exercises, discussions, clinical scenarios and other activities related to the Fundamental Principles of Nursing.

NUR 121 – Communication in Nursing

The aim of the course is to promote sensitization and understanding of the students towards the importance of the communication issues, as these are developed between nurses, nurses and patients and their families and between nurses and other health professionals. It is also expected that from the understanding and endorsement of specific clinical communication skills and educational methods, as part of the implementation part of the course, the students will develop critical reflective abilities to meet their nursing role and therefore be able to implement effectively the nursing process and offer substantial support to the patients and their family, aiming to construct a therapeutically relation.

ENG 122 English for academic purposes

ENG 122 is a three-hour per week, 4-ECTS credit (European Credits Transfer and Accumulation System) required degree level course that concentrates on the learning of English for Academic Purposes (EAP). ENG 122 is particularly designed to support students' studies by developing their English language to an academic level, equivalent to Common European Framework of Reference (CEFR) for languages level B1-B2. This course, based on the blended learning approach, aims to familiarise students with authentic reading material related to general and academic topics. This material is used to acquaint students with writing styles, such as process and argumentation. It also develops students' listening and speaking skills. Learners are expected in this way to develop their speaking and listening abilities by taking an active part in tasks such as dialogues, conversations, and oral presentations. The course focuses on learner-centered methods of teaching, as well as on the development of learner autonomy. The use of New Technologies (Computer Assisted Language Learning) constitutes a vital part in the learning process, so that students are provided with opportunities to develop their language and other skills.

Semester 2

APH 112 Human Anatomy and Physiology II

This course is a continuation of Anatomy and Physiology I. It builds on the general information about homeostasis and the specific body systems covered previously. This course begins with the endocrine system, followed by respiratory system, urinary system (including fluid and electrolyte regulation), the reproductive system, nervous and special senses. Human skeletons, human models, and animal organs are used in labs as representatives of human anatomy.

BIO 112 Biology – Biochemistry

The purpose of this Course is for the student to understand the biochemical processes involved in the functioning of the human body. The Course includes the basic biology and structure of the human cell, the biochemistry of carbohydrates, lipids and proteins, as well as RNA and DNA. We will study various cellular pathways, including the cell cycle, apoptosis and neoplastic development. At the end of this Course, the student will have the basic knowledge of human biochemistry, which will help him/her understand malfunction, disease development and progression. Assessed practical work will accompany the taught part for better understanding of the syllabus.

SOC 116 Introduction to Sociology

The course aims at presenting the social, economic, historical and

political circumstances, as well as the intellectual environment, which contributed to the rise and establishment of Sociology as a discipline. The course also discusses: the relationship between Sociology and other disciplines, sociological theories and models, social structures, the family, the community, social roles, and stereotypes. Upon the completion of the course, students will be able to explain how social rules and forces shape social practice and explore alternative social practices.

NUR 152 Fundamental principles of nursing II

The aim of the module is to expand on specific nursing issues. The theoretical part elaborates on fundamental principles of nursing as an applied science, including principles of assessment, patient safety, drug administration, the aseptic technique, principles of mobilization and prevention of musculo-sceletal injuries, pressure ulcers and care of patients with reduced mobility. During the laboratory sessions students are expected to obtain the necessary skills for the delivery of care using a problem based approach and the nursing process. The module also includes a clinical part during which students are also expected to increase the knowledge, skills and attitudes developed through the other two parts of the module

BIO 110 Biophysics

The aim of this course is to teach the basic concepts and principles of physics in relation to biology, medicine, biomedical technology and practice of nursing. The course includes basic concepts of solid and fluid mechanics, wave theory, electromagnetism theory and the interaction of electromagnetic radiation with matter. It provides insights into electromagnetism, laser radiation, diathermy, radiation therapy, radiation protection as well as mechanical equipment's in health care centers. At the end of the course, students should be able to understand the relationship of physics with biology, medicine, biomedical technology and nursing. The course includes labs so that students have an opportunity to comprehend, via practical application, the theoretical part of the course.

FAI 162 First Aid

The aim of the course is to introduce undergraduate students to the basic principles, knowledge and practice experiences of the provision of initial care for an illness or injury, until definitive medical treatment can be accessed. It generally consists of a series of simple and in some cases, potentially life-saving techniques that students can be trained to perform with minimal equipment. The key aims of first aid course can be summarized in three key points: a) Preserve life: the overriding aim of all medical care, including first aid. b) Prevent further harm: prevent the condition from worsening, or danger of further injury. c) Promote recovery: start the recovery process from the illness or injury that in some cases might involve completing a treatment. Some of the main topics of the course include ABC (Airway, Breathing, and Circulation), bleeding and shock interventions, cardiopulmonary resuscitation, head, spinal cord and bones injuries interventions.

ENG 150 English for Nursing-

ENG 150 is a three-hour per week, 4-ECTS credit, required degree level course that concentrates on the learning of English for Specific Academic Purposes (ESAP). ENG 150 is particularly designed to meet the needs of university students studying in the field of Nursing and aims to assist them in developing their English language to an academic level equivalent to the Common European Framework of Reference (CEFR) for languages (level B2). The course aims to enable students to acquire and use the English language efficiently and fluently in the performance of their duties as qualified nurses. This is accomplished through the use of a variety of topics and genre. Relevant material will be used to acquaint the

students with different writing styles (patient summary, patient record form, pain report, symptom report). Furthermore, learners are expected to develop their listening skills and their speaking fluency by taking an active part in discussions, giving oral presentations, etc. Special effort will be made so that students exercise and improve their critical thinking abilities. Students are expected to develop sufficient range of language, phonological control and sociolinguistic awareness to be able to express themselves with a degree of clarity, fluency and spontaneity. The course focuses on learner-centered methods of teaching, as well as on the development of learner autonomy. The use of New Technologies (Computer Assisted Language Learning) constitutes a vital part in the learning process, so that students are provided with opportunities to develop their language and other skills. Prerequisite: ENG 122

Semester 3

PATH 218 Pathophysiology I

The course aims to introduce students to the basic knowledge regarding cellular mechanisms that contribute to disease appearance and progression. It includes the process of pathophysiological transformation and altered cellular and tissue biology in all the major organic systems as well as their correlation with common disorders. The course includes the study of the most frequent diseases, prevention, the etiology of signs and symptoms, diagnosis, treatment, prognosis, wounds and healing and the use of referral for medical research and verification. Special emphasis will be given to the medical dimension of infectious diseases and Immunology, in nutritional and metabolic digestive diseases, dermatological gynecological and endocrine disorders. At the end of the course the student will be able to understand the pathogenesis of the disease. The course includes clinical practice.

MIC 219 Microbiology and Infections΄ Control

The purpose of this Course is for the students to understand the methods used in the isolation and identification of pathogenic microorganisms (bacteria, viruses, parasites and fungi). The Course covers the structure, the types, the nomenclature, the genetics, and the characteristics of pathogenic microorganisms. Furthermore, it covers areas such as the defense mechanisms of the host (in this case the human body), the immune system, specific bacterially- and virally-caused diseases that are of interest in the hospital and public health setting. At the end of this Course, the students will be able to understand the general biology of microorganisms and use this knowledge to solve problems. Laboratory sessions and a project on a specific topic will assist students grasp the essence of this Course.

NUR 225 Health Promotion

The course aims to introduce students to concepts related to understanding and adopting positive health changes among individuals and groups. The course discusses current health promotion issues, increased life expectancy and practices of maintaining and/or improving one's quality of life. The course includes topics such as health promotion theories, empowerment, the changing population and its health; health policy and the health care delivery system; relevant ethical issues; individual, family and community health assessment; and health education strategies especially within the community setting. At the end of the course students will be able to contribute to the promotion of health, to disease control and to the decrease of morbidity and mortality.

NUR 251 Fundamental principles of nursing III

The aim of the module is to further develop knowledge on the basic principles of holistic nursing. The theoretical part includes principles of management of care for persons with certain health problems such as pain, nutrition and feeding

problems, excretion and urinary bladder problems, temperature disorders, sleep disorders, as well as basic principles of oxygen therapy, intravenous fluid therapy, medication therapy and blood transfusion. During the nursing laboratory part of the module, students are expected to develop skills and problem-based attitudes related to the theory knowledge based taught and be able to deliver safe care.

NUR 252 Medical Nursing Specialties I

NUR 253 Medical Nursing Specialties II –

Semester 4-

The aim of this course is to deliver theoretical and clinical knowledge leading to individualized health care using the nursing process in adult patients with acute or chronic pathological diseases and facilitate the student to apply acquired knowledge gained from previous courses in clinical practice. Nursing care will be analyzed within a framework which preceded the nursing diagnoses and interventions focusing on the justification of each intervention The course is conducted by studying clinical cases designed to develop critical thinking .At the end of the course students expected to develop skills in nursing process so that be able to identify patient problems provide the necessary care . They will improve critical thinking and develop decision -making skills in clinical practice. They will be able to diagnose and therapeutically manage patients either with chronic or acute health problems. The course includes laboratory Nursing Skills that at the end students will be able to transfer knowledge from different sciences and other nursing subjects in health care. At the end they will taking care of their patients considering them as separate bio - psycho - socio cultural and spiritual entity and will be able to demonstrate basic nursing skills in their clinical practice. The course includes clinical practice .

NUR 254 Surgical Nursing and Specialties I

NUR 255 Surgical Nursing and Specialties II

The modules aim at facilitating students to implement the knowledge that was acquired from previous modules in clinical practice. The modules focus on concepts that are related to the caring of adult patients with acute needs in relation to the nursing care provided throughout the surgical process. This process includes the care provided at the pre-operative, operative and post-operative phases. Emphasis is placed on the psychological, social and the biological needs of the patient. At the end of these modules the student is expected to be able to identify the patient's needs and address these by implementing the principles of the nursing process. The modules include clinical skills laboratories that facilitate the transference of the theoretical knowledge in a controlled clinical environment. The student is also expected to provide care based on the basic principles of holistic caring that include the physical, social and spiritual aspects of the person. The modules include clinical practice in the surgical units of the hospitals.

Semester 6

PATH 219 Pathophysiology II

The course aims to strengthen the knowledge gained with the course Pathophysiology I concerning the cellular mechanisms involved in the disease appearance and process. The course includes the study of common diseases, prevention, the etiology of signs and symptoms, diagnosis, treatment, prognosis wounds and healing using medical referrals for investigation and verification. Special emphasis will be given to cardiovascular and hematological diseases, otolaryngological disorders, the renal and urological system, the neurological system and liver - bile ducts disorders. At the end of the course the student will be able to understand the genesis of the

disease. The course includes clinical practice.

NUR 217 Pharmacology in Nursing

The course aims to introduce students to the basic principles of pharmacology and to provide an extensive overview of all drug classes and in-depth study of specific items for each class. Includes discussion of pharmacokinetics, pharmacodynamics, adverse reactions, drug-drug interactions, food drug interactions and the related legal and ethical aspects of drug administration .During the course will be covered: the drugs of the autonomic and the central nervous system. The mechanisms of action, the pharmacological properties and clinical use of drugs that treat gastrointestinal cardiovascular and pulmonary diseases and chemo - therapeutic agents will be explained. The course also includes the following drug classes: anticoagulants, antiarrhythmics, antianginals, antihypertensives thrombolytics, antihyperlipidemic, antiasthmatics, hormones, steroids NSAIDs and other drugs. At the end of the course the student will be able to understand the actions and effects of drugs and be able to administer drugs with safety.

INF 241 Health Informatics II

The objective of the course is to examine the applications of information and communication technologies (ICT) in health sciences and especially in Nursing. It includes topics in hospital information systems, data bases, the electronic health and patient records (EHR and EPR), health information classification systems, clinical decision support systems, and the principles of imaging technologies as they apply in health care. As part of the practical sessions, students gain hands-on experience with tools useful both for their university and professional practice such as spreadsheets for developing real-world scenarios and analyses and databases for prototyping an EPR.

Elective – OHE 261 Occupational Health

The course objective is to introduce students to the basic principles and skills of occupational health. During the course, students are exposed to the five main categories of occupational hazards, namely physical, chemical, biological, ergonomic and psychosocial hazards of the workplace, as well as their impact on employees' health. In parallel, students evaluate the effect of workplace environment on people's health. Particular attention is given to those hazards encountered in the hospital environment and those affecting particular groups of workers such as the women, the elderly, those who work on shifts and others. In addition, work-related accidents and occupational diseases that arise due to the interaction of employees and self-employed persons with their working environment are also presented. Finally, particular attention is given on topics related to prevention and health promotion in the workplace setting. At the completion of the course, students are expected to be able to describe the role of occupational nurse at work and be aware of modern approaches in occupational health aiming to identify occupational hazards in the workplace and employ appropriate measures for the prevention and control of occupational accidents and/or occupational diseases. Overall, this course is intended to allow students to understand the interaction of the workplace environment with the health and well-being of the employees.

Elective - NUR 266 Fundamentals in Holistic Nursing and Practice

The aim of the course is to increase students' awareness regarding the integration of psychological, cognitive, social interaction and physiological processes in the body and in the generation of disease, as well as in the promotion of health and healing. The course has three areas of focus: a) the psychobiological and empirical foundations of holistic nursing, b)

the integral theories and models of healing and caring, and c) the therapeutic interventions specific to holistic caring practices. The totality of the individual (nurse and client), and of the mode of interpersonal interactions are emphasized as the agents of healing. Specific emphasis is given on research evidence from the disciplines of holistic nursing and medicine, and of psychoneuroimmunology, psychoneuroendocrinology and psychobiology. Integrated systems' theories, along with their clinical implications, are presented, including complex systems' (chaos) theory, and the work of nurse-theorists such as J. Watson, B. Neuman, M. Rogers and R. Rizzo Parse. Holistic approaches to nursing care and therapy are presented, including relaxation, imagery, biofeedback and therapeutic touch. The course includes laboratory and clinical instruction focusing on the therapeutic use of self, reinforcement of intuiting, and practice of specific holistic caring techniques. Upon completion the students will be able to identify and describe the cellular and organ system processes involved in the integration and regulation of mind-body communication, to reflect and to debate on the theories and philosophies of holism in nursing, and to practice the basic steps of specific mind- body integrative healing techniques on themselves and others.

Semester 5

RES 342 Nursing Research Methodology

The aim of the course is to introduce the student to the basic principles of nursing research methodology. Topics include: sources of knowledge and scientific approach, definition, characteristics, aim, types and description of nursing research, quantitative and qualitative approach, identification and formulation of research problems, literature review, research framework, research aim, formulation of research objectives, questions and hypotheses, quantitative and qualitative research design - types, study validity, sampling process, basic principles of measurement, ethical issues in health care research, research protocol, selecting and developing questionnaires, basic concepts of descriptive and inferential statistics, selection of statistical tests, dissemination of results, and publication process.
After completing the course the student will be able: a) to understand the basic principles of scientific research, b) to recognize and formulate nursing research problems, c) to design a study by selecting the appropriate methodology and writing a research protocol, and d) to evaluate and critically review research articles.

EPI 344 Epidemiology

The overall aim of this course is for the student to understand that the occurrence of disease in the population does not occur in a random fashion but displays patterns that represent underlying determinants (person-based, environmental and behavioural factors). This course will introduce the students to the basic concepts, principles and methods in epidemiological research in order for the student to recognize and appreciate the role of Epidemiology as a fundamental tool in formulating and testing aetiological hypotheses, assessing the effectiveness of preventive of therapeutic interventions and, as such, an integral part of evidence-based public health practice, health promotion, health policy and health services evaluation. The course revolves around three axes – study design, analysis and interpretation of epidemiological data. The student will become familiar with (a) the different study designs in descriptive and analytical epidemiologicy (cross-sectional, prospective, case-control, and clinical trials), (b) measures of disease frequency (e.g. prevalence, incidence, mortality and morbidity rates) and association (e.g. relative risk, odds ratios, attributable fraction, number needed to treat) and (c) the concepts of random

error, systematic bias, confounding and methods of dealing with it in the design or analysis stage of the study, and finally, the concept of causality. Upon completion of the course, the student-nurse will be able to read, understand and critically appraise a published epidemiological study.

PSY 316 Health Psychology

The course aims to describe the role and contribution of psychology in health care and to provide knowledge and skills that will help students to understand and effectively support adults, children and families during illness, recovery and death. It also aims to raise awareness among students regarding their own personal reaction to disease, disability, pain, life and death.

STA 343 Biostatistics

The aim of this course is for the student to understand the basic concepts and analytical procedures used in quantitative heath research, from the stage of collection and management of data to the description, presentation, analysis and interpretation of sample estimates and correlations. The overarching aim of the course is for the student to appreciate the role of statistics as a fundamental tool in quantitative research in the Health Sciences. The course provides the basic knowledge of concepts and principles needed by the student-nurse, without assuming a pre-requisite mathematical background, such as variables and data, precision and variance, population and sample, population parameters and sample estimates, confidence intervals and hypothesis testing, the range of statistical tests, association and correlation etc. The theoretical knowledge is followed by hand-on practice during computer labs, where the student has the opportunity to process and analyze data using the statistical software SPSS, so that by the end of the course the student will be able to manage their own data, prepare table and charts, produce and report statistical results. By the end of the course, the student-nurse will become familiar with the procedures in descriptive and inferential statistics and will be in the position to read, understand and critically appraise the statistical methods and presentation of statistical results in published research studies.

NUR 355 Gerontological Nursing

This module provides a comprehensive introduction to principle of elderly nursing care, consolidating students' previous knowledge and appreciation of nursing care. The aim of the module is to facilitate students to further develop the knowledge, skills and attitudes necessary to care for older persons in a holistic manner. The skills developed by students include critical thinking, reflection and evidence based practice. This module is designed to further develop students' knowledge and understanding of ageing in contemporary society by exploring the implications and challenges of a rapidly growing older population for healthcare delivery. It will advance the nursing students' knowledge and understanding of the principles and processes of management, organizational structures and policy development and how they impact on older person care. The module combines lectures and clinical practice in elderly care settings. Students are called to fulfil a 100 pages personal portfolio that contains validated scales for screening of special needs and pathological conditions of the elderly. This portfolio is used in the clinical placement. To enhance reflective practice, scales are firstly self-completed by the students (for example to assess their own self-efficacy, anxiety, fatigue etc) and then they take interviews from the elderly persons

NUR 356 Community Nursing

The course aims to understand and apply the theories and underlying principles of contemporary community nursing practice. It includes topics such as, the role of prevention of illness and the

promotion of health in training and teaching the individuals, families and the community. The course includes issues related to epidemiology, community health policies and strategies, community resources, the nursing process and diagnosis as related to community health issues, programme planning, family health, school health, public health and home care. At the end of the course students will become familiar with the theoretical bases of community nursing, community health issues and the role of nursing in providing care to individuals, families and groups in the community. Students will have the opportunity to participate and apply community based projects and to practice in different community health care settings, under the guidance of their mentors and their lecturer.

Elective – GEN 364 Genetics

The purpose of this Course is to present to the student the structure, function and mutational analysis of the genetic material. The Course covers the basic principles of inheritance (autosomal, sex-linked, and mitochondrial), the structure and function of DNA and RNA, the major inherited diseases, as well as information on genetic analysis and counseling. It covers topics such as the genetics of haemoglobinopathies, the genetics of immunological response, cancer genetics, prenatal diagnosis and gene therapy. At the end of this Course, the students will understand the way in which the genetic material participates in the development of diversity and disease in the human population.

Elective – INF 367 Surveillance of Infections in Health Care Settings

It provides the student with an overview and understanding of the fundamentals of the surveillance and control of Healthcare Associated Infections. Students are presented with information on the microbiology of contagious pathogens, disease transmission, and infection control measures to prevent or eliminate the spread of health care associated infections. Emphasis is placed on the pathogens that are likely to be used in a bioterrorism attack and new or re-emerging infectious diseases. At the conclusion of this course the student is able to: define infectious diseases and differentiate them from other types of disease processes, apply principles of infection control in describing measures to prevent transmission, identify vaccine preventable diseases and obstacles to compliance with recommended immunization schedules, identify infection prevention and control strategies to limit the secondary spread of infections, including assessment of strategies implemented during past outbreaks and disasters and to list the steps in outbreak investigation.

Semester 6

NUR 331 Nursing Management

The aim of the course is to introduce the student to the contemporary issues of organizational theory and organizational behavior with application to nursing services. Topics include: introduction to management theories, organizational structure, organization and characteristics of nursing care, basic principles of planning and budgeting, staffing, human resource management, organizational culture, organizational change, power and politics, evaluation of organizational effectiveness, communication, staff motivation, leadership theories, decision making, conflict management, work stress, and ethical issues in management. After completing the course the student will be able: a) to understand the basic principles of organization theory and behavior, and b) to identify, evaluate and prioritize problems in everyday nursing practice and then design and implement appropriate interventions for the specific situation.

NUR 354 Mental Health Nursing I

The aim of this course is to introduce the basic principles of the

theoretical and clinical framework of mental health nursing. More specifically, this module is divided in two parts. Part A includes a) the theoretical and philosophical underpinnings of mental health nursing and interdisciplinary care b) the nursing process as applied within the mental health nursing framework, as well as the nursing diagnoses system NANDA and classification of nursing interventions (NIC) and outcomes (NOC) according to Iowa system and c) therapeutic communication between mental health nurses, clients and their families. Part B introduces the basic mental health disturbances, and the role of nurses to the prevention and management of them, taking into consideration contemporary knowledge from neurosciences and social sciences. Emphasis is given to anxiety disorders, mood disorders, cognitive disorders, schizophrenia, eating disorders, substance use and misuse, and personality disorders.

NUR 353 Child Care Nursing

The aim of the course is to develop theoretical knowledge and clinical competences, for the provision of individualized nursing care to healthy and sick children and families, following Nursing Process. It includes concepts of physical and psychological development used for diagnosing normal conditions and variations in health status of infants and young children. At the end of the course students are expected to develop knowledge about research – based nursing strategies and critical thinking skills for effective nursing care provision in all pediatric clinical settings. Communication skills with families and children according to their developmental stage will be developed to enable teaching and counseling process with children and families. The module also includes a clinical part during which students are expected to integrate theory with practice and develop further knowledge, skills and attitudes.

NUR 350 Midwifery Care

The course aims: to introduce students to the basic knowledge of pregnancy and childbirth. It includes the process of fertilization and fetal development; the biological and psycho-emotional changes during pregnancy as well as common disorders and complications; the physiology of birth as well as complications of childbirth; the physiology and care of postpartum mothers and complications; the physiology, problems and care of newborn infants and breastfeeding. At the end of the course students will be able to describe, evaluate, and promote the health of women during pregnancy, birth and postpartum using the nursing process. The course includes clinical practice.

NUR 333 Nursing Ethics and Professional Legislation

This module provides an opportunity and an ‘open door’ to students to gain a deeper and more systematic understanding of the key ethical, deontological and legal issues in the nursing science. By focusing on specific ethical and legal challenges the module aim to deepen the students understanding of the legal and ethical bases of nursing practice. Students are called to discuss all these issues using case studies and reflection. The module includes discussion of aboriginal health, women’s health, HIV/AIDS, intellectual property & access to pharmaceuticals, refugee health, and other topics analyzed from a human rights perspective. Special mention to patients’ rights and professional liability. Focus on four main ethical principles, embodying the concepts of autonomy, privacy, beneficence, and justice. Analyse and discuss a variety of broad ethical issues which arise in patient care, i.e. the allocation of health care resources, the justifiability of paternalism, breaches of patient confidentiality, in vitro fertilisation, research involving humans, and euthanasia. Emphasizes the interrelationship between public health, human rights & ethics.

Elective NUR 365 Family Nursing

The course aims to introduce students to family nursing and health, an emerging, vital and advanced practice nursing area. The course includes topics such as family (theories, functions, definitions, the role of the family in health and illness), the Cyprus family health, the family nursing process, interventions. At the end of the course students will be able to critically discuss the function and role of the family in all dimensions of health (e.g. mental, physical) and explain why it is important for nurses to work with families.

Elective NUR 366 – Palliative Care

The module aims at introducing students in the concepts, philosophy, theoretical and research framework of palliative care. Central aspects of this framework include the concepts of death and dying as these are experienced by the person and the family. The module provides the basic principles of caring for the patients and caring for the survivors. Communication issues, symptom management, dealing with loss, grief and bereavement issues, ethical and legal issues will be discussed in the light of palliative care.

Elective – NUR 368 Evidenced Based Nursing Practice

This course aims to develop the theoretical and practical skills required for nurses to retrieve, appraise and implement research and other high-quality evidence in order to improve the quality of care, to reinforce the empirical foundations of nursing and to promote nursing theory and research. Emphasis is given on the critical appraisal of nursing practice and of nursing research, and on the strategies employed to implement evidence in clinical practice. The methodology of formation of clinically relevant evidence-based research questions is analysed, along with the methods and strategies for comprehensive literature searches, and the methodology of systematic reviews and meta-analysis. Moreover, the methodology of development of clinical practice guidelines, along with the steps of implementation and audit are analysed. The course includes 1 hour of class and 2 hours of laboratory instruction on weekly basis. Students are expected to formulate evidence-based research questions, and to perform literature searches on pertinent databases (MedLine, Cinahl, Cohcrane Library), critical appraisal of evidence and of current clinical guidelines, and to make specific evidence-based suggestions for practice. Upon completion of the course, the students will be able to formulate search questions, to locate and appraise evidence and to describe the steps needed for the development of guidelines and the implementation of evidence to practice.

Semester 7

NUR 452 Intensive Care Nursing

This course aims to develop the theoretical and clinical skills required for the comprehensive care of critically ill individuals, and for the organization of nursing care delivery in intensive and critical care units. In-class instruction focuses on the individual and family responses to critical illness, the physiopathologic and psycho-cognitive mechanisms pertinent to the critical care experience, the therapeutic roles of nurses, the monitoring and support of vital functions, clinical assessment and nursing diagnosis, respiratory support modes and interventions, infection control, code management and critical care nursing interventions. Emphasis is given on the pathophysiology, prevention and nursing management of multisystem disorders and dysfunction in critical illness. The principles of care and treatment of individuals with cardiac and nervous system alterations, sepsis, trauma, burns, acute respiratory and renal failure, hematological, endocrine and immune disorders, and gastrointestinal alterations are analyzed. The importance of the therapeutic interpersonal relationship and communication, as well as of patients' and families' empowerment and of the reflection

on the lived experience of critical illness is highlighted. During laboratory exercises students practice critical care nursing procedures and documentation, emergency procedures, code management and advanced procedures such as intra-arterial and central venous catheter insertion, endotracheal intubation/ extubation and tracheostomy placement and care. During clinical placement, students carry out comprehensive care of critically ill individuals based on nursing diagnosis and plans of care. By the end of the course students will be able to carry out comprehensive assessments of critically ill patients based on physical examination, history, and laboratory tests, to conduct basic bedside care in the ICU, including continuous monitoring of vital functions and management of life support devices. Moreover, they will be able to recognize alarm signs and symptoms and they will familiarize with the corresponding algorithms.

NUR 457 Oncology Nursing

The module aims at introducing and increasing the understanding of the basic principles of Oncology Nursing. The module covers the current knowledge and research in fields such as carcinogenesis, cancer treatment, psychosocial responses to cancer, quality of life for people diagnosed with cancer and the care of people at the end-of-life phase. Ethical and legal issues as well as issues that relate to the oncology care delivery systems are discussed within the nursing framework. At the end of this module the student will develop the necessary skills to assess, plan, implement and evaluate the care provided to patients diagnosed with cancer. Furthermore, they will have the knowledge to promote health policy and positively influence the patients and the public towards healthier lifestyles. The module includes clinical practice in the oncology and hematology units of the hospitals.

NUR 454 Mental Health Nursing II

The aim of this course is to explore special issues of mental health nursing that promote the holistic and humanistic mental health nursing, with special focus on community practice. This module includes: a) clients rights, ethics and advocacy, b) therapeutic milieu and psychosocial rehabilitation, c) administration in mental health services, d) epidemiology of mental health conditions, e) evidence-based practice in mental health nursing, f) nursing intervention strategies in psychopharmacotherapy, cognitive-behavioural therapy, as well as family and group therapy g) mental health and transcultural issues related to vulnerable populations/ groups h)Consultation - Liaison mental health nursing interventions, and i) crisis management and nursing intervention.

RSC 435 Basic Principles of Teaching and Learning in Nursing

The aim of the course is to introduce the student to the basic principles and theory of teaching and learning with application to patients, nursing staff and students in an academic environment. Topics include teacher style, motivation and behavior change, learning theories, patient literacy, multicultural aspects of learning, planning and conducting classes, teaching methods, teaching strategies, distant learning, promoting and assessing critical thinking, clinical teaching, lifelong learning, assessing and evaluating learning. After completing the course the student will be able: a) to recognize the principles of teaching and learning in adults, b) to discuss and explain the process of learning, c) to identify the educational needs of individuals and population groups, d) to prepare and design teaching, and e) to evaluate the effectiveness of teaching.

PRO 400 Undergraduate Project

Semester 8

NUR 424 Transcultural Nursing

The course aims to offer students an introduction to basic transcultural

health and nursing concepts. The course includes: self-assessment of cultural biases, differentiation between the terms culture, ethnicity, cultural diversity, minority and race; and specific transcultural concepts with regard to nursing and health practice. Components of a thorough cultural assessment will also be discussed. Several different cultures will be explored regarding differences in communication, use of personal space, social organization, time, environmental control and biological responses The course explores cultural responses to pain, gender differences, different cultural practices in health. At the end of the course students will understand cultural sensitive and cultural appropriate care and its importance in delivering quality individualized and community care.

NUT 414 Nutrition and Special Diets

The course aims to introduce to the students the basic nutrition principles for the functions of digestion, absorption and metabolism of nutrients in the human body and also the role of the vitamins, the salts and the enzymes in these processes. The course includes topics such as anatomy and physiology of the cells, lipids, carbohydrates, fiber, proteins hormones, vitamins, water, salts, enzymes, nutritional needs of the human body and the nutritional therapeutic applications in the prevention and treatment of common diseases. Furthermore, the course includes nutritional guidelines and dietary recommendations for some other specific problems such as hypoglycemia, allergies and various syndromes. At the end of the course students will learn to recognize signs and symptoms of an unhealthy nutrition, to identify good sources of dietary supplements and the appropriate use of vitamins and minerals for good health.

NUR 432 Nursing Care Quality Management

It provides the students with an overview and understanding of the fundamentals of nursing care quality management. The course focuses on the historical view of quality in the industry and in the health care sector, as well on the analysis of the main conceptual models for quality and patient satisfaction, the political & social factors impacting on quality assessment in health care, the patient safety (indicators and a strategy for the control and the reduction or errors), the customer satisfaction, the principles of quality assessment, assurance and improvement, the presentation of the International and the Cypriot Accreditation and Certification Organizations, the medical and nursing errors management and the principles for the quality strategic management and clinical governance.

NUR 459 Specialties / Consolidation (clinical sites - ICU cardiac, Accident and Emergency Departments, Surgical theatres)

The aim is to acquire theoretical and clinical knowledge that will enable the accurate assessment and appropriate nursing intervention in crisis situations in patients nursed in specialized departments: Intensive Care Units, Accident and Emergency Departments, Surgical theatre, anesthesia, artificial kidney unit.

Department of Speech and Language Therapy

(Speech / Speech Pathology)

The aim of the Department is to provide high quality education and the promotion of research and related Applications in Rehabilitation Sciences .The vision of the Department is to become a centre of excellence in teaching, clinical training and research both in Cyprus and the region of Middle East.

The Department began its operations by offering undergraduate program in Speech /

Speech Pathology ,which will be followed by the offer of undergraduate programs in Occupational Therapy , Physiotherapy and Clinical Social Work.

The curricula of the Department will be the standards of Cyprus for such specialties as will be the first to offered at a public university in the country , and additional the start-up of the Department gives a big boost to research activity in Cyprus in the field of Science Rehabilitation.

SPEECH AND LANGUAGE THERAPY			
FIRST YEAR			
FALL SEMESTER		SPRING SEMESTER	
1st Semester		2nd Semester	
	ECTS		ECTS
ANATOMY AND PHYSIOLOGY	6	PSYCHOLOGICAL PROCESSES OF LANGUAGE	6
GENERAL AND LANGUAGE NEUROLOGY	6	GENERAL AND APPLIED LINGUISTICS I	6
EDUCATIONAL PSYCHOLOGY	6	SCIENTIFIC RESEARCH METHODS	6
DEVELOPMENTAL PSYCHOLOGY	6	EDUCATIONAL FOUNDATIONS OF SPEECH AND	6
SPEECH THERAPY AND SOCIETY	6	INTRODUCTION TO BASIC PSYCHOLOGICAL	6
Total	30	**Total**	30

SECOND YEAR			
FALL SEMESTER		SPRING SEMESTER	
3rd Semester		4th Semester	
	ECTS		ECTS
LAW, BIOETHICS AND SPEECH THERAPY	6	GENERAL AND APPLIED LINGUISTICS II	6
LANGUAGE DISORDERS I	6	LANGUAGE AND SPEECH DISORDERS IN ADULTS	6
VOICE AND SWALLOWING DISORDERS	6	HEARING DISORDERS	6
SPEECH AND NON-VERBAL FUNCTIONS	6	PRODUCING DOCUMENTS AND MATERIALS FOR	6
PRACTICUM 1	6	ASSESSMENT AND DIAGNOSIS IN SPEECH	6
Total	30	**Total**	30

FOURTH YEAR			
FALL SEMESTER		**SPRING SEMESTER**	
7th Semester		**8th Semester**	
	ECTS		ECTS
SLT INTERVENTION IN COMMUNICATION	6	AUGMENTATIVE COMMUNICATION SYSTEMS II	6
AUGMENTATIVE COMMUNICATION SYSTEMS I	6	PRACTICUM III (Six-week stay)	
EDUCATIONAL PSYCHOLOGY FOR READING AND WRITING	6	UNDERGRADUATE DISSERTATION	4.5
SLT INTERVENTION IN EARLY CHILDHOOD	6	OPTIONAL SUBJECT III	4.5
SLT INTERVENTION IN THE FAMILY	6	OPTIONAL SUBJECT IV	6
Total	30	Total	21

THIRD YEAR			
FALL SEMESTER		**SPRING SEMESTER**	
5TH Semester		**6th Semester**	
	ECTS		ECTS
SLT INTERVENTION FOR VOICE	6	SLT INTERVENTION IN SPEECH AND NON-VERBAL	6
ASSESSMENT AND DIAGNOSIS IN SPEECH THERAPY	6	COMMUNICATION DISORDERS IN CHILDREN AND	6
PRACTICUM II (Four-week stay)	9	SLT INTERVENTION IN HEARING	6
OPTIONAL SUBJECT I	4.5	SLT INTERVENTION IN LANGUAGE I	6
OPTIONAL SUBJECT II	4.5	SLT INTERVENTION IN LANGUAGE II	6
Total	30	Total	30

Semester 1

Course Title: Phonetics and Phonology

Course Outline

Articulatory phonetics: articulators, speech physiology, consonant and vowel characteristics, IPA, the sounds of Greek. Phonetic transcription. Stress and Intonation. Acoustic phonetics: Basic principles of speech production and airstream mechanisms. Amplitude, voicing, frequency. Speech waves and waveform analysis. Spectrograms: formant structure. Detailed acoustic analysis of sounds. Using Praat to record and analyse speech through waveform and spectrogram analysis. Phonology: how it differs from phonetics, basic concepts: phoneme, allophone; basic phenomena: assimilation, dissimilation, insertion, deletion. Syllable structure, sonority principle. Phonological analysis and practice through data sets.

Course Title: Anatomy-Physiology of the Speech and Hearing Mechanisms

Course Outline

General anatomical terminology .Structure and function of human cell and its organelles, ways of cell to cell transfer, synapses and tissue characteristics. Structure and function of the central and peripheral nervous systems. Structure and function of the human brain and the cranial nerves. Structure and function of the respiratory tract and breathing mechanism. Structure and function of the larynx and the speech mechanism. Structure of the external, middle and internal ear and the mechanism of hearing.

Course Title: Introduction to Linguistics

Course Outline

The biological basis of Language. Differences between human language and animal communication systems. Bird singing, bee dancing, teaching human language to primates. Language Acquisition Device (LAD). Poverty of the Stimulus (POS). Linguistic competence, linguistic performance. Descriptive and prescriptive grammars. Generative linguistics and differences with earlier schools of Linguistics or other linguistic approaches. Articulatory phonetics: consonants, vowels, place/manner of articulation, voicing. Phonology: phonemes, allophones, suprasegmental features. (Differences between phonetic and phonological disorders).

Morphology: morphemes (bound-free, functional–lexical), allomorphs, agglutinative and fusional languages. Phonological, syntactic and lexical differences between Cypriot Greek (CG) vs. Standard Modern Greek (SMG). (Disorders affecting the morphological component). Syntax: utterance, sentence, grammaticality, acceptability, semantic anomaly. Generative syntax, Phrase Structure Rules, X' Theory.
Transformations/movement.
(Interrogative sentences, passive sentences. Disorders affecting the syntactic component). Semantics: lexical meaning, structural meaning/sentential meaning, thematic roles, truth value.

Pragmatics: anaphora and deixis, (theory of) speech acts, implicatures,

Historical Linguistics, language families (Indo-european and other), writing systems.

Course Title: Introduction to Computers

Course Outline

Historical retrospective on Computers. Parts of a personal computer (PC) and peripheral devices. Operational Systems and Application Programs. Societal repercussions of computers.

The Operational Systems Windows 98/XP (Introduction, user interface, system configuration, control panel, printers, management of devices, exploration of Windows). Basic word processing concepts (MS Word). Introduction and basic concepts of spreadsheet applications (MS Excel).

The Internet and its services (world wide web, email, search engines, other services).

Basic concepts of descriptive statistics. Fundamentals and types of frequency distributions (univariate analysis) – graphical representation. Measures of central tendency. Measures of variability. Correlation - graphical representation. Measures of correlation.

Course Title: Introduction to Speech-Language Therapy

Course Outline

The role of the speech therapist: prevention through informing and education

Introduction to terminology related to (i)Diagnosis/assessment of human Communication-Voice, Speech, Language and Swallowing disorders and (ii) Treatment of disorders, rehabilitation principles and settings.

Brief introduction to developmental language disorders, language learning disorders, dysarthrias, dysphagias, phonological disorders, dysphonias, stuttering, aphasias, autism.

Analysis at a basic level for communication abilities, therapeutic methods, interpersonal clinical and counseling skills. Reference to other disciplines that collaborate with speech-language therapists. Interdisciplinary approach and collaboration for holistically dealing with each patient.

Employment opportunities: Private practice. Working in schools, hospitals, institutions and other services.

Visits to special schools, hospitals and institutions where speech therapists work. Familiarization with the University Speech Therapy Clinical.

Course Title: English for Academic Purposes

Course Outline

The course focuses on:

i. developing awareness of vocabulary, language and grammar used in the speech and language therapy profession to enable greater flexibility and variety of choice of vocabulary in a professional communicative context

ii. developing word-building skills for the learning and acquisition of speech and language therapy terminology

iii. improving the pronunciation of speech and language terminology

iv. develop awareness of academic writing conventions in the speech and language therapy profession

v. practicing comprehension and reading skills/strategies using authentic materials covering the content of core subjects (Language, Learning, Communication, Voice and Swallowing Disorders etc.) to improve the ability to comprehend academic language and professional terminology

vi. developing fluency and comprehension through discussion and listening activities using authentic listening, viewing, and web materials of the profession.

Semester 2

Course Title: Developmental Psychology

Course Outline

Historical recursion. General principles of development. Developmental factors: Maturation-Learning. Research methods, ethical problems. Modern theoretical directions: Descriptive-Genetic direction, Behavioral direction (Watson, Skinner, Bandura), Psycho-analytic theory of Freud, Cognitive-Genetic theory of Piaget, Bio-social theory of Erikson and Social-cultural theory of Vygotsky.

Prenatal and Intrauterine/ Perinatal period: Conception. Chromosomes as heredity carriers. Abnormalities. Development of the embryo. Pregnancy dangers. Childbirth.

Infancy: Physic-kinetic development. Infant's biological needs. Sensory, mental and language development. Importance of first experiences. Adhesion.

Preschool age: Psychokinetic development. Childhood diseases/ accidents. Language development. Pre-reasoning thought. Autonomy. Sex differentiation. Childhood game, aggression and fears. Affections from the family.

School age: Bio-physical and language development. Reasoning thought. Psychometric scales of intelligence. Memory. Creative thinking. Social interaction at school. Development of morality.

Adolescence: Physical development. Maturation of sexual function. Language and mental development. period of typical logical actions. Psycho-social development. Identity formation. Mature age: Bio-physical, mental, emotional and social changes. Work. Marriage. Parental role.

Elderly: Bio-physical, mental, emotional and social changes. Retirement. Death. Mourning.

Course Title: Speech and Hearing Science

Course Outline

General principles, theories and physiological bases of senses and systems of perception. Psychophysics. Methods of psychophysics. Theories of Psychology Relative to Perception.

Sensory systems. The coding of sensory systems. Neurons, neural impulses and synapses. Processing of Nervous Signals. General attributes of receptors. Growth and development of the brain. Sounds. Production of sound waves. Types of sounds. Characteristics of sound. Pitch.

Periodical pitch. Timbre. Combinations of sounds. Critical Band. Sound masking. Combination tones. Binaural Hearing.

Production, transmission and recognition of Speech. Phonemes. Spectrogram. Running Spectra. Co-articulation and Variability of Speech. Acoustic Signal of Speech. Categorical perception. Neural Mechanisms underlying Perception of Speech. The McGurk effect. Difficulties - Particularities of Speech Perception. Phoneme restoration. Recognition of two simultaneous vowels.

Perception of sight, touch, taste and olfaction. Organization, Recognition, Attention, Motion. Perception Development.

Course Title: Language Acquisition –Language Development

Course Outline

The position of the field in the area of cognitive sciences.

Basic theories of language acquisition: experimentalism/ behaviorism – intellectualism/ rationalism.

Representatives, arguments for and against.

The approach of language acquisition from linguistics and psychologists. Experimental methods and observation of spontaneous speech.

Acquisition of the phonological system: The affect of language of the environment. Interaction of perception and production. Early phonetic production, the appearance of syllables, babbling. The appearance of phonologic systematic. The role of prosody in language acquisition. The development of the ability of intonation and the transition to syntax. The acquisition of phonemes and phonological rules.

Acquisition of lexicon. Verbs, nouns, syntactic start. Mean Length Utterance (MLU) in Greek and other languages.

Acquisition of the morpho/ syntactic field: Words for objects, words for actions. Stage of one word, stage of two words. Subsequent stages. Functional classes – bound morphemes: theories of their acquisition. Theory of Continuity, Theory of Maturation. Acquisition of gender, Agreement of Subject-Verb. Acquisition of Relative Link, Control, Formation of Questions, Inflectional pronouns.

Course Title: Phonological Development and Disorders

Course Outline

Review of the articulation of sounds and their phonetic transcription. Short description of genetic phonology. Comparison of phonology and phonetics. Models of phonological development. First stages of phonological development, understanding and production of sounds in babies (babbling) and the transition stage from babbling to words. Later stages of phonological development and individual differences. Phonological processes of simplification in the speech of preschool children. Speech disorders and factors (cognitive, linguistic, psychological) that influence their occurrence. Emphasis on the processes of phonological evaluation and the ways of analysis and interpretation of findings for the differential diagnosis of speech disorders. Description of basic

therapeutic strategies and processes in dealing with phonological disorders as well as with articulation disorders such as dyspraxia, dysarthria and delay in speech development. Referral to dialectal differences.

Course Title: Clinical Principles in Speech-Language Therapy

Course Outline

Basic terminology related to human communication impairments in the areas of: hearing, speech, language and swallowing disorders. Sampling of human communication behaviours. Definition, types and aims of non-verbal communication behaviours. Basic intervention methods, interpersonal clinical and counseling skills. Relationship between clinician-client and social flexibility (the clinician adapting her behavior to the individual, the context or social situation).

The multidisciplinary approach, client-referral system and clinical confidentiality. Preparation of clinical reports (verbal and written), progress reports, SOAP notes. Application of the above to child and adult communication disorders.

Visits to kindergartens, schools, hospitals, nursing homes. During these visits students are encouraged to observe, recognize, describe, analyze and make clinical decisions about the communication process (verbal and non-verbal) and the components of language (grammar, syntax, morphology, phonology, semantics, pragmatics) in healthy children and adults.

Course Title: English for Rehabilitation Sciences (Speech-Language Therapy)

Course Outline

Rehabilitation includes all measures aimed at reducing the impact of disability for an individual, enabling him or her to achieve independence, social integration, a better quality of life and self – actualization. Rehabilitation can no longer be seen as a product to be dispensed; rather rehabilitation should be offered as a process in which all participants are actively and closely involved.

The course will focus on

- An introduction to the principles of rehabilitation based on the International Classification of Functioning, Disability and Health framework (ICF)
- Community based rehabilitation (CBR)
- The rehabilitation team of specialists
- The role of the Speech Therapist in the ICF
- The elderly and rehabilitation
- Hearing rehabilitation
- Stroke rehabilitation
- Head injury rehabilitation
- Spinal injury rehabilitation
- Attention Deficit Disorders and rehabilitation
- Autism and rehabilitation
- The role of music and pets in rehabilitation
- Computers in rehabilitation

Semester 3

Course Title: Clinical Ethics and Counseling

Course Outline

Principles of deontology: Responsibilities and rules of conduct for students during their clinical training.

Speech language therapists' responsibilities to patient and to members of the multidisciplinary team. Professional confidentiality. Deontology of providing speech language therapy services to the public. Speech-language - therapist and Mass Media. Obligation for continuing education and professional development. Rule of inter-professional and intra-professional relationships .

Introduction to counseling: Examination of each counseling approach, historical review and presentation of wide spectrum of therapeutic approaches e.g., systemic, multicultural.

Counseling in special education: approaches of promoting educational, professional and social adaptation. Analysis of case studies, interview samples, clinical application of communication skills and intervention techniques.

Course Title: Developmental Language Disorders

Course Outline

Short review of normal development of speech and language. Terminology of developmental language disorders. Presentation of different models of speech and language development. Disorders of semantics, disorders of the structure of language (phonology, morphology, syntax), disorders of the use of language (pragmatics).

Detailed description of language delay, specific language impairment, intellectual handicap, autism, hearing loss. Videos and tapes with samples of impaired language. Reference to alternative communication (augmentative) systems such as PECS, MAKATON, computer language etc.

Course Title: Fluency Disorders

Course Outline

Terminology, characteristics, definitions, theories and etiology. Epidemiology, conditions found to increase or reduce stuttering. Normal disfluency. Early stuttering: research and characteristics. Assessment, Techniques and goals of intervention. Intervention programmes. Lidcombe programme. Factors for early recovery.

Chronic stuttering: Assessment and intervention. Treatment phases in chronic stuttering. Structured direct and indirect treatment. Continuous speech.

Clinical matters concerning chronic stuttering. The effectiveness of treatment methods. Fluency counts

Other fluency disorders: Cluttering. Neurogenic stuttering. Psychogenic stuttering.

Course Title: Language Learning Disabilities

Course Outline

Short description of processing and working memory models. Cognitive skills that formulate language development (perception, memory, attention). Historical review of the concept of language learning disabilities. Definition of language learning

disabilities. Characteristics of children with language learning disabilities. Causes of learning disabilities. Cognitive deficits and difficulties associated with written language learning disabilities. Dyslexia. Attention Deficit Disorder with or without hyperactivity. Evaluation and differential diagnosis of learning disability and dyslexia. Therapeutic interventions. The role of the speech-language therapist in assessment, diagnostics and intervention.

Course Title: Audiology

Course Outline

Physics of sound. Acoustic characteristics: objective characteristics of sound (basic characteristics of sound. Psychoacoustic characteristics : subjective characteristics of sound (hearing thresholds). Embryology of the outer, middle and inner ear. Anatomy of the peripheral and central hearing system: outer ear, middle ear, inner ear, central auditory nervous system. Physiology of hearing: function of the outer, middle and inner ear. Modern theories of cochlea function. Clinical evaluation of hearing: pure tone audiometry (audiometer, air conduction, bone conduction), masking (different noise types), middle ear analysis (middle ear analyzer, tympanogram types), acoustic reflexes (ipsilateral, contralateral), speech audiometry (speech recognition threshold, speech recognition score testing, most comfortable level, uncomfortable loudness level), auditory brainstem response, otoacoustic emissions. Interpretation of audiometric test results. Effects of different pathological ear conditions on hearing.

Course Title: Diagnostic Methods in Speech-Language Therapy

Course Outline

Basic terminology related to the diagnosis (diagnostic, evaluation, assessment)

Theoretical models of assessment such as, the Medical model which is based on quantitative and qualitative information about the patient, the Descriptive/Developmental model which emphasizes describing the patients behaviour in relation to his problem rather than the cause of his problem, and the Systems model which stresses the importance of family and the cultural context in which the client must function. Differentiating between the various models of teaming/ multidisciplinary groups (groups comprising of different disciplines) and groups of the same discipline (a group of speech pathologists with specialist training)

Communication problems in childhood and adulthood as well as the assessment and diagnosis of communication problems in children and adults such as language problems, articulation, voice, swallowing, cognitive deficits, stuttering and the standardised diagnostic tests that are formally adapted in Greek and other diagnostic tests used internationally.

Application of the above methods of assessment and analysis of the results.

Students are expected to familiarize themselves with available screening diagnostic tools for speech, language, hearing and for formal diagnostic measures for language learning difficulties and communication difficulties mainly phonological,

language, fluency, apraxia, dysarthria, aphasia, dysphagia and voice) that are evident in children and adults, as well as the development and implementation of appropriate intervention.

Semester 4

Course Title: Neuroanatomy - Neurophysiology

Course Outline

Kinds of neurocytes. Study of the anatomy of the neuron. Synoptic description of the nervous system, with emphasis in the description of the central nervous system (brain – spinal cord).

The physiology of the transmission of nervous impulse – neuron's after potential – action potential – function of the synapses – detailed description of the function of chemical synapse – neurotransmitters (examples of the action of stimulant and inhibitory transmitters).

Anatomy and physiology of different areas of the brain (cerebral hemispheres, thalamus, hypothalamus, midbrain, cerebellum, medulla obloganta, pons and brainstem). Especially for the cerebral hemispheres, the discrimination between different areas of the cortex (motor – sensory – associative – optical – auditory, etc.).

Development of the nervous system from the prenatal life to infancy – critical periods of the development of the brain.

Physiology of the senses: vision, hearing, olfaction, taste.

Functions of speech – expressing and understanding language – Speech disorders.

Learning and memory.

Normal stress and psychological stress – involvement of the nervous system.

Modern methods of controlling disorders of the nervous system.

Course Title: Swallowing Disorders-Dysphagia

Course Outline

Anatomy and physiology of swallowing. The most important areas of the head and neck during swallowing: mouth, tongue, palate, pharynx, larynx, esophagus, trachea. Analytical discussion of the three phases of swallowing: oral, pharyngeal, esophageal. Description of physiologic (normal) swallowing. Reference to the anatomical structures causing swallowing disorders (e.g., scars of the tongue, and esophageal causes). The study of neurogenic disorders of swallowing, of structural disorders of swallowing and of esophageal dysphagia. Clinical examination of dysphagia, endoscopic and videofluroscopic examination of swallowing. Rehabilitation of swallowing disorders and feeding management of the patient with swallowing disorders. Surgical rehabilitation of dysphagia, post surgical follow ups and treatment plan for the management of dysphagia.

Course Title: Rehabilitative Audiology

Course Outline

Areas of rehabilitative audiology. Types of hearing loss: conductive, sensorineural, mixed, functional, central auditory nervous system hearing loss. Degree of hearing loss. Differential diagnosis of the peripheral hearing system. Effects of several pathological conditions on hearing. Effects of hearing loss

on speech and language. Causes of hearing loss in childhood. Screening hearing tests (otoacoustic emissions, auditory brainstem responses). Amplifying systems: hearing aids (types of hearing aids), FM systems (personal, stand-alone), large area hearing systems, cochlear implants (types and function). Criteria for cochlear implantation. Selection of the appropriate hearing aid system. Monaural or binaural amplification. Ling test. Characteristics of speech (segmental, suprasegmental) and language in children with hearing loss. Rehabilitation of speech and language in children with hearing loss: principals of rehabilitation, intervention steps, application of the appropriate principles and therapy methods. Education of children with hearing loss: methodology. Rehabilitation of adults with hearing loss.

Course Title: Voice Disorders

Course Outline

Review of the anatomy and physiology of the larynx, the superior and inferior respiratory system and description of the normal function of phonation. Presentation and classification of voice disorders, concerning color, intensity, resonance, flexibility and resistance of voice. Voice disorders due to lesions in the mass of vocal cords, neurological and psychological causes and abuse. Restoration methods for the disorders, depending on the type of voice disorder and the age (treatments for adults and children). The role of the speech therapist in observation, prevention and restoration of professional voice. Voice and communication issues after laryngectomy. Treatments of laryngeal cancer: radiation, chemotherapy, surgery. The scientific team and the respective roles of the professionals for the treatment of the patient. Preoperative and postoperative treatment and care of the patient and his/her family. Evaluation of the physical, psychological, social and communicative progress of the patient. Methods for producing phonation: electro larynxes, “pseudo phonation”, esophageal phonation. Restoration issues following extensive surgery. Medical treatment and clinical evaluation of voice disorders using technological, mechanical and clinical protocols.

Introduction to Clinical Practicum

Course Outline

Students spend two days per week in clinic under supervisor guidance in the university speech-language-hearing clinic to gain direct and observational clinical experience working with people with communication disorders and to establish links between theory and practice. This course is supported by regular tutorial sessions.

Semester 5

Course Title: Neurology

Course Outline

Organization of the nervous system: central, peripheral, autonomous. Speech and other mental functions. The Cranial nerves. Normal walking, muscle synergy, hyperkinesias. Neuro-radiology: computed tomography, magnetic resonance imaging, myelography, angiography, functional neuro-imaging Neuro-physiological tests: electroencephalography, evoked related potentials (ERPs). Intracranial pressure: conditions of elevated or decreased

intracranial pressure. Confusion and Delirium. Dementia: Alzheimer's disease, vascular dementia, body Lewy disease. Stroke: causes, clinical characteristics, differential diagnosis, investigation, treatment, prognosis. Transient Ischemic Attacks. Secondary prevention of strokes and Transient Ischemic Attacks. Subarachnoid hemorrhage. Epilepsy: diagnosis and treatment. Head and brain trauma. Multiple sclerosis. Parkinson's disease, akinetic-dyskinetic syndromes and hyperkinetic disorders: tremors, focal and generalised dystonia, chorea). Neoplasms of the central nervous system. Motor neuron disease. Disorders of the neuro-muscular junction: Myasthenia Gravis Myopathies. Psychiatric complications of neurological diseases.

Course Title: Craniofacial Disorders and Genetic Syndromes

Course Outline

Genetic factors, syndromes and diseases that cause craniofacial abnormalities: causes and disposition factors. Syndromes: Apert, Crouzon, Pfeiffer, Saethre Chotzen, Pierre Robin, Treacher Collins, Palato- Cardio- Facial. Lip cleft – Cleft palate: Definition, causes of manifestation, types and combinations in manifestation, effects in appearance, feeding, phonation, dentition, articulation, hearing, language development, social-emotional development. Members of the scientific team and the types of their intervention. Speech difficulties in people with cleft palate: Resonance (hyper-nasality, hypo-nasality, mixed nasality), phonation, articulation, phonetic and phonological development, language development. Evaluation of people with clefts: History, oral-facial examination, assessment and characteristics of speech, signs of clinical phonetic recording. Inadequate function/ dysfunction of the palatal-pharyngeal valve: function of the palatal-pharyngeal muscles, causes of dysfunction, assessment methods, therapeutic surgical techniques (pharyngeal plastic surgery, pharyngeal flap), prosthetic procedures (speech bulb, palatal lift). Speech therapy approaches for the speech problems in people with clefts: treatment of hypo-nasality, hyper-nasality, audible nasal escape, dysphonia, problems in articulation and phonology. Dysphagia in children with clefts, ways of treatment and special feeding devices. Social-emotional development and psychological support for people with craniofacial abnormalities and their parents.

Course Title: Psycholinguistics and Neurolinguistics for Speech-Language Therapists

Course Outline

Aims of Psycholinguistic research. Language as a psychological function. Introduction to Language acquisition, Bilingualism and Second language learning. Speech production. Verbal and visual decoding of lexical items. Neuropsychological models of lexical reading. Research methods adequate for oral and visual decoding (models and current scientific conclusions). Sentence comprehension. Strategies of surface structure. Current models of written and oral language comprehension. Research techniques for the investigation of on-line sentence processing (comprehension and production).

The Neuropsychology of sentence structure. Language structure, Working Memory and Mental Lexicon (models of lexical storage and lexicon's structure). Language and the Brain. Neuroimaging. Brain asymmetries. Brain lobes and linguistic functions. Holistic & Modular approaches. Research methods: CT-scan, PET, MRI, fMRI. Current "hot" topics on language processing.

Course Title: Aphasia and other Acquired Language Disorders

Course Outline

Definitions of aphasia and related disorders, types of aphasia. Historical review, explanation, description, symptomatology, diagnosis of aphasia based on the model of World Organism of Health (WHO), specifically the International Classification of Functioning, Disability and Health (ICF framework). Neurology of aphasia. Localisation of lesion and imaging of cerebral hemispheres in aphasia. Theories and mechanisms of plasticity of the brain and functional recovery in aphasia. Diagnostic principles of evaluation with standardized and non-standardized tests. Principles of treatment and intervention. Deficits of auditory comprehension (models, evaluation and diagnosis, treatment and rehabilitation). Naming disorders (models, evaluation and diagnosis, treatment and rehabilitation). Disorders of reading and writing– acquired dyslexias and dysgraphias (models, evaluation and diagnosis, treatment and rehabilitation). Deficits in sentence processing in aphasia (models, evaluation and diagnosis, treatment and rehabilitation). Pragmatic deficits. Discourse deficits. Functional aspects of aphasia rehabilitation. Psychosocial impact of aphasia on the patient and his/her family. The social model of aphasia rehabilitation. Right Hemisphere Syndrome. Differential diagnosis of aphasia and related communication disorders.

Course Title: Basic Statistics

Course Outline

Basic concepts of descriptive statistics. Fundamentals and types of frequency distributions (univariate analysis) – graphical representation. Measures of central tendency. Measures of variability. Correlation - graphical representation. Measures of correlation. Finally, the way to use a PC and MS Excel as a tool for Statistics is developed: Representation of data. Statistical functions of Excel. Tables and graphical representations of results using Excel

Course Title: Clinical Practicum I

Course Outline

Clinical practicum I is the first systematic contact students have with patients facing communication problems and therefore, they must apply academic knowledge to clinical praxis, based on bibliography and research. More precisely, clinical practicum 1 aims at student's education regarding the collection of the patient's case-history information, evaluations of communication disorders (primarily phonological and language disorders) that are common among preschool and school aged children, and also the development of the appropriate therapeutic program as following:

1. Collection of the appropriate patient's history.

2. Application of oro-facial examination, articulation test, test of phonological processes, diadochokinetic rate test, evaluation of language skills, assessment of speech rate and intelligibility, evaluation of language skills.

3. Development of the therapeutic program: selection of the long-term goal, pre-therapy evaluation testing, therapy analysis, therapy method, post-therapy evaluation testing.

4. Development of the initial and final therapeutic program.

The clinical hours are conducted in nursery and elementary schools under the supervision of professional speech and language therapists.

Semester 6

Course Title: Clinical Neuropsychology

Course Outline:

Organization of the human brain with emphasis on the CNS and brain-behaviour relationships. Effects of brain damage on cognitive functions, emotions, personality, aphasia, apraxia, agnosia, frontal lobe damage. Evaluation and rehabilitation in neuropsychology with an emphasis on language-communication disorders. Basic neuropsychological test batteries for cognitive assessment. Methods of differential diagnosis of neurological disorders involving the Speech-Language Therapist (SLT). Cognitive rehabilitation methods. Clinical case studies of the above involving SLT.

Course Title: Neurogenic Motor Speech Disorders

Course Outline

An understanding of the system that controls the movements for speech. Study, diagnosis and rehabilitation of the motor speech disorders. Neurological damages of the upper and lower motor nervous system, the system of cerebellum and the extra-pyramidal system. Developmental Motor Speech Disorders: Cerebral Palsy, Developmental Apraxia of Speech.

Dysarthria in Degenerative Disease. Degenerative disorders of the motor system and lesions of the motor programming for speech. Clinical Examination of Motor Speech Disorders. Differential Diagnosis of Dysarthria and Apraxia and of the different dysarthrias. Localization of pathologies in different motor speech disorders. Principles and goals of intervention for dysarthria. Selection and formulation of therapeutic programs. Treatment approaches for the different speech subsystems: respiration, resonance, articulation, and prosody. Instrumentation for management of dysarthria.

Course Title: Neurogenic Cognitive Disorders

Course Outline

Neurogenic Communication Disorders: Definitions, types, historical background, aetiologies, descriptions, symptomatology, diagnosis and categorisation. Introduction to neurocognitive models related to neurogenic communicative disorders. The study and assessment of cognitive functions such as memory, recognition, attention, learning, mental organization, behavioural thinking and problem solving. Communication management

issues associated with neurogenic communicative disorders.

Traumatic Brain Injury: description, assessment, differential diagnosis, rehabilitation and therapy programs.

Dementia: description, type, assessment, differential diagnosis, rehabilitation and therapy programs.

Language Disorders associated with Degenerative Diseases such as Parkinson's Disease, Multiple Sclerosis, Brain Tumors. Description, type, assessment, differential diagnosis, rehabilitation and therapy programs.

Language Disorders associated with Psychiatric Illnesses (e.g. schizophrenia). The multidisciplinary team and intervention. Psychosocial effects and counselling the individual and the family environment.

Course Title: Neurocognitive Rehabilitation

Course Outline

Principles of neurocognitive rehabilitation. Theories supporting neurocognitive rehabilitation. Neurogenic disorders with cognitive decline. Intervention for neurocognitive disorders. Theories of Memory for neurocognitive rehabilitation. Metacognitive strategies include helping the patient increase self-awareness regarding problem-solving skills by learning how to monitor the effectiveness of these skills and self-correct when necessary. Goal-orientated programmes that improve cognitive function, memory, attention, concentration and daily living skills. Remedial (or restorative) approach. Compensatory approach. Cognitive rehabilitation therapy has been shown to be effective for individuals who suffered a stroke in the left or right hemisphere. Working with families of individuals with neurocognitive impairments.

Course Title: Clinical Practicum II

Course Outline

Students learn and use screening tests for language, speech and hearing, tests for learning disorders and communication disorders (mainly for phonological disorders, disorders of fluency, apraxia, dysarthria), that are presented at children and adults. Also, they learn how to develop and apply the proper therapeutic program.

a. Application of screening tests for language, speech and hearing in children and adults.

b. Application of tests that evaluate learning abilities of school-age children.

c. Application of tests that evaluate disorders of language, speech, fluency, apraxia, dysarthria.

d. Development of the primary and final therapeutic program.

The clinical hours are conducted in institutions, nursery and elementary schools, and at the University SLT clinic under the supervision of professional speech and language therapists.

Semester 7

Course Title: Research Methods for Rehabilitation Sciences

Course Outline

Introduction to the methodology of research: definition of science,

scientific process, scientific tools. Research process, research methods and issue choice, definition of research problem, goals and cases. Descriptive research: questionnaires, design, test. Scales: species, design and choice. Research interview: non structured, semi-structured and structured interview.

Research observation. Experimental designs: true experiment and experimental design. Research action: design, characteristics and applications. Case study. Control of validity and reliability. Methods for choosing samples, sampling error. Structure of research proposal and study.

Quantitative methods and data analysis: Introductory presentation of the statistical package SPSS, files, windows, variables and measurements. Coding and inserting data in the program, error checking and basic cases analysis. Initial data investigation: frequencies, averages, crosstabs, etc, basic tables and charts. Chi-square: differences between data samples and frequencies. Correlations between two or more variables, t-test, comparison between two samples from associated or non associated values. Fluctuation analysis: ANOVA & MANOVA. Exploratory Factor Analysis. Reliability indices. Analysis non parametric data. Presentation of the analysis of results. Presentation of data analysis cases study.

Course Title: Applications of Computers and New Technology to Speech-Language Therapy

Course Outline

Digital signal processing, sound processing, speech processing and recognition, speech synthesis on computers. Computer diagnosis tools for disorders of speech, voice and hearing. Nasometer, Visipitch, Electroglottograph, Computerized Speech Laboratory, Multispeech, Electromyograph, Palatograph. Software programs for therapy of phonological disorders, articulation disorders, cognitive disorders, language disorders after e.g. aphasias and traumatic brain injury, voice disorders, apraxia, language delay etc. Technology in the treatment of chronic stuttering through altered auditory feedback: AAF, DAF, FAF. Biofeedback systems for the treatment stuttering: Cafet, Dr Fluency. Models of systems of perception, auditory and symbolic. Multimedia. Verbal and non-verbal communication, technology of alternative augmentative communication systems (AAC), prognostic factors for use of AAC in various teams of children and adults. Telespeech Therapy. Assistive Technology.

Course Title: Bilingual and Multilingual Issues for Speech-Language Therapists

Course Outline

Bilingualism is the study of Culturally and Linguistically Diverse (CLD) Individuals. All individuals who actively use or attempt to use more than one language even if they have not achieved fluency in the second language are considered bi/tri/multilingual. Usually, bilingual individuals are bicultural (have 2 cultures). The different types of bilingualism will be explained, in terms of type and degree of bilingualism and language attrition. With regards to the level of language knowledge Bilingualism is seen as a continuum (more fluent or less fluent bilinguals) rather than a

bilingual/monolingual dichotomy. An individual may have different levels of proficiency in the different language modalities (auditory and written comprehension, verbal and written expression) and in different linguistic components (morphology, syntax, phonology, lexical semantics) Reference will be made to studies relating language dominance and localization of languages and language processing to brain functions. Bilingual models of word processing such as the Revised Hierarchical Model and the Declarative/Procedural model will be explained. Functional links between languages will be explored such as neighbours (words with similar orthography) and cognates as well as code-switching. Emphasis will be placed on the collaboration between a speech therapist and an interpreter for the assessment and intervention of individuals with communication impairments (e.g. aphasia) who speak two or more languages.

Course Title: Organization of Speech-Language Therapy Services

Course Outline

Introduction of the concepts incorporation and administration with reference in services of public utility and health services. Basic theories of administration: anthropocentric, goals based administration, Weberian theory of officialism, etc. Structure and function of the public non-profit sector in issues of social organizations, representative providers. Structure and function of social services in private sector. Social policy in health, politic analysis. Strategy planning and strategic management in social services. Internal conformation, of social organizations, dimensions of internal structure: specialization, centralization, formalism. Administration of human dynamic – job position planning, attraction and selection, gathering work groups of volunteers. Leadership and leader behavior, boards, and decision making systems at social providers. Power, influence and politics at social providers, obstacles and reactions at introducing changes. Administrations of lobbyists in social sectors and planning resources development programs. Quality of social services, evaluation of services and introduction of improvements, approaches in assessing social organizations.

Course Title: Evidence-based Practice (EBP) in Speech-Language Therapy

Course Outline

Advances in the knowledge base, service provision and scope of practice of speech therapists have significantly impacted the complexity and diversity of the profession.

These advances have resulted in significant work changes, requiring practitioners to not only consider factors relating to individuals and families they serve (such as client needs, values and preferences) but also develop new clinical skills that are underpinned by a sound knowledge base that is based upon published research. Evidence-based practice ensures that the latest research evidence from high quality scientific studies is used to inform expert clinician management of assessment and treatment in conjunction with client needs and values. Such an emphasis underpins the growing

maturity of a research-focused profession.

Each time, this process commences with the creation of a general or specific clinical

question, for example, “What is the evidence that computer-based programmes improve the language function of children with language delay?” A search of the databases then follows, with specific attention paid to identification of evidence that pertains to the question and the level of evidence that is represented (such as whether the evidence arises from a systematic review or a randomised controlled

trial: RCT). The focus of the topic will be on critical appraisal of research to evaluate information. The course outcome will be to incorporate research into the speech therapist’s knowledge base and value system.

Course Title: Clinical Practicum III

Course Outline

Training of students in assessment tests of aphasia, dysphagia, and voice disorders in children and adults, as well as in development and application of the proper therapy program for each type of the above communication disorders:

a. Application of various assessment techniques for aphasia.

b. Application of various assessment techniques for motor speech disorders

c. Application of various assessment techniques for dysphagia.

d. Application of various assessment techniques for assessing voice disorders.

e. Development and application of the appropriate therapy program.

Development of the appropriate clinical reasoning skills for setting short and long term goals, , therapy hierarchies and session structure , and organization of a complete record for each case.

Clinical hours to be held in hospitals schools of special primary education under the supervision of professional speech and language therapists .

FACULTY OF APPLIED ARTS AND COMMUNICATION

Department of Communication and Internet Studies

Academic Staff

Yorgos Zotos
Professor, Dean of Faculty

Stelios Stylianou
Associate Professor, Associate Coordinator

Nicolas Tsapatsoulis
Associate Professor

Christopher Kyriakides
Assistant Professor

Eleni Kyza
Assistant Professor

Lambros Lambrinos
Assistant Professor

Angeliki Gazi
Assistant Professor

Dimitra Milioni
Assistant Professor

Dionysis Panos
Lecturer

Vasiliki Triga
Lecturer

Vagia Doudaki
Lecturer

Euripides Antoniades
Special Teaching Staff

Ntina Sofokleous

Costas Tziouvas
Special Teaching Staff

Yiannis Christidis
Special Teaching Staff

Maria Avraamidou
Postgraduate Fellow

Zenonas Theodosiou
Postgraduate Fellow

Iolie Nicolaidou
Special Teaching Personnel

Venetia Papa
Research Associate

Konstantinos Vadratsikas
Research Associate

Yiannis Georgiou
Research Associate

Lia-Paschalia Spyridou
Research Associate

Eirini Tsichla
Research Associate

Vasilis Manavopoulos
Research Associate

Department of Communication and Internet Studies

The Department of Communication and Internet Studies promotes research, dissemination of knowledge and practice application in the fields of Communication, Media and the Internet. Specifically, the Department aims to scientific analysis and understanding of ways in which society shapes and is being shaped by new technologies, and how they affect the economy, politics, governance, education, individual and collective identities and culture in general .The Undergraduate Program emphases the relationship between the old, new and emerging media in one hand, and social structure and action, local, European and international level, on the other hand. The undergraduate curriculum includes required courses in communication and education internet, social methodology research courses, elective course from subject areas (technology, culture and society, political communication, information management, communications and applied journalism), language courses and free elective course. Upon completion of the courses, the Department grants ' Degree in Communication and Internet Studies.

Bachelor in Communication and Internet studies			
FIRST YEAR			
FALL SEMESTER		**SPRING SEMESTER**	
1st Semester		**2nd Semester**	
	ECTS		ECTS
CIS 130 Introduction to Communication Studies	5	**CIS 100** Content Creation	5
CIS 131 Introduction to Social Science	5	**CIS 110** Local and International Communication Systems	6
CIS 132 Introduction in new media	5	**CIS 133** Introduction to Social Science Research	5
CIS 134 Introduction to Internet Studies	6	**CIS 135** Introduction to Computing Applications	5
CIS 137 European History and Media History	5	**CIS 136** Introduction to Social Psychology	5
ENG 122 English for Academic Purposes	4	**ENG 170** English for Communication and Internet Studies	4
Total	30	**Total**	30

SECOND YEAR			
FALL SEMESTER		**SPRING SEMESTER**	
3rd		**4th Semester**	
	ECTS		ECTS
CIS 202 Web site design and implementation	5	**CIS 210** Introduction to Cultural Studies	5
CIS 211 Ethics of New Media	5	**CIS 212** Introduction to Journalism	5
CIS 220 Critical Media Theory	5	**CIS 222** Political Communication	5
CIS 221 Introduction to the Information Society	5	**CIS 231** Communication Research Methods II: Quantitative Analysis	6
CIS 230 Research Methods in Communication I: Quantitative Analysis	6	**CIS 232** Data Management in the Information Society	5
ENG 220 English for Communication Studies I	4	**ENG 270** English for Communication Studies II	4
Total	30	Total	30

DIRECTION: COMMUNICATION TECHNOLOGIES			
THIRD YEAR			
FALL SEMESTER		**SPRING SEMESTER**	
5th Semester		**6th Semester**	
	ECTS		ECTS
CIS 200 Interactive Multimedia	6	**CIS 302** Creation of Visual Content with the use of Camera	6
CIS 300 Object Oriented Programming	6	**CIS 303** Web Application Programming	6
CIS 312 Information and Knowledge	6	**CIS 305** Content Management	6
CIS 330 Internet-based research	6	Elective(compulsory)*	6
Elective(compulsory)* / elective**	6	Elective(compulsory)* / free elective**	6
* see table 1 * * see table 2		* see table 1 * * see table 2	
Total	30	Total	30
FOURTH YEAR			
Fall Semester		**Spring**	
7th Semester		**8th Semester**	
	ECTS		ECTS
CIS 440 Internship	8	**CIS 453** Thesis or 3 courses from the 4th	18
CIS 450 Research Design	6	Elective (compulsory/free)*/	6
Elective(compulsory)*	6	Elective(compulsory/free)**	6
Elective(compulsory)*	6		
Elective(compulsory)*/ free elective**	6		
* see table 3 * * see table 4		* see table 3 * * see table 4	
Total	30	Total	30

Direction: Information Management			
THIRD YEAR			
FALL SEMESTER		**SPRING SEMESTER**	
5TH Semester		**6th Semester**	
	ECTS		**ECTS**
CIS 319 Writing for print and electronic media	6	**Introduction 301** Introduction to sound for music,radio, TV and Internet	6
MGA 240 Human-Computer Interaction	6	**CIS 315** Marketing and Communication	6
CIS 330 Internet-based research methodologies	6	Elective (compulsory)	6
Elective(compulsory)*	6	Elective (compulsory)	6
Elective(compulsory)* / elective(free)**	6	Elective (compulsory/free)	6
** see table 1* ** * see table 2*		** see table 1* ** * see table 2*	
Total	**30**	**Total**	**30**

FOURTH YEAR			
FALL SEMESTER		**SPRING SEMESTER**	
7th Semester		**8th Semester**	
	ECTS		ECTS
CIS 440 Internship	8	**CIS 453** Thesis	18
CIS 450 Research Design	6	Elective (compulsory/free)**	6
Elective(compulsory)*	6	Elective (compulsory/free)	6
Elective(compulsory)*	6		
Elective(compulsory)* / elective(free)**	6		
* see table 3 * * see table 4		* see table 3 * * see table 4	
Total	30	**Total**	30

Direction: Information Management			
THIRD YEAR			
FALL SEMESTER		**SPRING SEMESTER**	
5TH Semester		**6TH Semester**	
	ECTS		**ECTS**
CIS 320 Writing for print and electronic media	6	**CIS 321** Introduction to sound for music,radio,	6
MGA 240 Human-Computer Interaction	6	**CIS 323** Marketing and Communication	6
CIS 330 Internet-based research methodologies	6	Elective(compulsory)*	6
Elective(compulsory)*	6	Elective(compulsory)*	6
Elective(compulsory)*/	6	Elective(compulsory)*/	6
** see table 1* ** * see table 2*		** see table 1* ** * see table 2*	
Total	**30**	Total	**30**
FOURTH YEAR			
FALL SEMESTER		**SPRING SEMESTER**	
7TH Semester		**8TH Semester**	
	ECTS		**ECTS**
CIS 440 Internship	8	**CIS 453** Thesis	18
CIS 450 Research Design	6	Elective(compulsory)*/ elective(free)**	6
Elective(compulsory)*	6	Elective(compulsory)*/ elective(free)**	6
Elective(compulsory*	6		
Elective(compulsory)*/ Elective(free)**	6		
** see table 3* ** * see table 4*		** see table 3* ** *see table 4*	
Total	**30**	**Total**	**30**

Table 1: List of the elective-compulsory courses for the 3rd year

CIS304 Digital games and communication
CIS 310 Communicational Policy of the E.U.
CIS 311 Organizational Communication
CIS 313 Alternative Media
CIS 314 Media and Digital Diplomacy
CIS 316 Journalism on the Internet
CIS 318 Copyright Issues in the era of Infrormation
CIS 322 Social relationships in cyberspace
CIS 324 Media and Globalization
CIS 325 Technology, Economy and Society
CIS 326 Politics of the Internet: Governance, Policy-Making and Democracy
CIS 331 Internet and Society*
CIS 332 Principles of Advertising
MGA 102 Principles and History of Typography
MGA 242 Programming for Multimedia I

* A series of seminars in English, available for the ERASMUS students as well. This course is available for 12 ECTS.

Table 2: List of the elective-compulsory courses for the 4th year

CIS 400 Screen Typography
CIS 401 Radio Production – Internet Radio
CIS 402 TV Production and Programming
CIS 403 Computer Networks and Multimedia CommunicationMultimediaApplications
CIS 404 Information retrieval and Search Engines
CIS 405 Artificial Intelligence on the Web
CIS 406 Pervasing Computing Applications
CIS 410 Security and access in the cyberspace
CIS411 Information and Communication Technologies for Learning
CIS 420 Political Economy of the Internet
CIS 421 Digital Policy
CIS 423 Technology, Culture and Society
CIS 424 Comparison of communicative and political systems
CIS 425 Confrontations in the era of Information
CIS 430 Digitization of Cultural Heritage
CIS 431 Digital Media Literacy
CIS 432 Collective Web Intelligence
CIS 433 Social Interaction and Communication by identifying
CIS 436 Thematic Seminar
MGA 210 Photography I
MGA 441 Potential Reality

Table 3: List of free- elective courses of the 3th and 4th year

FR 111 French Language I
GER 111 German Language I
SPA 111 Spanish Language I
ITA 111 Italian Language I
CFS 402 E-commerce
HTM 350 Human Resource Management
MSE 531 Artificial Intelligence
ENG 140 Academic English for Research Purposes
GRE 410 Greek for academic purposes/Dissertation Writing II
CEI 531 Artificial Intelligence

COURSES DESCRIPTIONS

CIS 100: Content Creation I: In this course the students are exposed to the process of creating high quality digital content appropriate for the Web. This content appears is several forms: text (the basic component), vector graphics (logos, banners), images (photographs and other imaging material), audio (sounds, speech, interviews), video and animation. The students are first introduced to the basics of the HTTP protocol and the 2-tier and 3-tier architectures. The basics of every form of digital content are presented then and the students create content in each one of these forms. Web content structuring and layout design techniques including templates and stylesheets are shown. Finally, the students are taught how to create digital content through interactive web applications (forms, surveys). For this purpose client-side programming is introduced with the aid of Javascript.

CIS 110 Local and International Communication Systems: This course attempts a comparative analysis of the structures and performance of communication organisations and of their regulatory systems, at a local and international level. The impact of international communications across national states and the new conditions rising in national and international media systems due to the growth of internet, are discussed and analyzed. In addition, this course examines the global flow of media products, as well as the organizational models and business strategies of media organizations at a national, regional and local level. Special emphasis is given to the characteristics of Cypriot media and the conditions shaping the communications landscape in Cyprus.

CIS 132: Introduction in new media: This course is an introduction to the historical evolution and contemporary characteristics of the information age. Topics to be examined in the course include: important developments in media (telecommunication, television, radio, digitization, Communication and Information Technologies and the internet), the way mass media developed from a historical perspective, both at a national and international level, and the concept of a technology-mediated communication environment. In the last part of the course models of internet-mediated interaction (Web1.0, Web2.0 and Web3.0) will also be examined. The course includes a lab component, part of which takes place during one of the two weekly meetings.

CIS 130 Communication Theory: This course will provide students with a broad foundation in the study of communication. It will introduce students to fundamental concepts and principles of interpersonal communication and basic historical and normative dimensions of mass communication, such as the social role and the effects of the media, culture, and ethics. Special attention will be paid to the most significant models and theories of mass communication, from the early theoretical approaches to contemporary theories about media effects. Students of this course will be able to familiarize themselves with fundamental concepts of Communication Studies, recognize key communication models and theories, and apply this theoretical knowledge in analyzing everyday experiences with the media.

CIS 131 Introduction to social science: This course aims to familiarize students to sociological theory as part of social sciences.

Two are the main questions around which this course is organized: "what is society" and "what is the relationship between the individual and society." Through these questions students will become familiar with the main theoretical approaches and will discuss topics such as: social interaction, social stratification, power, social movements and social organization (communism, capitalism, socialism, etc.).

CIS 133 Introduction to Social Science Research Methods: This course is the first in a series of social science methods courses and it aims at introducing the students to the scientific mode of thought, measurement and analysis. The course begins with the most important elements of the scientific method and concludes with the presentation of the most important methods of quantitative and qualitative measurement and analysis. With the conclusion of the course, students are expected to have acquired (1) an understanding of the basic concepts and principles of the scientific method, (2) an understanding of the connection between research questions and empirical data, (3) an ability to conceptualize and operationalize abstract concepts, (4) an understanding of the concepts of causality, experimental and statistical control, (5) knowledge of the basic methods of measurement and analysis, (6) the ability to use certain methods to answer simple research questions, and (7) a positive attitude toward the scientific method.

CIS 134 Introduction to Internet Studies: This course aims to familiarize students with the basic concepts of the Computer Science and the Internet and its most popular applications. In addition to an explanation of the techniques behind the basic services offered (email, file transfers etc), special consideration is given on the use of the Internet as a communication tool (e.g. videoconferencing). The course also touches upon technical aspects of basic computer networking from a theoretical and practical perspective.

CIS 135 Introduction to computing applications: Introducing the basic principles of software development, this course acquaints students with knowledge on how software is designed, implemented and maintained. The role of operating systems in today's computing infrastructure is also described in addition to the key concepts of files and processes. The course also includes a brief introduction to the foundations of object oriented programming.

CIS 136 Introduction to Social Psychology: The course provides a thorough understanding and negotiation of the key theories and research that falls in the subject of Social Psychology. Considering as dominant the relationship between 'individual' and 'social', the focus is on socio-psychological concepts and structures that try to explain and interpret the behavior of individuals and social groups and the ways in which individuals and groups construct their social world. Through the study of socio-psychological interpretations students will get to study multiple levels of analysis and interpretation in order to understand the individual through the collective, the establishment and operation of social thought, collective behavior and ideology.

CIS 137 European History and Media History: In this course

students will be introduced to European history from the 15th century on, with emphasis on the history of media and communication technologies. Topics will centre on periods of significant social change such as the Renaissance, the Enlightenment, major political upheavals such as the French and Russian revolutions, the Industrial Revolution, the two world wars, and the collapse of the Eastern Block. The course will focus historically on the interwar period, the post-World War II era and the years of the Cold War, when the mass media were developed, including public broadcasting in Europe and the internet in the US. Overall, the course will examine the social, cultural, political and economic changes and continuities that have shaped, and continue to shape, what is usually called 'Western society'. The course will also include discussions on the historical significance of communication technologies, such as the printing press, radio, telephone, etc., and will explore how these technologies addressed social needs which, as a result, facilitated rapid social change.

CIS 220 Critical Media Theory: The primary aim of this course is to familiarize students with the process of design and development of interactive multimedia content and interactive websites. For this purpose (a) the basic characteristics of natural and animated video are explained, (b) the students are introduced to the object oriented programming with the aid of Actionscript 3.0, (c) the basic principles of designing interactive multimedia applications are presented, and (d) several ways of publishing interactive multimedia to the Web are given. The laboratory part of the course includes training on the usage of Adobe Flash for the creation of interactive animated video of high quality. Furthermore, the students are given mini projects throughout the course in order to master the theoretical material.

CIS 202 Web site design and implementation: The course aims at understanding the structure and functionalities of the Internet and the World Wide Web through a detail explanation of their underlying technologies. It explains the concepts of design and web development (web design vs. web development), and it studies the characteristics of web applications and the fundamental principles behind their design. Furthermore, best practices for designing, implementing, hosting, and maintaining websites are studied. Finally, it explains how search engines work and covers techniques for design search engines friendly websites.

CIS 210 Introduction to Cultural Studies: This course offers a general introduction to Cultural Studies. Cultural Studies emphasize the significance of culture in the modern world. As one of the most interdisciplinary and diverse fields in humanities and social sciences, it integrates various approaches of culture: as a way of life, as the (dynamic) rules that determine how we think and act, and as a site for human struggle through discourse and action. The course will examine the processes under which the production, consumption and appropriation of a variety of cultural artifacts takes place, ranging from visual culture to popular music to digital media and cyber cultures. Key concepts are: Agency, Identity, Representation, Power, Discourse,

as well feminist approaches to issues of gender and sexuality.

CIS 211 Ethics of New Media: A class on Ethics is defined by its theoretical consideration of matters pertinent to its domain of study and as such its main objective is to introduction students to ethical theory with the purpose of examining the ethical parameters of issues relevant to New Media and their use. The class will introduction students to matters considered 'classic', like relativism (subjective and cultural), truth, reality, God(s) etc; it entertains questions that comprise our ethical environment: what is the 'good', how can one know the 'good', what is the basis of the good's existence and so forth. Our goal is to urge students to become conscious of the structuring ingredients of their ethical frameworks and to tackle issues that arise within the domain of new media. In parallel, the class deals with contemporary issues in the study of the ethics of new media such as its supposed democratic and democratizing character, its effects on privacy and on subjectivity.

CIS 212 Introduction to Journalism: This course combines the theoretical investigation of the contemporary role of journalism with practice on news writing. Regarding the theoretical aspect of the course, the basic objective is to study the role of journalism in the modern communication environment and the ways in which journalism and news mediate relations and institutions of society. Concerning the practical dimension of the course, students familiarize with the main journalistic tasks of searching, gathering and evaluating information, as well as with the composition and presentation of information in the form of news for different media.

CIS 220 Critical Media Theory: This course provides the foundation for understanding and analyzing the structure and the content of the media. It offers an overview of the key critical approaches to media theory, focusing on analyzing the media as cultural texts, as social and economic institutions, as technologies with cultural extensions and as everyday practices. Key approaches that will be examined are: discussions of mass culture (Frankfurt School), political economy of the media, marxist and neomarxist approaches, the concept of ideology and hegemony (Gramsci and Althusser), cultural studies, semiotics, and reception studies. Students will develop knowledge of communication models and theoretical approaches, and engage in critical analysis of the media and their interaction with society. Also, they will learn to form research questions and to critically review literature.

CIS221 Introduction to the Information Society: Modern-day society is referred to as the "Information Society", often without the presentation of evidence that justifies the use of this term or supports the claimed transition to a novel and revolutionary era. This course offers an introduction to the concept of the Information Society and its characteristics, drawing from empirical data, where available. Students will discuss the Information Society as a model for organizing modern society and will contrast this model to other proposed models of social organization. In the first half of the course we will discuss ways to examine and measure the so called Information Society, while in the second half of the course we will examine areas of societal activity,

such as health, economy, and education, where the new information technologies are expected to have an impact.

CIS 222 Political Communication: Political communication is a fundamental process of the political sphere. Today, all organized political actors apply professional communication strategies to mobilize public opinion. Similarly, the interaction of citizens with public officials as well as the horizontal citizen communication is mediated by communication media. This course focuses on understanding the mediatization of politics, examining the relation between the media, political institutions and political behaviour, including the formation and expression of opinion. Special attention will be paid to how political communication is changed by new media and to the question of whether newer communication technologies are the cradle of a more open democracy or a tool for the intensification of control by the political elites. Key questions are: how political persuasion works, the effects of the professionalization of public communication on democratic institutions, the organization and effects of electoral campaigning, how political messages impact on views, emotions and behaviours of citizens, and how citizens use the media for political participation.

CIS 230 Research Methods in Communication I: Following CIS 133, this course is designed to familiarize students with basic methods of quantitative data analysis, with emphasis on both theoretical understanding and practical application. With the conclusion of the course, students are expected to have acquired (1) the ability to evaluate operational definitions vis a vis abstract concepts, (2) the ability to distinguish among the four levels of measurement, (3) the ability to choose and use statistical tools for descriptive and correlation analysis in the sample, (4) an understanding of the concept of statistical inference, (5) the ability to apply parameter estimation and hypothesis testing, (6) an understanding of the concept of statistical control, (7) knowledge and ability to use linear regression analysis at an elementary level, and (8) knowledge and ability to run factor analysis and to construct latent variables.

CIS 231 Communication Research Methods II: This course introduces students to epistemology and methodology of qualitative research. During the course, the usual approaches of qualitative research methodology, are presented, for example, interviews, focus groups, case studies and ethnography. Emphasis is placed on the importance of data collection and analysis with the appropriate method in relation to the hypotheses and research questions. Part of the courses' obligations is the implementation of a small research project, using various methods of collecting, coding and analysing qualitative data.

CIS 232: Data Management in the Information Society: In the era of Information Society massive quantities of data are exchanged between Web users every minute. On the other hand traditional data management techniques were enriched with aid of various Internet technologies. This course revisits the design and creation of databases in this framework and shows the importance of modern database systems in contemporary Web-

based applications and content management systems. In the first part of the course the basics of databases and relational database management systems (RDBMS) are examined and an introduction to SQL (Structured Query Language) is provided. In the second part, the students through particular case studies, learn how to collect, store and retrieve data through Web-forms with the aid of open source RDBMS such as MySQL.

CIS 300 Object Oriented Programming: This course aims to acquaint students with object oriented programming skills. Using the Java programming language, students are introduced to object oriented design methodologies, coding practices as well as the use and development of libraries. Special emphasis is placed on the practical exercises of the course as hands-on experience is key in understanding the theoretical concepts.

CIS 301 Introduction to Sound for Music, Radio, TV and Internet: This course concerns the stages of sound production, both in the stage of preproduction and the stage of post production. It also focuses on the techniques of sound recording both in studio and open air conditions. The theory of the course explores basic terms of the field of Soundscape Studies, while the sound labs and the assignments focus on the production of original sound and music texts. In this stage the students familiarize with ways of sound editing with audio software, while in the end of the course, the sound tracks created are used as stand-alone productions, or are combined with visual footage (TV and Web) or they are used in exhibitions.

CIS 302 Creation of Visual Content with the use of Camera: This course is mostly focused on the lab work and experience and focuses on the image creation (photographs, documentaries, films) that is based on an existing or original scenario/text for visual media. The students, having acquired knowledge about the basic principles of scenario and filming are required to use the camera to create moving image (video, photographs or slides) that is suitable for text originated from cinema, journalism or web applications. The films created are published on the web and are used to exhibitions.

CIS 303 Internet programming: In this course students extend their programming knowledge by studying advanced object oriented programming techniques which include Graphical User Interfaces and applet programming. As today's WWW is becoming more and more dynamic, effort is devoted on learning programming techniques for interactive web pages (such as Javascript and PHP) along with database access mechanisms.

CIS304 Digital games and communication: Digital games have received great interest in recent years due to their broader appeal and to their role in technological and cultural developments. This course will examine digital games as a new medium for communication, socialization, expression and identity formation. Using an interdisciplinary approach, the course meetings will focus on the theoretical analysis of digital games and examine them through cultural, aesthetic, social, learning and economic lenses. The course will include a lab, which will provide students with the opportunity to review cases of

digital games as they relate to theories about the use of games.

CIS 305 Content management at the World Wide Web: This course explores the current technologies for content management on the web. First, it covers the basic concepts of client side and server side programming, and dynamic web content management. Leveraging from this, students develop different components of a web content management system (CMS) using web programming technologies (PHP / MySQL). Then, it analyzes the characteristics of the most popular open source CMS platforms. The course includes all phases of development of a dynamic web site; preparation of multimedia content, web design, implement basic functions of the website using CMS and augmenting its functionality by incorporating off-the-shelf modules. Students are invited to design and build a dynamic web site using a CMS platform.

CIS 311 Organizational Communication: The course focuses on classic and contemporary research in organizational theory. The core axis of the course constitutes the presentation of a variety of models that examine communication in organizations, the assessment organizational problems and the current research studies to solve these problems. The course also addresses communication issues in diverse organizational environments such as rules, networks, leadership, decision-making processes and methods of analysis of communication problems.

CIS 312: Information and Knowledge Management: The ability to manage knowledge has become increasingly important in today's knowledge society. Knowledge is considered a valuable commodity, embedded in products, individuals and social network communities. Knowledge management (KM) represents a deliberate and systematic approach to cultivating and sharing an organization's knowledge base. It is a highly multidisciplinary field that encompasses both information technology and intellectual capital. This module offers a comprehensive overview of the field of KM from the information technology perspective covering four major areas: (i) basic concepts of information and knowledge management, (ii) data management and digital libraries, (iii) knowledge management, and (iv) data and knowledge mining.

CIS 313 Alternative Media: Alternative media are broadly defined as media practices falling outside of and/or directly opposing mainstream (corporate) media institutions – in terms of content, aesthetic codes, organization, production practices, ethics and relations with audiences. At the core of the conceptualization of alternative media is the issue of power and the ways in which it is resisted, subverted or transformed by symbolic practices. The internet has reinvigorated the field of alternative media production, introducing new formats but also blurring the lines between the 'mainstream' and the 'alternative' in novel ways. This course offers a conceptual overview of alternative media, following their historical development and examining current online alternative media forms – such as radical, social movement, activist, community, subcultural, citizens' and participatory media. The course aims at: (a) providing conceptual frameworks for thinking about alternative media and

critically assessing media messages; b) analyzing alternative media projects; and c) putting theory into practice by experimenting with alternative media production.

CIS 315 Marketing and Communication: The course will familiarize the student with key concepts of marketing. Marketing Philosophy and the marketing mix concept will be discussed. Topics to be approached from an applied point of view, include the evolution of marketing, the significance of marketing activities in the contemporary economic environment, the use of marketing research, market segmentation, product life cycle and new product development and consumer behavior. Emphasis will be in communication issues such as Advertising and Promotion. The marketing ethics and the Social responsibility of marketing will be presented and discussed.

CIS 316 Journalism on the Internet: This course aims to give students exposure to the opportunities and challenges created by new technologies and conditions of convergence on the roles and practice of journalism, and also to familiarize students with news writing for the web. Upon completion of the course students are expected to be able to: a) understand the contemporary phenomena and trends in the field of journalism and the ways in which they are enhanced by internet, b) use the opportunities and tools offered online for content production, and mainly news, c) search for, collect, edit and present information and news content for the web in converged environments.

CIS 319 Writing for Print and Broadcast Media:
In this course, students get acquainted with the conventions of news writing for different kinds of media. While studying the characteristics of news in different communication environments and practicing on writing for print media, radio and television, students familiarize with the specifics of each type of medium and learn to form journalistic texts in ways that respect the nature of each medium and promote its special characteristics.

CIS 321 Cyberspace culture: The aim of this course is for students to comprehend the range and depth of the social transformations due to the use of the Internet and the development of cyberspace. Issues under study include: synchronous and asynchronous networking, transformation of social capital in web communities, digital divide and Internet and everyday life, social and political uses of the Internet, etc. These issues will be analyzed theoretically and empirically in a comparative basis.

CIS 322 Social relationships in cyberspace: This course focuses on the formation of Identity in the digital age and the feelings of people involved in various types of computer-mediated communication (CMC). It is aimed that students will understand (1) the extent to which the network connection affects the self-image, and (2) the ways in which the grammar of the Internet (anonymity, virtuality, etc.) undermines, multiplies, transforms or enhances individual Identities. Additionally, it is expected that students will explore the ways in which Identities are connected in an online and offline level and the ways

in which emotions are expressed and experienced in cyberspace.

CIS 324 Media and Globalization: The course provides students with an understanding of globalization both in theoretical terms and as a historical phenomenon, which can be traced back to the nineteenth century and the world's telegraph-based news agencies. It will focus on historical processes shaping globalization and the digital era; the information society and new perspectives on social and economic development; the use of information and communication technologies for new forms of political and social activity and community-building in international contexts; and multimedia environments and new media.

CIS 326 Politics of the Internet: Governance, Policy-Making and Democracy: This course aims to provide students with a general introduction to some of the most salient issues surrounding the relationship between the Internet and Politics. It is structured around two broad but interrelated questions. Firstly, how has politics affected the evolution of the internet both in the past and in the present? And secondly, how does the internet affect traditional forms of political activity and mobilisation? To address these questions the course focuses on three substantive domains: 1) the governance of the internet's technological architecture; 2) the internet's impact on a number of policy domains (e.g. copyright, privacy, surveillance and security, digital divide, etc.) and 3) the use of the internet as a potential tool for enhancing participation and democratic governance. The course is open to students from a variety of backgrounds and does not presuppose any particular technical knowledge.

CIS 332 Principles of Advertising: The objective of the course is to focus in advertising, as a communication process. The structure of an advertising campaign and the role of the involved partners are examined. The course introduces the student to the planning, development and effectiveness of advertising. Basic topics such as: promotional mix, development of advertising budget, advertising plans, establishing advertising objectives and hierarchy models of communication effects are discussed. The new trends in advertising effectiveness (neuroscience and the information processing), the media planning strategy and media evaluation are presented. The structure and the organization of an advertising agency and the social aspects of advertising are critically presented and discussed.

CIS 330 Internet-based research methodologies: This module aims to provide students with practical, hands-on experience in Internet-based research and cover all relevant methodological and epistemological issues that arise from such practices. Students are expected to firmly grasp the ways of conducting quantitative and qualitative research on the Internet, as well as the transformations that Internet-based research brings about in traditional research methodologies employed in the social sciences.

CIS 400 Screen Typography: This is a laboratory course focusing on the role of typography in digital media. In the first part of the course, students are introduced to the fundamentals of typography, the

basic types of lettering, and layout design. They explore their expressive capabilities through the exclusive use of lettering, and understand how type can replace images to convey meaning. In the second part of the course students study the use of typography in the digital world. They learn that reproducing traditional typography for the screen is often unsatisfactory due to technological differences and limitations. As a part of the course students will be asked to produce typography and layout for websites, on-line interactive applications, animated advertisements, and movies.

CIS 401 Radio Production – Internet Radio:

Through this course the student has the opportunity to expand his/her knowledge regarding the specific characteristics, codes and content of the radio medium. The student has the opportunity to understand the way new media are changing the traditional forms of communication. The understanding and analysis of the medium codes through the psychosocial approach indicates a structural approach to the radio. Through this approach the specific medium codes are forming concrete results in the use, uptake and impact of the message. Through laboratory courses, which will accompany the theory, students will be trained on issues related to the digital audio technology. Thus, a comprehensive understanding of the nature of the radio will be gained and an understanding of the way audio content should be composed and presented, based on a psychosocial approach, will be promoted. Prerequisite: CIS 301 Introduction to Sound for Music, Radio, TV, and Internet Production

CIS 404: Information Retrieval and Web Search: This module deals with the basic principles of information retrieval (IR) including indexing, processing and querying textual data. It also covers basic retrieval models, IR algorithms as well the evaluation of IR systems. All this material is presented if the framework of modern search engines by relating the basic architecture and functionality of search engines with the fundamental processes of information retrieval stated above. Assignments, hand on activities and practical examples are delivered using the high-level programming language Python and the Natural Language Processing Toolkit (NTLK). At the end of this course, students will be able to: (i) explain the way modern search engines operate using specific examples for each one of their consisting components, (ii) apply in practice information retrieval techniques, (iii) apply natural language processing, indexing and ranking methods for web page analysis, (iv) implement basic operations of a search engine (crawling, indexing, ranking).

CIS 405: Artificial Intelligence and the Web:

Artificial Intelligence deals with the design and development of computing systems that exhibit intelligence behavior including learning, problem solving and communication using natural language. This module introduces the basic concepts of Artificial Intelligence like intelligent agents and search algorithms for problem solving. In addition, intelligent data analysis methodologies are presented such as machine learning methods for data classification and clustering. Special emphasis is given to application of Artificial Intelligence in the World Wide Web

like Sentiment Analysis, Web Mining and the Semantic Web. During the course, students will learn to use various open source software tools, like Weka, that integrate the aforementioned principles.

CIS 406 Ubiquitous computing and the Internet of Things:

Computers and the Internet are nowadays an integral part of our daily activities. In addition to the traditional computing devices (i.e. desktops and laptops), the Internet integrates a constantly growing number of devices which include smart phones, sensors, smart meters, home appliances etc. This course acquaints students with theoretical and practical knowledge on Ubiquitous computing and the Internet of Things. The theoretical component of the course will be complemented by hands-on exercises using Android-based mobile devices and various sensors.

CIS411 Information and Communication Technologies for Learning:

This advanced studies course will introduce students to the use of information and communication technologies for learning, in and out of traditional school contexts. The course will provide an overview of existing learning technologies and address their contribution to learning at different age levels and for different purposes. The course will also cover concepts such as lifelong learning, self-regulated learning and examine policies and practices aiming to support such behaviour at European and local levels. The course will combine readings and discussions about the theoretical framework of learning in the "information age", engage students in a critical examination of the affordances and trade-offs of information and communication technologies (ICTs), and provide opportunities for hands-on experiences with ICTs.

CIS 413 Consumer Behavior: The aim of this course is to provide students the opportunity to grasp why the study of Consumer Behavior is important for an effective marketing strategy and communication campaign. Students are introduced to the main definitions, principles and theories of Consumer Behavior. Different consumer decision-making models are presented. The concepts of perception, involvement and learning are analyzed. Emphasis is given to consumers' attitudes and their measurement. Lectures also cover the topics of segmentation, targeting and positioning strategies as well as the use of lifestyle, demographics, psychographics and cultural data.

CIS 414 Current Issues in Advertising: The aim of this course is to expand students' knowledge and understanding of advanced concepts of advertising, and their application to international marketing communication campaigns. The course investigates the effects of postmodern cultural context on advertising design and implementation, putting emphasis on the use of gender stereotypes and emotional appeals (fear, humor, warmth, surprise, sexuality and nostalgia) in advertising. Concepts such as postmodern condition, fragmentation, and symbolism, are presented. Current issues and trends in advertising, such as product placement and social media marketing communications, are discussed and analyzed. Students are advised to take as prerequisite the course CIS 332 "Principles of Advertising".

CIS 420 – Political Economy of the Internet: This course aims to explore the processes that shape the current operational structure of the Internet and New Media. Through the study of contemporary debates on property issues, regulation and governance of cyberspace, students will be able to form their own opinion on crucial issues such as the phenomenon of horizontal and vertical ownership concentration in New Media, the resistance of "gift economy" on the Internet, the production and distribution of content by the same users, copyright issues, open source products and services etc. Prerequisite: CIS 310 Communications Policy of the European Union.

CIS 430 Digitization of Cultural Heritage: This course deals with the issues and current trends regarding the digitization, annotation and preservation of analog audiovisual material and documents (manuscripts and others). The aim is to expose students to all stages of the creation of easily indexed and searchable digital collections form analogue material. In this framework the students are first taught the mathematical background of analog to digital conversion of photographs, audio, video, manuscripts and 3D objects. In the next step the annotation process is examined, both theoretically and in practice using appropriate software tools for structured knowledge representation. OCR is also examined in this stage. Finally, the basic design of cultural heritage portals is dealt with and good practices are given in the framework of specific digitization projects that took place in Cyprus and Europe the last twenty years.

CIS 431 Digital Media Literacy: This course examines the changing concept of literacy in modern society in light of the changes brought about by digital communication media. According to the European Commission, media literacy targets the understanding and the development of skills for accessing, analyzing, and evaluating modern media messages, which are critical for fostering democratic participation in the Knowledge Society. In the context of this course, students will approach the topic of media literacy critically and will engage in activities that will support the development of an informed understanding of the topic. Through a variety of case studies students will examine the cognitive foundations of digital literacy, analyze the communicative and technologically-driven strategies that help shape modern media messages, and discuss the impact of these messages on aspects of human society.

CIS 432: Collective / Internet Intelligence: This module has two purposes: First, to help towards a better understanding of how the information is collected over the Internet, and second to teach students how to use the collected information on building Internet applications including e-Marketing. Initially, students will have to come across different tools / methods of collecting and analyzing online information, including Google Analytics, Google adWords, Google Insights, e-Surveys, Website Insights and Social Media Insights. In addition they will have to become familiar with terms like Searching, Filtering, Ranking and Optimization. In the next phase, students will be taught how to use the collected information in order to achieve marketing objectives over the Internet. This will include optimization of HTML code and

development of intelligent e-Marketing campaigns. Data Mining, Internet Marketing, Search Engine Optimization, Social Media Marketing, Email Marketing, Blogs, Viral Marketing, e-Metrics, e-Business and e-Privacy are topics that will be covered in this module.

CIS 433 Social Interaction and Locative Media: Locative Media (LM) may be defined as communication media associated with specific locations. This module will investigate the process of convergence of physical and digital information, primarily accessible by means of mobile handheld devices such as smartphones and tablets, from an interdisciplinary perspective. Prospective students will be introduced to the broad theoretical, epistemological, and methodological issues of LM research and content design and creation, with a particular focus on the transformation of social activity and mediated communication brought about by LM (by virtue of location awareness) in the context of the mediated city.

CIS 436 Thematic Seminar: This course has been introduced in the program as substantively complementary to the rest of the courses. It is an open-subject seminar aiming at an in-depth understanding of the corresponding issues. It will be offered to satisfy student needs for elective courses, subject to the availability and interests of the teaching staff. Possible themes will be related to the research interests of faculty members and may be theoretical or applied, general or special. As a fourth level course, the seminar will attempt to produce learning outcomes predominantly at the levels of analysis and synthesis, as well as at the level of critical thinking.

CIS 450 Research Design: The Research Design course develops the students' abilities to conduct academic research and formulate a relevant thesis proposal. In order to do that the students are exposed to academic reading and analysis of scientific articles, and are taught basic techniques of (a) conducting requirement analysis and literature review for research projects, (b) organizing and performing basic research, (c) analyzing and presenting research findings, and (d) writing academic articles and research reports. At the end of this course, students will be able to: (i) identify and formulate a relevant and realistic research problem within the fields of communication, internet studies and informatics, (ii) identify and formulate relevant objectives (main and specific), (iii) choose appropriate study methods (qualitative /quantitative / desk study / experimental), (iv) conduct a relevant scientific literature search, (v) formulate a consistent and clear research proposal and (vi) give short presentations supporting a research proposal.

CIS 453 Thesis: In collaboration with their supervisor, students will develop and implement a research project related to their chosen direction and academic interests.

FACULTY OF APPLIED ARTS AND COMMUNICATION

DEPARTMENT OF MULTIMEDIA AND GRAPHIC ARTS

Academic Staff

Panayiotis Zaphiris
Associate Professor, Dean of School of Fine and Applied Arts

Andreas Lanitis
Associate Professor, Head of Department of Multimedia and Graphic Arts

Antonis Danos
Assistant Professor

Evripides Zantides
Assistant Professor

Nicos Souleles
Assistant Professor

Theopisti Stylianou-Lambert
Assistant Professor

Aspasia Papadima
Assistant Professor

Andri Ioannou
Lecturer

Andrew Laghos
Lecturer

Despina Michael
Lecturer

Charalambos Poullis
Lecturer

Eva Korae
Special Teaching Staff

Aekaterini Mavri
Special Teaching Staff

Thiseas Mouzouropoulos
Special Teaching Staff

Aggelos Panayides
Special Teaching Staff

Nicos Synnos
Special Teaching Staff

Niki Louizidi
Visiting Professor

Doros Polydorou
Visiting Lecturer

Department of Multimedia and graphic Arts

Major technological developments of the past years have brought about significant changes in modes of communication and information dissemination, resulting in the use of multimedia and Graphic Arts has established itself among the most effective ways of disseminating information. The vision of the Department is to develop and consolidate as an international centre of research and learning in Multimedia and Graphic Arts. The program of the Department's study provides a specialized scientific training in the specialties of Multimedia and Graphic Arts. During the first two years (four semesters) , students gain a comprehensive knowledge of objects and simultaneously have able restricted elective courses on the direction of interest. The directional selection made in advance, in declared preference for curricula on the part of potential students, within the Pancyprian Examination.

During the third and fourth year, students follow specialized courses in Multimedia or Graphic Arts. In the final year of study, you will have the opportunity to work in companies operating in relevant fields.

TABLE A: DETAILED STUDY PROGRAMME-1ST, 2ND,3RD AND 4TH YEAR			
FIRST YEAR			
FALL SEMESTER			
1ST Semester			
Multimedia Concentration		Graphic Arts Concentration	
	ECTS		ECTS
MGA 100 Drawing, Colour and Composition I	5	**MGA 100** Drawing, Color and Composition I	5
MGA 105 Introduction to Graphic Design	5	**MGA 105** Introduction to Graphic	5
MGA 110 Introduction to Multimedia	6	**MGA 110** Introduction to Multimedia	6
MGA 120 Design Theory and Methodology	5	**MGA 120** Design Theory and Methodology	5
MGA 130 History of Art I	5	**MGA 130** Art History I	5
ENG 122 English for Academic Purposes	4	**ENG 122** English for Academic Purposes	4
Total	30	**Total**	30
SPING SEMESTER			
2nd Semester			
Multimedia		Graphic Arts	
	ECTS		ECTS
MGA 101 Principles of two- Dimensional Design	5	**MGA 101** Principles of two-Dimensional Design	5
MGA 102 Principles and History of Typography	6	**MGA 102** Principles and History of Typography	6
MGA 112 Photography I	5	**MGA 112** Photography I	5
MGA 131 Art History II	5	**MGA 131** Art History II	5
MGA 140 Computer Science	5	**MGA 140** Computer Science	5
ENG 171 English or Multimedia and Graphic Art Studies	4	**ENG 171** English or Multimedia and Graphic Arts Studies	4
Total	30	**Total**	30

SECOND YEAR

FALL SEMESTER			
3rd Semester			
Multimedia		**Graphic Arts**	
	ECTS		ECTS
MGA 205 Digital Media Design	5	**MGA 205** Digital Media Design	5
MGA 211 Animation I	5	**MGA 211** Animation I	5
MGA 212 Photography II	5	**MGA 212** Photography II	5
MGA 230 Modern and Contemporary Art and Theory	5	**MGA 230** Modern and Contemporary Art and Theory	5
MGA 240 Human- Cantered Design	5	**MGA 240** Human-Cantered Design	5
MGA 241 Design and Computing	5	**MGA 201** Applications for Typographical Design I	5
Total	30	**Total**	30

SPRING			
4th Semester			
Multimedia		Graphic Arts	
	ECTS		ECTS
MGA 200 Principles of three-dimensional Design	5	**MGA 200** Principles of three-dimensional design	5
MGA 202 Image and Meaning	5	**MGA 202** Μάθημα Περιορισμένης Επιλογής (Βλ. Πίνακα Γ)	5
MGA 213 Animation II	5	**MGA 213** Animation II	5
MGA 214 Digital Sound and Image	5	**MGA 214** Digital Sound and Image	5
MGA 243 Programming for Multimedia	5	**MGA 203** Visual Communication	5
MGA 215 Interactive Multimedia	5	**MGA 204** Applications of Typographical Design II	5
Total	30	**Total**	30

THIRD YEAR			
FALL SEMESTER			
5TH Semester			
Multimedia		Graphic Arts	
	ECTS		ECTS
MGA 310 Three-dimensional Modelling and Animation I	6	**MGA 310** Three-Dimensional Modelling and Animation I	6
MGA 320 Design for all	6	**MGA 320** Design for all	6
MGA 312 Film Production	6	**MGA 300** Graphic Design and Production	6
MGA 318 Interactive Multimedia II	6	**MGA 301** Applications to Illustration	6
MGA 340 Website Design and Development	6	**MGA 302** Page Design and layout	6
Total	30	**Total**	30
SPRING SEMESTER			
6th Semester			
Multimedia		Graphic Arts	
	ECTS		ECTS
MGA 314 Multimedia Project Management	6	**MGA 303** Graphic Design and Advertising	6
MGA 315 Three- Dimensional Modelling and development	6	**MGA 304** Information Design	6
MGA 316 Computer Games Design and Development	6	**MGA 321** Packaging Design	6
MGA 341 Web design and Development II	6	**MGA 340** Website Design and Development I	6
Restricted elective course (see table B)	6	Restricted elective course (see table B)	6
Total	30	**Total**	30

FOURTH YEAR			
FALL SEMESTER			
7TH Semester			
Multimedia		**Graphic Arts**	
	ECTS		**ECTS**
MGA 410 Multimedia Applications	**6**	**MGA 400 Management of Graphic Projects**	6
MGA 450 Internship	**9**	**MGA 450 Industrial Placement**	9
MGA 460 Research Methodology in Multimedia and Graphic Arts	**6**	**MGA 460 Research Methods in Multimedia and Graphic Arts**	6
Restricted elective course	**6**	**Restricted elective course (see table B)**	6
Elective course	**6**	**Elective course**	6
Total	**33**	**Total**	**33**
SPRING SEMESTER			
8TH Semester			
Multimedia		**Graphic Arts**	
	ECTS		**ECTS**
MGA 461 Thesis	**15**	**MGA 303 Thesis**	15
Restricted elective course (see table B)	**6**	**Restricted elective course(see table B)**	6
Elective course	**6**	**Elective course**	6
Total	**27**	**Total**	**27**

* Courses offered by other departments as elective and not another prerequisite course.

TABLE B: RESTRICTED ELECTIVE COURSES-3RD AND 4TH YEAR	
	ECTS
MGA 305 Motion Graphics	6
MGA 317 Multimedia Data Representation	6
MGA 322 Product Design	6
MGA 330 Visual culture	6
MGA 331 History and theory of Cinematography	6
MGA 332 Art Philosophy	6
MGA 333 Aesthetic and Political Issues in Contemporary Art, Theory and Visual Culture: From Postmodernism to Globalization	6
MGA 342 Databases for multimedia	6
MGA 343 GIS (Geographical Information Systems)	6

MGA 402 History and Evolution of Graphic Design	6
MGA 403 Books design	6
MGA 404 Experimental Image, Text and Sound	6
MGA 405 Semiotics and Visual Communication	6
MGA 411 Three-Dimensional Modeling and Animation	6
MGA 412 History and Evolution of Interactive Media	6
MGA 413 Multimedia Evaluation Methodologies	6
MGA 416 Film Production II	6
MGA 433 Museums and Society	6
MGA 434 Theory of Photography	6
MGA 430 Contemporary Theory and Criticism of Art	6
MGA 431 Electronic Media and Visual Arts	6
MGA 432 Sociology of Art	6
MGA 440 Speech and Image Processing	6
MGA 441 Virtual Reality	6
MGA 442 Innovative Technologies	
MGA 490 Special Topics in Multimedia and Graphic Arts	
MGA 491 Printmaking	
MGA 492 Bookbinding	

Code XXX	Department Modules by Topics
First Digit=Year	Code x0x: Graphic Art Modules
Second Digit: Topic	Code x1x: Multimedia Modules
Third Digit: Number	Code x2x: Design Modules
	Code x3x: History courses- Art Theory
	Code x4x:Computer Science Modules
	Code x5x: Internship
	Code x6x: Thesis
	Code x9x: Various Modules

COURSE DESCRIPRION

ENG 122 English for Academic Purposes

A compulsory, three-hour session, accredited with four credits. It focuses on developing skills such as understanding and analyzing texts, note taking, proper handling of the written word, practicing in aural perception and the use of spoken language through academic activities (discussions, lectures and oral presentations), through the use of new technologies (Computer Assisted Language Learning).

ENG 171 English for Multimedia and Graphic Arts Studies A compulsory, three-hour session, accredited with four credits. It focuses on teaching English for specific academic purposes. The material gives students the opportunity to become familiar with different types of writing (process description, comparing and contrasting, analyzing causes and effects and classification) in the cognitive field of Multimedia and Graphic Arts. In addition, students develop their listening comprehension and oral discourse through discussions, oral presentations and develop sufficient vocabulary to be able to express themselves with a sufficient degree of clarity, fluency and spontaneity.

Prerequisite: ENG 122: English for Academic Purposes

ESD 100 Content Creation I

Content Creation I, aims to make students familiar with the process of designing digital content for the Web. Web content appears in various types: text (which is by far the most common form), vector graphics (logos, icons, banners, diagrams), digital images (photographs and other visual representations using millions of colors), digital sound (spots, interviews), digital video and animations. The students will learn the basic characteristics of these types of content and how to create them using the appropriate software tools. Following that, they will be taught the basic principles of web page layout design using templates and stylesheets. The course concludes with an introduction to the creation of interactive digital content using client-side programming with aid of Javascript.

ESD 132 Introduction to new media

This course is an introduction to the historical evolution and contemporary characteristics of the information age. Topics to be examined in the course include: important developments in media (telecommunication, television, radio, digitization, Communication and Information Technologies and the internet), the way mass media developed from a historical perspective, both at a national and international level, and the concept of a technology-mediated communication environment. In the last part of the course models of internet-mediated interaction (Web1.0, Web2.0 and Web3.0) will also be examined. The course includes a lab component, part of which takes place during one of the two weekly meetings.

MGA 100 Drawing, Color and Composition I

This course aims to familiarize students with drawing and composition in relation to color. The teaching includes both the practical and the theoretical level and is divided into two parts. In the first part the course begins

with the introduction of various approaches to theory and the psychology of color. Afterwards, basic concepts about color and chromatic relations are defined and explained, including chromatic action. Attention is paid on the relative and dependent quality of the color, indicating the formalist properties. The second part examines color in correlation with the visual expression in art. Aim of this course is to introduce students to color and the composition as a conceptual proposal and to develop skills for its successful implementation.

MGA 101 Principles of Two-Dimensional Design

The course aims to give students the opportunity to explore the elements and principles of the design, to experience the use of graphic arts material through experimental methods and to deepen their approach for resolving two-dimensional design problems. Design elements, such as line, tone, form, figure-space ratio and proportions are considered. An introduction to the various techniques of graphic design is provided and ways in which the meaning is generated and influenced by the juxtaposition of image and text are analyzed. Moreover, the course aims to inform and familiarize students with topics on visual perception and aesthetics.

MGA 102 Principles and History of Typography

In this course students learn the basic principles and history of typography, the emergence, evolution and reproduction of writing, before and after the advent of printing. They study the anatomy of letters, they get trained to recognize and analyze basic types of fonts, and they learn to recognize the importance of typography in visual communication. In addition, they explore their expressive abilities, with the exclusive use of letters in the design of artistic and experimental applications: typography replaces the image in the transmission of meaning. Emphasis is given to readability and creativity factors, as well as the correct sequence of the creative process.

Prerequisite: MGA 101: Principles of Two-Dimensional Design

MGA 105 Introduction to Graphic Design

This course introduces students to the basic principles, processes and tools of graphic design. It includes an overview of the basic design elements, targeted for graphic design, such as shape, space, composition, color, typography, photography, basic principles for text layout and the design for various print and digital media. The planning process involves visualizing concepts, developing album (scrapbook) and mood board, research and development of optical concepts, and the professional presentation of graphic works. Students are expected to acquire their own toolbox with the right tools graphic design such as pencils, brushes, markers, paints, chisels etc. Upon completion of this course, students will have completed a personal file that demonstrates an understanding of the principles of design and inform their further development of their studies. The laboratory part of the course is familiarity with software, which may be necessary in later academic and professional careers.

MGA 110 Introduction to Multimedia

The course aims to familiarize students with the design of applications in the broad area of multimedia. At first, multimedia technologies, ways of digitization, processing, storage and reproduction of the most important instruments (eg, audio, image and video) are presented. Then, the methodology of design analysis and implementation of multimedia applications is developed, taking into account all the operating factors of the produced system. Moreover, issues concerning the aesthetic and social dimensions of multimedia and of media in general are analyzed. The course includes practice in which the students are familiarized with multimedia applications software development.

MGA 120 Design Theory and Methodology

The course is a basic introduction to design theory and methodology concepts. The educational objective is to familiarize students with the design and to raise their awareness as to its scope and implications. The backbone of the course is based on the combined application of various techniques for the exploration of a topic and the development of ideas. Students are provided with the appropriate tools which will help them evaluate both the work of other designers, but also of their own work as future designers. After completing the course, students realize that the design is a science primarily based on planning, work and research, and that talent and creativity are enhanced only through the application of those principles.

MGA 130 Art History I

A general course of cultural history. Examples of “artistic creation” (with emphasis on Western culture) are analyzed, starting from prehistory up to the late European Middle Age. It consists of a series of "episodes" of the history of human creation, in which nowadays we refer to as “art”. Objects, images and buildings are examined. Emphasis is given to the intentions and reasons behind their creation, as well as to their importance and use by / for the people from whom and for whom they were constructed. The course examines the ways in which these creations embody the ideological, social, political and financial composed of their time.

MGA 131 Art History II

A general course that teaches the history of European art, from early Renaissance to the early 20th century. A series of historical periods and "movements» is examined, mostly in chronological order. Emphasis is paid in painting, sculpture and architecture. The analysis of the above, include both formalistic characteristics and developments, and the wider cultural context within which the various works of art, monuments and buildings were created. Moreover, the way the "artistic creation" embodies and expresses the ideological, social, political and economic composed of each era and how, it influences and simultaneously contributes to it, is analyzed.

Prerequisite: MGA 130: Art History I

MGA 140 Computer Science

The course is a basic introduction to computer science issues, so that students become familiar with the basic concepts related to the

operation and limitations of the computers' hardware and software. Particular emphasis is placed on IT issues directly related to multimedia and design. Specifically, the presented issues include presentation of the structure and function of computer devices, storage and representation of different types of data in digital form, operation of the software system, introduction to programming using flowcharts and pseudocode, operating systems, computer networks, information systems and computer applications in multimedia and graphic arts. The laboratory part of the course is designed to familiarize students with various applications, which are considered necessary in their subsequent academic and professional careers. Specifically, students are trained in the use of design software, page layout, image editing and web design software.

MGA 141 Design and Computers

The aim of this course is to familiarize students with computer programming paying emphasis on technical programming used in design and illustration. As part of the course program design techniques such as flowcharts and pseudocode, are widely used. Furthermore, some basic data types and the most important programming structures such as the assignment, selection and repetition, are presented. Students also become familiar with the definition and call of procedures, with basic concepts of object and with programming techniques of interactive applications. During the laboratory part of the course, students become familiar with programming techniques with the use of interactive programming tools in design and three-dimensional illustration applications.

Prerequisite: MGA 140: Computer Science

MGA 200 Principles of Three-Dimensional Design

The course aims to encourage students to experimentally approach design and gain the ability to work with various instruments and methods. It deepens to the process of design research, with emphasis on the conceptual understanding and abstraction as means of design generation. The course is based on the extensive use and combination of materials that assist the three-dimensional design, touching the boundaries of sculpture, installation and performance art. Another important objective of this course is to develop a creative, critical and investigative way of thinking since students are asked to judge both their own work and that of their classmates. The emphasis is on transfer of an abstract idea into a dynamic design proposal.

Prerequisite: MGA 120: Design Theory and Methodology

MGA 201 Applications of Typographical Design I

This course explores current applications and design rules of typography in a macro / micro level, whilst using audio and video in print and digital form. Having understood the origin and principles of typography and design, students develop and evolve organizational, conceptual, design, creative and expressive skills with typography as the main broadcaster of messages. The principles of early prioritization of information in text and image, as well as the principles of composition and design in

multimedia and graphic design, are thoroughly examined. Emphasis is placed on contemporary history of typography and design movements that have influenced the graphic design. This course explores the use of modern electronic instruments and software applications as tools for typography, while considering practical, temporal, environmental and technical constraints through specific typographical, theoretical and practical studies.

Prerequisite: MGA 102: Principles and History of Typography

MGA 202 Image and Meaning

This course examines how the image occurs and is constructed in relation to typography to broadcast the audio-visual communication. Students are introduced to basic theories of semiotics, and are encouraged to edit the image in conceptual and creative level, for the reception, perception, production and transmission of specific messages. Emphasis is placed on the process of converting the spoken or written word into visual form, and the application of the image and signs construction / deconstruction theory to specific graphic design problems. Students explore image forming techniques and changes in reception, creation and understanding of their meaning in relation to the text / typography, sound and context within which they transmit messages.

Prerequisite: MGA 102: Principles and History of Typography

MGA 203 Visual Communication

This course introduces and expands the applications of graphic design and multimedia, as well as their role in modern society. Through international and local examples it examines the history, evolution, the necessity for and the importance of the visual identity for products and organizations. It focuses on designing logos and marks for printed and digital applications and in the role and process followed to establish a visual identity. Students grapple with specialized and complex design problems that require conducting research and devising corporate identity applications in digital and printed two-dimensional or three-dimensional design.

Prerequisite: MGA 102: Principles and History of Typography

MGA 204 Applications of Typographical Design II

This course is the sequel to the Applications of Typographical Design I course, and examines current applications of typography by elaborating the basic principles of typography, the prioritization of information in text and image, the composition and design in multimedia and graphic arts applications. The course explores and develops the capacity to translate and transmit messages through contemporary aesthetic language code by focusing on typography. It introduces the methodology of the development of experimental thought and perception, in order to enable students to combine both image and meaning in experimental applications involving multimedia and graphic arts. Furthermore, the course studies and analyzes examples within the field of multimedia and graphic design, which overturn conventional thinking and push the boundaries of creativity and aesthetic perception in new directions.

Prerequisite: MGA 201: Applications of Typographical Design I

MGA 205 Design for digital media

This course is an introduction to the design and creative applications for the graphical user interface and digital media. This course looks at the graphic communication between new technologies, creativity, aesthetics and innovative design in interactive media as well as the mediation of graphic design from one digital communication medium to another. Additionally, students learn the theory of various types of digital design as well as what the latest tools are and how to use them. Particular emphasis is placed on exploring and solving design problems associated with interface design, digital design and the application of graphic design in various digital media.

MGA 210 Photography I

Photography I is an introductory course in basic photographic skills. Students get to know the basic functions of a manual (D)SLR camera (film or digital) and familiarize themselves with relevant technical subjects (such as lenses, ISO sensitivity, exposure etc). Also, students get a taste of black and white development from film negatives in the darkroom. The emphasis is on photography as a form of art and communication. Practical issues are complemented with theoretical presentations as well as exercises and individual projects. Students are expected to get to know the work of well-known photographers and explore their own personal style.

MGA 211 Animation I

This course offers a historical, theoretical and practical approach in the field of animation. The historical and theoretical approach is achieved by the presentation of animation films and other visual material and by investigation and analysis of the key concepts of film animation. The practical approach aims to develop design and presentation skills for the pre-production stage of the animated film and techniques for the production of two-dimensional hand drawn animations for multimedia applications.

MGA 212 Photography II

Photography II is a theoretical and practical photographic course. The theoretical part includes presentations and analysis of main photographic concepts and issues. The practical part includes intensive work on one photographic project which results in a photography book. Students are expected to develop a unique photographic project which will be published in the form of an artist's photobook.

Necessary equipment: SLR or DSLR camera

Prerequisite: MGA 210: Photography I or grant permission by the instructor

MGA 213 Animation II

The course is a continuation of Animation I and aims to strengthen the theoretical process of developing ideas for film animation and their practical application. Students are taught stop motion animation related processes, like the techniques of pixilation, puppet animation and cut-out animation. They are introduced to animation timing, i.e. rhythm of introduction and movement of elements, and the use of graphical methods to show action, emotion and storytelling. Emphasis is given on the directing

of short films, the use of animation techniques, the experimental process, the behaviour and performance of graphic elements and the expressive and creative results through the construction of short animation films. In the theoretical part, time is dedicated for the presentation and analysis of works by animation artists and filmmakers.

Prerequisite: MGA 211: Animation I

MGA 214 Digital Sound and Image

The aim of this course is to provide students with advanced theoretical and practical background in audio and video. Featured sections: digitization, storage, processing and transmission of audiovisual productions. The laboratory part includes familiarity with techniques covering the whole range of techniques presented in the theoretical part of the course.

Prerequisite: MGA 110: Introduction to Multimedia

MGA 215 Interactive Multimedia

The course focuses on the design and development of interactive multimedia applications. Students examine and evaluate contemporary interactive multimedia applications and acquire practical experience in the use of multimedia authoring tools through a series of hands-on activities. The course covers the use of a scripting language for the implementation of interactivity in multimedia applications. Students focus on the development of their own interactive multimedia application for CD or the web.

MGA 230 Modern and Contemporary Art and Theory

A general lesson which examines western art (mainly in Europe and the U.S.), from the early 20th century to the present day. It examines developments from the early ("historical") modernism to the "high" modernism in the mid-20th century, and the transition to modernism and contemporary artistic expression. Various artistic "movements", concepts and theories, mostly in chronological order are being analyzed. Emphasis is given on painting, sculpture, photography, 'environmental' and representational art. It examines both the formal and theoretical characteristics and related concepts, as well as the broader cultural and ideological environment in which art, artistic events and theories are created and developed.

Prerequisite: MGA 131: Art History II

MGA 240 Human-Centered Design

The course introduces the human-centered design methodologies. The aim of this course is for students to assess the importance of the user in the design of interactive systems and to develop skills in the use and application of special methods where the user is the center of the design decisions. Moreover, the course enhances individual and collective skills to solve design problems. Upon successful completion of this course, students will be able to gather useful information about users and their activities through observation or systematic research, develop skills in evaluating existing systems and critical thinking on the use of objects, create descriptions of user needs with scenarios and personas, demonstrate ability to create low-fidelity prototypes, be full aware of the importance of

evaluation systems and be able to conduct assessments with or without users, be able to carry out a heuristic evaluation of an existing system.

Prerequisite: MGA 110: Introduction to Multimedia

MGA 241 Design and Computing

Introduction to computer programming with emphasis on programming techniques used in design and illustration. As part of the course students get familiar with systematic program design methodologies and algorithms using flowcharts and pseudocode. Basic and complex data types and programming techniques such as assignment, selection and repetition are presented. Students also become familiar with the definition and call procedures and basic concepts of object-oriented programming. The laboratory part of the course, students become familiar with programming techniques with the use of interactive programming tools to design applications and three-dimensional interactive animations.

Prerequisite: MGA 140 Computer Science

MGA 243 Programming for Multimedia

The main objective of this course is to familiarize students with programming techniques in the context of multimedia applications. More specifically: - Learning basic programming principles, algorithmic thinking, and data structures in the context of multimedia application design and development. - Design, implementation, testing and elimination of errors in multimedia applications. - Evaluation of various solutions to a given programming problem. - Introduction to a high-level programming language using various multimedia libraries for the processing and reproduction of text, audio, image and video.

Prerequisite: MGA 141: Design and Computers

MGA 300 Graphic Design and Production

The course aims at analyzing and understanding the theory and processes relating to graphic design and printing reproduction, such as design specifications, preparing final layout as well as pre- and post- printing processes. Within a historical, theoretical and aesthetic context, the different printing processes, technical procedures, technical and visual features, materials and modern technology of printing are explored and analyzed, while discussing their use and implementation. The module supports printing breeding methods through creative print design projects. Alongside, issues relating to the organization of the design process, such as printing materials, paper, specialized techniques of graphic design, costing, practical and environmental constraints are discussed.

Prerequisite: MGA 203: Visual Communication and MGA 204: Applications of Typographical Design II

MGA 301 Applications to Illustration

The course examines the applications, the importance and role of illustrations in various aspects of graphic arts. The role of illustration is considered as an important factor in visual communication as an effective means of expression in graphic design. The course encourages a

variety of approaches and styles through creative applications, from simple to complex linear sketch experimenting, exploring the latest developments in modern design and electronic technology, while taking into account parameters and constraints that affect the process of creation.

Prerequisite: MGA 202: Image and Meaning and MGA 204: Applications of Typographical Design II

MGA 302 Website Design and Layout

This course explores and analyzes the content and objectives of magazines publications having aesthetic completeness and functionality of configured pages as the principal axis of the module. Expertise in the use of graphical grid, the visual hierarchy of information in the organization and provision of information and text in concrete structures, in creative and functional application of visual information, using, simultaneously, photography, illustration, continuous text, information tables, printing etc is developed. We study the importance, purpose and meaning of speech and visual communication in the promotion and creation of editorial identity through researching lifestyle, daily life, habits, psychology, etc. of the consumers.

Prerequisite: MGA 203: Visual Communication and MGA 204: Applications of Typographical Design II

MGA 303 Graphic Design and Advertisement

The course studies the conceptual design and advertising. Students have the opportunity to implement a variety of methods for the exploration and development of novel, functional and creative advertising solutions, such as conceptual design, product, organization, social messages, etc. Basic concepts of design, aesthetics and ethics in international advertising are analyzed, and issues related to the desired audience of the respective case are examined. Moreover, we study the configuration and design of advertising campaigns, through which the proposed products, organizations, etc. form a systematic and enduring identity that appeals to their audience. Through specific work assignments which are treated as real, research skills and knowledge are developed, which govern the relationship between client and graphic designer.

Prerequisite: MGA 202: Image and Meaning and MGA 302: Web Design and Layout

MGA 304 Information Design

This course explores the use of typography and symbols for design information to complex problems graphic communication. Students develop and evolve organizational, conceptual, design, creative and expressive skills, preparing and designing signage systems, information, navigation and mapping portfolio in print and digital form. The principles and history of design information as well as economic, technical, environmental and practical factors that influence design decisions in the design information are investigated. Reference is made in modern analysis and applications, as well as alternative design information such as: digital interactive applications, three-dimensional visual information design, digital signage and digital charts. At the same time, students come into contact with real design

assignments, and integrate their work in the community.

Prerequisite: MGA 203: Visual Communication and MGA 204: Applications of Typographical Design II

MGA 305 Motion Graphics

This subject explores the contemporary digital applications of motion graphics through the combination of sound, image and typography. During this course, the students are asked to use their conceptual knowledge, creativity as well as their organizational and design abilities in order to come up with creative solutions using this dynamic form of communication. This course focuses on educating and demonstrating the unique methodologies that are required by the subject of motion graphics. Some of the applications that this course deals with are: moving image, title sequence, branding themes, broadcast advertising, motion graphic identities and motion graphics for the web. Finally, the students will develop a dynamic visual mechanism which is explores the motion and the mood in conjunction with creative and innovative ways of using sound, image and typography.

Prerequisite: MGA 204: Applications of Typographical Design II, MGA 205 Design for Digital Media

MGA 310 Three-Dimensional Modeling and Animation I

The aim of this course is to present basic principles on the construction of three-dimensional modeling and animation. There is a theoretical and practical approach, which aims at teaching basic modules such as: structure and features of three-dimensional modeling, design and construction of three dimensional models and sites, changes in lighting, color, movement and dimensional deformation models. The course includes practical fieldwork in which students are familiarized with three-dimensional models design and animation software.

Prerequisite: MGA 213: Animation II

MGA 312 Film Production

The course presents all the stages of film production. It examines the role and applications of technology and arts, such as photography, music, etc., to more complex art. Emphasis is given in directing, the script, the aesthetic and other important aspects of film production. Films of significant artists are projected and the various types of film are examined. The background presented is applied in a practical project.

Prerequisite: MGA 214: Digital Sound and Image

MGA 314 Multimedia Project Management

Introduction to Project Management related to the development and management of multimedia projects. All steps of the design cycle of interactive works are analyzed in detail. As part of the course, students will develop a project on media so that they will familiarize with all the steps of the design cycle and project management. The knowledge and experience that students will acquire in this course will give them the necessary skills to be able to run and manage individual or team multimedia projects.

Prerequisite: MGA 320: Design for All or grant permission by the instructor

MGA 315 Three-Dimensional Modeling and Animation II

This course is a continuation of the Three-Dimensional Modeling and Animation I course. It includes sections relating to the construction of three-dimensional modeling, three-dimensional space, animation and special effects, with the aim of their multimedia application. We investigate and analyze in theoretical, aesthetic and practical level, the main concepts of digital three-dimensional animation, the production processes, experimental applications and methods of projection. At the laboratory part of the course, students use software for the application and combination of various techniques for creating an experimental short film / video art with three-dimensional animation.

Prerequisite: MGA 310: Three-Dimensional Modeling and Animation I

MGA 316 Computer Games Design and Development

The purpose of this course is to present the methodology and techniques of designing and developing computer games. The course includes the following topics: overview of the historical development of computer games, games categories and development stages of computer games including initial planning, design scene and characters, script and formulate rules of the game, the game's development, control operation and evaluation of the game. The course includes practical work in which students engage in experimental development of computer games.

Prerequisite: Grant permission by the instructor

MGA 317 Multimedia Data Representation

The course aims to familiarize students with techniques used to display data using the most appropriate means for the case. Within this context, the usage of audio, image, video and other alternative media for data presentation, is illustrated. An important part of the course focuses on the selection and combination of the most appropriate tools to support the specific circumstances of different imaging data, characteristics of the users and the general environment of the display.

Prerequisite: MGA 214: Digital Sound and Image or grant permission by the instructor

MGA 318 Interactive Multimedia II
This course comprises of two parts. The first part is a follow up of Interactive Multimedia I course and has to do with the development of advanced interactive multimedia applications. The second part has to do with emerging technologies that can be used for interaction with multimedia applications. Several technologies will be covered such as kinects, touch surfaces, multi-touch tables, mobile devices, etc. In both parts we'll cover theoretical background of the corresponding concepts and put things in practice with development of interactive multimedia applications.
Prerequisite: MGA 215:Interactive Multimedia I

MGA 320 Design for All

This course discusses the concepts, the necessity, the principles and guidelines of design for all. Featured topics related to

information technology, communications and accessibility, accessible content, accessible entrance and exit systems, new processes, principles and examples of accessible human interaction and the computer, as well as design methods and techniques accessible to human-centered systems. Ethical, legal restrictions and guidelines, trade trends, standards and best practices on designing, are examined in relation to the global reality, always in the context of design for all. Finally, drawing accessible systems exercises are conducted and experiences related to accessibility are presented.

Prerequisite: MGA 240: Human-Centered Design

MGA 321 Package Design

This course studies the importance and usefulness of packaging design in the context of the modern market. We study both the two and three dimensional design of the packaging, paying attention both in form and in graphic application and the package production. Theory and semiotics of color and typography is developed, as well as methods to achieve color and printing differentiation and creating identity among disparate, almost similar and identical products. The creative application of typography and information systems to the design of a comprehensive proposal that meets the legal and practical requirements of modern packaging design is studied. Students have the opportunity to create innovative and functional packaging product data models that meet both in terms of design and of conceptualization the needs of the modern market and the target audience.

Prerequisite: MGA 300: Graphic Design and Production

MGA 322 Product Design

Presents the modern aspects of the design process of products. More specifically, the course deals with the possibilities of industrial design in the current era, the technology that the designer has at his or her disposal and the parameters to keep in mind throughout the process of design. Moreover, issues on longitudinal design, recycling products and materials as well as accessibility issues for all population groups are discussed. As part of the course, students will work in exercises of designing specific products and prototypes, thus solving real design problems.

Prerequisite: MGA 200: Principles of Three-Dimensional Design

MGA 330 Visual Culture

This course introduces students to contemporary theoretical practices which identify the visual reception in a broader cultural context. It examines the transition from sight to vision-"visualization"- and the different ways of visual reception ('visualization'), which generate respective modes of representation. It incorporates elements from various academic disciplines, including art theory, cultural criticism, media theory, psychoanalysis, sociology, etc., to examine the processes of visual material and the visual reception as an indirect ‘mediation’ process.

Prerequisite: MGA 230: Modern and Contemporary Art and Theory and/or grant permission by the instructor

MGA 331 History and Theory of Cinematography

This course is an overview of the history of cinematography, from

its birth until today. Cinema is considered both as an art and as a popular medium of mass entertainment. Important artists and theoreticians of cinematography are being studied. We explore artistic, ideological and sociological aspects of film production.

Prerequisite: MGA 230: Modern and Contemporary Art and Theory or grant permission by the instructor

MGA 332 Art Philosophy

This course examines some of the major theories concerning the art, the history of (mainly Western) philosophy, from Plato to modern times. From the original sense of aesthetics as intake through the senses, to the instantiation of a philosophical analysis of art, questions such as the nature and properties of the art (for example, the relationship with nature and / or the "reality", the validity of "information" that provides, etc.), the concept of beauty and its relationship with art, the properties of the artwork and the aesthetic "evaluation", as well as problems with the "meaning" of the work art and representation and illusion in art, are examined.

Prerequisite: MGA 131: Art History II or grant permission by the instructor

MGA 340 Web Design and Development

The course is an introduction to the principles of web design and development based on W3C web standards and specifications. During the first part of the course, students are taught how to hand-code web pages in HTML while combining various layout and formatting methods such as CSS. Following that, students are introduced to methods of enriching web page interactivity as well as user interface design and usability principles. Finally, the course touches upon several practices concerning website structure, search engine optimization as well as web validation tools that help generate accessible and compliant websites. Students are required to fulfill a series of hands-on exercises with emphasis on aesthetics and creative interface design.

Prerequisite: MGA 240: User Centered Design, MGA 205 Design for Digital Media

MGA 341 Web Design and Development II

This course extends the knowledge acquired from Web Design and Development I by moving on from static to dynamic websites. Students are introduced to client and server-side markup and scripting languages such as XML, JavaScript and PHP and learn the basics of databases, SQL and database management systems like MySQL. Additionally, students experiment with the new features and techniques introduced with HTML5. Combined with good layout and usability principles, all of these technologies can help create fully functional, usable, aesthetically pleasing and standards-compliant websites. Finally, the course aims to familiarize students with available/open-source Content Management Systems (CMS) for learning the basics of development, customization and maintenance of dynamic websites.
Prerequisite: MGA 340: Web Design and Development I

MGA 342 Databases for multimedia

The course aims to familiarize students with the basic principles of design and development of multimedia databases. In this context database architectures, database design techniques, structured query language (SQL) and management of multimedia

data are presented. Criteria that determine effectiveness for multimedia databases are also presented. During the practical part of the course, students become familiar with multimedia database design and development tools.
Prerequisite: MGA 341: Web Design and Development II

MGA 343 GIS (Geographical Information Systems)

As part of the course methodologies and techniques related to the development and use of GIS (Geographical Information Systems) in conjunction with multimedia data presentation are presented. The mian topics presented are: importance and uses of Geographic Information Systems, data collection and data entry, system design and data presentation.
Prerequisite: MGA 241: Design and Computers and/or grant permission by the instructor

MGA 400 Graphic Arts Applications In this course students learn the design, organization and importance of the portfolio, through which each student expresses and builds individuality and authenticity. Students prepare and practice in methods of presentation for academic and professional purposes using multimedia. Students also take part in local and international competitions and actively contribute constructively in the community, by promoting a wider understanding and
appreciation of graphic arts. In this course, students participate in activities where they have contact with real customers or bodies in order to realistically explore data resulting from such work. The course also assesses and takes into account the experiences and knowledge gained from the practice.
Prerequisite: MGA 450: Placement (as co-required) or grant permission by the instructor

MGA 402 History and Evolution of Graphic Design

The course examines the history of graphic design in the 20th century and early 21st. The different avenues of graphic design, such as printing design, advertising, illustration, methods of print reproduction are being studied and analyzed according to their basic characteristics. We study the process of graphic design through the recent history, emphasizing the major artistic and design movements that have influenced its development. Moreover, we consider the social, economic and political context of each era, the technological developments and the influence that they exerted in transforming the modern design style in graphic creation.
Prerequisite: Grant permission by the instructor

MGA 403 Books design

With an introduction and overview of the history and design of publishing books locally and internationally, this course explores the process and stages of production and promotion of books, looking at criteria such as the content of the text the author, the publisher selection of designer, the playback method and sales areas. Emphasis is given to the typographical design and ethical codes for book publishing, technical specifications and the different methods of binding. The corresponding theory, analysis and process is amended and presented for e-books.
Prerequisite: MGA 300: Graphic Design and Production or grant permission by the instructor

MGA 404 Experimental Image, Text and Sound This course encourages the resolution of communication problems by examining innovative and unconventional graphic solutions, using the image, text and sound. Focusing initially the research to particular cultural symbols (artists, writers, philosophers, designers, poets, media personalities, etc.), students present the work and their cultural influence, and are

asked to react to it, by creating a visual interpretation which will be presented in the form of public exhibition or event. Emphasis is placed on conceptual and creative approach and development of the proposed solution.
Prerequisite: Completion of the third years' core courses or grant permission by the instructor

MGA 405 Semiotics and Visual Communication This course explores the role of semiotics in optical communication. Drawing on the basic theories developed by Ferdinand de Saussure up to modern semioticians of structuralism and post-structuralism, this course explores the relationship that exists between image, text and sound as carriers of messages. We investigate and analyze examples from the field of graphic design and multimedia design (logos, magazines, newspapers, advertising, packaging and web), interactive media (video games, websites and mobile) film and television (news and television series). Students develop conceptual skills and apply explanatory models adopted by the semiotic, through theoretical and practical design assignments.
Prerequisite: MGA 300: Graphic Design and Production and MGA 303: Graphic Design and Advertisement

MGA 410 Multimedia Applications
The course includes the study of at least three different case studies related to multimedia applications. For each case under investigation, students should develop multimedia projects that are consistent with the requirements, specifications and schedules that will be set, and which will be incorporated into an electronic portfolio. The work for this course will be completed during the placement of students in related businesses. The cases that will be investigated, will involve multimedia applications in different fields such as education, advertising, management and e-commerce. The evaluation work will be based on written and oral presentation of the assignment that will be done in each case.
Prerequisite: MGA 450: Placement (as co-required) or grant permission by the instructor

MGA 411 Three-Dimensional Modeling and Animation
This course is a continuation of the Three-Dimensional Modeling and Animation II course, with particular emphasis on the design and animation of realistic and non-realistic three-dimensional characters. The course presents design techniques of imprinting thoughts, feelings change as well as synchronization techniques of speech mouth movements and animation techniques with synchronized gait and other movements. The background presented is applied in practical work.
Prerequisite: MGA 315: Three-Dimensional Modeling and Animation II or grant permission by the instructor

MGA 412 History and Evolution of Interactive Media
This course is an overview of the history and development of interactive media from birth to the present day. Interactive media are changing the way we live, work, and entertain ourselves. The course aims to familiarize students with tools, history, nature, properties and potential of interactive media, with which they can analyze and understand interactive experiences and articulate their own ideas for new experiences interactive media.
Prerequisite: MGA 316: Computer Games Design and Development or grant permission by the instructor

MGA 413 Multimedia Evaluation Methodologies
This course introduces a range of different evaluation methodologies of multimedia. It discusses the strengths, weaknesses and difficulties in implementing the methodologies. Students have the opportunity to gain practical experience in the

implementation of many of these methodologies and to get in touch with the latest developments in the field of multimedia, through the work of professionals and researchers.
Prerequisite: MGA 240: Human-Centered Design or grant permission by the instructor

MGA 416 Film Production II

The Film Production II course will be formed in such a way as to offer students with an insight into film production with a different approach; that is to provide students with the 'elasticity' of experimentation through various activities as well as the deepening of their knowledge through various in-studio processes. The course aims to encourage students to work on assignments as groups where they will collectively produce short films focusing on significant technical aspects of a movie, such as the power of sound, editing, shot selection etc. In addition guests from the world of cinema will be invited to analyze their own specialization throughout the course. This is a hands-on course, covering several stages of film production through exercises and tasks and by utilizing the new equipment purchased by the Department.
Prerequisite: PGT 312 Film Production I

MGA 430 Contemporary Theory and Criticism of Art

The course deals with developments in critical theory of recent decades, including post-structuralism, postmodernism, multiculturalism, and identity and race and gender theories, which have drastically changed the production and perception of art. It focuses on discussions of recent decades, and the role of the history, concepts and language in the creation, presentation and reception of art. It examines texts by philosophers, critics and artists in an effort to acquaint the students with the theory and the creation of art in the early 21st century.
Prerequisite: MGA 230: Modern and Contemporary Art and Theory or grant permission by the instructor

MGA 431 Electronic Media and Visual Arts

This course is an overview of electronic media in the visual arts in relation to the historical, technical, economic and social factors. Emphasis is placed on artistic practices that incorporate electronic media, particularly in the projects that go beyond the traditional area of the gallery, and invade "fields" of mass media modern technologies, such as the Internet, etc. Such creation is examined by stylistic, formalistic and theoretical perspective.
Prerequisite: MGA 230: Modern and Contemporary Art and Theory or grant permission by the instructor

MGA 432 Sociology of Art

The course deals with the different (religious, political, aesthetic, etc.) role of art in society through history, and focuses on the ways and reasons for / with which the artwork is produced, distributed and "consumed". We examine examples of the visual and performing arts and architecture, both from the "fine" art and from the folklore culture. It explores the interaction of art and society and the relationships between the various arts, as well as the role of technology in arts. Finally, it introduces students to important theoretical texts from the 19th century until today, in relation to these matters.
Prerequisite: MGA 330: Visual Culture or grant permission by the instructor

MGA 433 Museums and Society

Museums collect, present and interpret the past as well as help shape a national cultural and artistic identity of a country. This course examines the concept, role and function of contemporary museums and their historic development. Furthermore, it examines how technology

influences the presentation and interpretation of material culture.

MGA 434 Theory of Photography

This course examines the multiple roles of artistic, historic, commercial and vernacular photography. Special attention is given to the relationship between photography, truth and experience, the uses of photography, as well as how photography's aesthetics and context influences its meaning.

MGA 440 Speech and Image Processing The theoretical background, algorithms and practical speech and image processing techniques are presented. The course is divided into the following sections: Speech coding and processing, speech synthesis and recognition, image coding, basic image processing techniques, image transformations and image analysis strategies. As part of the course experimental speech and image processing systems are developed.

Prerequisite: MGA 214: Digital Sound and Image or grant permission by the instructor

MGA 441 Virtual Reality

The aim of this course is to present the issue of virtual reality as a modernist production of interactive multimedia systems for various applications. The aim of the course is to familiarize students with the principles, design methodologies, systems capabilities and limitations of virtual reality. The course is divided into two sections: the first section presents the historical background of the progression of virtual reality systems, some basic concepts of the subject and the material and the software required for the development of virtual reality. The second section includes the presentation, study and evaluation of visual reality modern applications .The course includes practical training where students are asked to develop experimental applications of virtual reality.

Prerequisite: MGA 315: Three-Dimensional Modeling and Animation II or grant permission by the instructor

MGA 442 Innovative Technologies

The course deals with innovative technologies that can be used in multimedia applications. The relevant scientific background of the different categories of these technologies and the basic principles underlying the operation are presented. In addition the design of contemporary multimedia applications with emphasis on innovative ways of interacting are presented.

Prerequisite: MGA 215:Interactive Multimedia I

MGA 450 Internships

Internships in companies and organizations that are active in the areas of multimedia and graphic arts. It is expected that through the internship, students will gain important experience related to real working environment. The whole process of internship will be supervised and evaluated by members of the Department of Multimedia and Graphic Arts.

Prerequisite: Completion of at least 150 ECTS or grant permission by the academic advisor

MGA 460 Research Methodology in Multimedia and Graphic Arts

The aim of this course is to familiarize students with the necessary procedures and techniques for the elaboration of the research projects on the disciplines of multimedia and graphic arts. This module includes the following sessions: types of research, research disciplines in multimedia and graphic arts, research topics' selection criteria, programming and management of the research project, literature review, data collection and analysis, development/design of deliverables, outcomes presentation, preparation of reports and articles, and evaluation of research projects. As part of the course, students are expected to prepare a research proposal on their dissertation.

Prerequisite: Completion of the third years' core courses or grant permission by the instructor

MGA 461 Dissertation

Dissertation on issues related to multimedia, graphic arts and visual culture. The aim of this course is for students to acquire experience on elaborating an independent assignment within the context of a specific project. The dissertation will be done under the supervision of a member of the Faculty. The evaluation will be based on three pillars: a written dissertation, the final piece of work and an oral presentation of the project.

Prerequisite: MGA 460: Research Methodology in Multimedia and Graphic Arts or grant permission by the academic advisor

MGA 490 Special Topics in Multimedia and Graphic Arts

This course deals with current issues in multimedia and graphic arts. The content is formed to include recent methodologies and cutting-edge issues in multimedia and graphic arts.

Prerequisite: Grant permission by the instructor

MGA 491 Printmaking

The course is an introduction to the art of Engraving and Printmaking in general. It aims at teaching students the techniques and methods of engraving, as well as the potential of art printing, as it has developed down to our times. Emphasis will be placed on the method of relief printing, in the category of which belong the more recent types of artistic printing.

MGA 333 Aesthetic and Political Issues in Contemporary Art, Theory and Visual Culture: From Postmodernism to Globalization

The course examines the transition from the twentieth century to the twenty-first, covering the period from the 1960s to today, by focusing on certain topics and issues. It begins with a general introduction to the relation between the aesthetic and the political, in the duration of the twentieth century, and it continues by looking at: the rise and hegemony of postmodernism; the 'end of art'; the challenge against postmodernism; the transitory 1990s; institutions: from the reshaping of the museums to the dominance of the biennials; technology and theory; the aesthetics of the everyday: mass media, communication, interactive art; post-colonial criticism and globalization theories; capitalism, conflict, and visual culture. The course includes weekly theoretical readings in both Greek and English, for facilitating student participation and discussion.

Prerequisite: MGA 230: Modern and Contemporary Art and Theory and/or grant permission by the instructor.

FACULTY OF ENGINEERING AND TECHNOLOGY

Department of Electrical Engineering, Computer Engineering and Informatics

Academic Staff

Takis Kasparis
Professor, Department Chair, EE Degree Coordinator

Andreas Andreou
Associate Professor, Department Vice Chair, CEI Degree Coordinator

Christakis Damianou
Associate Professor

Kyriacos Kalli
Associate Professor

Vassos Soteriou
Assistant Professor

Ioannis Lestas
Assistant Professor

Fragkiskos Papadopoulos
Lecturer (tenure-track)

Michael Michaelides
Lecturer

Michael Sirivianos
Lecturer (tenure-track)

Sotirios Chatzis
Lecturer (tenure-track)

Marios Kassinopoulos
Assistant Professor

Sotos Voskarides
Senior Lecturer

Avraam Georgiou
Senior Lecturer

Giorgos Kourtellis
Senior Lecturer

Christos Marouchos
Senior Lecturer

Paul Christodoulides
Senior Lecturer

Charalambos Chrysafiades
Assistant Professor

Eliza Loizou
Senior Lecturer

Ioannis Dimitriou
Lecturer

Christiana Panayiotou
Lecturer

Marinos Ioannides
Lecturer

Constantinos Ioannou
Senior Labs Tutor

Charalambos Koutsides
Post-doctoral Fellow

Elena Kakoulli
PhD Student, Postgraduate Fellow

Harris Michail
Special Teaching Staff

Kyriakos Deliparaschos
Special Teaching Staff

Constantinos Psomas
Research Fellow

Department of Electrical and Computer Engineering and Informatics

The aim of the Department is to train high level scientists and promote research and related applications in the fields of electrical engineering , of computers and associated networks the ICT industry software, modern telecommunications systems and networks, automation and electronic systems and devices in varied environments.

The Department of Electrical Engineering / Engineering Computer and Information merges the fields of Electrical and Computer Engineering and Information technology in a single transdisciplinary department. The Department grants a degree in Electrical Engineering or a degree in Computer Engineering and Informatics. Both degrees are recognized practicing a profession in Engineering from the ETSC. The degree selection made in advance, in the declared preference for curricula from by potential students in the context of Pancyprian Exam.

BSc in Electrical Engineering			
FIRST YEAR (Common Courses for both directions)			
FALL SEMESTER		SPRING SEMESTER	
1st Semester		2nd Semester	
	ECTS		ECTS
CEI 101 Advanced Mathematics I	5	CEI 103 Advanced Mathematics II	5
CEI 102 Physics I	6	CEI 104 Linear Algebra	5
CEI 131 Foundations of Electrical Engineering and Computer Engineering and Informatics	6	CEI 105 Physics II	6
CEI 132 Introduction to Computing and	6	CEI 111 Electrical Circuits Analysis I	6
CEI 122 English for Academic Purposes	4	CEI 133 Methodology and Programming (C++)	6
		CEI 161 English for Electrical engineering	4
Total	27	Total	32

SECOND YEAR			
FALL SEMESTER		SPRING SEMESTER	
3rd Semester		4th Semester	
	ECTS		ECTS
CEI 201 Advanced Mathematics III	5	CEI 214 Electronics I	6
CEI 202 Physics III	5	CEI 215 Digital Circuits Design Laboratory	5
CEI 203 Introduction to Biology	5	CEI 231 Signals and Systems	6
CEI 211 Electric Circuits Analysis II	6	CEI 232 bioengineering and bioinformatics	6
CEI 212 Digital Systems	6	CEI 233 Computer Organization	6
CEI 213 Electric Circuits Laboratory I	4		
Total	31	Total	29

THIRD YEAR			
FALL SEMESTER		SPRING SEMESTER	
5th Semester		**6th Semester**	
	ECTS		**ECTS**
CEI 311 Control Systems	**6**	**CEI 316** Electromagnetism	**6**
CEI 312 Electronics II	**6**	**CEI 317** Telecommunication Systems	**6**
CEI 313 Electronic circuits lab II	**4**	**CEI 318** Digital Signal Processing	**6**
CEI 314 VLSI Systems Design	**6**	**CEI 319** Electronic Circuits Lab III	**5**
CEI 315 Engineering Economic Analysis	**4**	**CEI 320** Power Systems	**6**
CEI 331 Probability Theory and Random	**6**		
Total	**32**	**Total**	**29**

FOURTH YEAR			
FALL SEMESTER		SPRING SEMESTER	
7th Semester		**8th Semester**	
	ECTS		**ECTS**
CEI 411 Capstone Design Project I	**6**	**CEI 412** Capstone Design Project II	**6**
Departmental Elective	**6**	Departmental Elective	**6**
Engineering Elective	**6**	Departmental Elective	**6**
Engineering Elective	**6**	Engineering Elective	**6**
Free Elective	**6**	Engineering Elective	**6**
Total	**30**	**Total**	**30**

Bachelor in Computer Engineering and Informatics			
FIRST YEAR			
Fall Semester		**Spring Semester**	
1st Semester		**2nd Semester**	
	ECTS		**ECTS**
CEI 101 Mathematics I	5	**CEI 103** Mathematics II	5
CEI 102 Physics I	5	**CEI 104** Linear Algebra	5
CEI 121 Electrical and electronic circuits	6	**CEI 163** English for Computer Engineering and Informatics	4
CEI 122 English for Academic Purposes	4	**CEI 122** Digital logic	5
CEI 131 Foundations of Electrical Engineering / Computer Engineering and Informatics	4	**CEI 133** Methodology and Programming (C++)	6
CEI 132 Introduction to Computing and Programming C	6	Free Elective	5
TOTAL	**30**	**TOTAL**	**30**

SECOND YEAR			
Fall Semester		**Spring Semester**	
3rd Semester		**4th Semester**	
	ECTS		**ECTS**
CEI 203 Introduction to Biology	4	**CEI 226** Algorithms and complexity	5
CEI 221 Discrete Mathematics	5	**CEI 227** Databases	5
CEI 222 Principles of Programming Languages and Compilers	6	**CEI 228** System Programming	5
CEI 223 Information Systems Analysis and Design	5	**CEI 231** Signals and Systems	5
CEI 224 Data Structures and Algorithms	5	**CEI 232** Introduction to bioengineering and bioinformatics	4
CEI 225 Operating Systems	5	**CEI 233** Computer Organisation	6
TOTAL	**30**	**TOTAL**	**30**

THIRD YEAR			
FALL SEMESTER		**SPRING SEMESTER**	
5th Semester		**6th Semester**	
	ECTS		**ECTS**
MCEI 321 Computer Networks and Communications	**5**	**MCEI 326 Web Engineering and Internet Technologies**	**6**
MCEI 322 Computer Networks and Communications Laboratory	**3**	**MCEI 327 Parallel Processing and Distributed Systems**	**6**
MCEI 323 Computer Architecture	**6**	**MCEI 328 Software Engineering Project and Professional Practice**	**7**
MCEI 324 Software Engineering	**5**	**MCEI 328 Artificial Intelligence**	**6**
MCEI 325 Advanced Object Oriented Methodology and Programming (UML, Java)	**6**	**Departmental Elective**	**5**
MCEI 331 Probability and Random	**5**		
Total	**30**	**Total**	**30**

FOURTH YEAR			
FALL SEMESTER		**SPRING SEMESTER**	
7th Semester		**8th Semester**	
	ECTS		**ECTS**
MCEI 421 Degree Thesis I	**5**	**MCEI 421 Degree Thesis II**	**10**
Departmental Elective	**5**	**Departmental Elective**	**5**
Departmental Elective	**5**	**Departmental Elective**	**5**
Departmental Elective	**5**	**Engineering Electives**	**5**
Engineering Electives	**5**	**Free Elective**	**5**
Free Elective	**5**		
Total	**30**	**Total**	**30**

Elective Courses

- **CEI 441** - Human-Computer Interaction
- **CEI 442** - Embedded and Real-Time Systems
- **CEI 443** - Computer Graphics
- **CEI 444** - Digital Telecommunications
- **CEI 445** - Microprocessors
- **CEI 446** - VLSI design
- **CEI 447** - Advanced Computer Architecture
- **CEI 448** - Advanced Topics in Databases
- **CEI 449** –Information Security
- **CEI 450** – Digital Cultural Heritage

Course Description

CEI 101 Advanced Mathematics I

Elementary Calculus with emphasis on applications. Variables, functions, limits and continuity of functions. Derivative of functions, differential, problems of maxima and minima, series expansion. Indefinite and definite integral with applications. Introduction to elementary differential equations.

CEI 102 Physics I

Electromagnetics and Optics. Electric fields, Coulomb's law. Gauss' law, Electric potential, Capacitors, dielectrics, current, and resistance, Circuits with DC current, magnetic fields, Sources of magnetic field, law of Biot - Savart and Ampere's. Faraday's law of induction. Inductors. Alternating current circuits. Maxwell's equations andelectromagnetic waves. The nature of light and laws of geometrical optics. Geometric optics. Reflectors and lenses. Infraction diffraction and polarisation of light.

CEI 103 Advanced Mathematics II

Multi-variable functions. Partial derivative and total differential, problems of extrema of multi-variable functions. Multiple integrals and applications. The theory of ordinary differential equations, fist-order differential equations, linear differential equations and engineering applications, ordinary and singular points and the method of power series. Prerequisite: Mathematics I

CEI 104 Mathematics II (2nd semester)

Multi-variable functions. Partial derivative and total differential, problems of extrema of multi-variable functions. Multiple integrals and applications. The theory of ordinary differential equations, fist-order differential equations, linear differential equations and engineering applications, ordinary and singular points and the method of power series. Prerequisite: Mathematics I

CEI 106 English for Computer Engineering and Informatics (4 ECTS)

This is a three hour per week, 4-credit, required level course that concentrates on the learning of English for Specific Academic Purposes. The course is particularly designed to meet the needs of university students studying in the field of Computer Engineering and Informatics. This course intends to familiarise the students with relevant reading material. This will be used to acquaint the students with writing styles, such as proposals, lab reports, process analysis, cause and effect. Furthermore, learners are expected to develop their listening comprehension and speaking fluency by taking an active part in discussions, giving oral presentations, defending their opinion etc. They are expected to develop sufficient range of language, phonological control and sociolinguistic awareness to be able to express themselves with a degree of clarity, fluency and spontaneity. Prerequisite: CEI - English for Academic Purposes

CEI 111 Introduction to Computing and Programming (C)

Introduction to basic computer organisation (microprocessors and memory structures) and computing (Turing machines, Finite State machines, regular languages, context free grammars). Introduction to modular programming, basic computer programming principles and

software construction. Presentation of the C programming language concentrating on data types, control structures, loops, functions, matrices, strings, pointers and recursion. The course includes a number of programming exercises and a project.

CEI 112 Foundations of Electrical Engineering, Computer Engineering and Informatics

Historical overview of the evolution of the Electrical Engineering / Computer Engineering and Informatics fields. Introduction to fundamental aspects of Electrical Engineering / Computer Engineering and Informatics. Description of various areas of specialization within the two directions. Selected in-class demonstrations and invited lectures.

CEI 121 Introduction to Computing and Programming

Introduction to basic computer organisation (microprocessors and memory structures) and computing (Turing machines, Finite State machines, regular languages, context free grammars). Introduction to modular programming, basic computer programming principles and software construction. Presentation of the C programming language concentrating on data types, control structures, loops, functions, matrices, strings, pointers and recursion. The course includes a number of programming exercises and a project.

CEI 122 Electrical and Electronic Circuits

Ohm's Law, KCL, KVL, Voltage and current divider, Electric Power.Operation and construction of Diodes, Bipolar Transistor, Field Effect Transistors (JFET, OSFET) new technologies. Biasing, stability of biasing, switching characteristics, delays leading to Hazards. Logic Gates circuits, transfer characteristics of ideal and real gates, input – output voltage levels. Families of logic gates. Operational Amplifiers, comparators and mathematical operators. Analogue to digital (ADC) and Digital to Analogue Converters (DAC), Data Acquisition System.

CEI 123 Digital Logic

Introduction to CMOS. Boolean algebra, its axioms and rules, prime implicants, principle of duality, simplification and minimization using Karnaugh maps, De Morgan's Laws. Binary mathematical systems. Timing analysis and worst path determination, timing hazards in logic circuits. Networks of logic gates, combinational and sequential synthesis. Finite state machines (FSMs), state tables, state assignment and minimizations and their use in sequential and control circuits. Synchronous and asynchronous circuits, signaling and handshaking. Adders, subtractors, multipliers, dividers, the ALU. Encoders and decoders. Counters, shifters and shift-registers. Multiplexors and de-multiplexors. Registers and register files. SRAM and DRAM cells. Error-detecting codes. Sequential and combinational design with CPLDs, GALs, FPGAs, PLAs. Introduction to hardware-description languages (VHDL or Verilog). Memory structures such as RAM, ROM. The course includes laboratory experiments involving the design and testing of digital systems using small and medium scale integrated circuits.

CEI 131 Foundations of Electrical Engineering, Computer Engineering and Informatics

Historical overview of the evolution of the Electrical Engineering / Computer Engineering and Informatics fields. Introduction to fundamental aspects of Electrical Engineering / Computer Engineering and Informatics. Description of various areas of specialization within the two directions. Selected in-class demonstrations and invited lectures.

CEI 201 Introduction to Biology

An introduction to the basic principles of modern biology, including cell structure, organs and organismal levels, with emphasis on physiological processes, homeostasis and evolution.

CEI 211 Signals and Systems

Basic continuous and discrete-time signals in Linear Vector Spaces, impulse functions, basic properties of discrete and continuous linear time-invariant (LTI) systems, difference and differential LTI systems, Convolution, Fourier series representation of continuous-time periodic and aperiodic signals. Fourier transform for discrete-time signals. Z-transform. Stability of discrete-time systems.

CEI 221 Discrete Mathematics (5 ECTS)

Logic, algebra of propositions, predicate logic. Methods of proof. Sequences and summations. Principles of induction and rules of inference. Set theory. Relations and functions. Boole Algebra and applications. Combinatorics. Fundamental principles of algorithms. Graphs and trees.

CEI 222 Principles of Programming Languages and Compilers (6 ECTS)

The course introduces the fundamental principles in programming languages and implementation techniques for compilers. The focus is on language design, program syntax and semantics, as well as compilation, interpretation and linking. The course discusses formal translation of programming languages, finite-state recognisers and regular expressions, automata theory, context-free parsing techniques, control flow and expression evaluation, iteration and recursion, data types, type checking, parameter passing, exception handling, code generation and optimization, linking, encapsulation and inheritance, late binding and multiple inheritance. Practical exercises on lex and yacc.

CEI 223 Information Systems Analysis and Design

Study of methodologies developed in the area of systems analysis and design. Focus on the Information System as a whole and study of its environment. Stakeholders, development phases and project management. Emphasis on techniques for software analysis, system modeling, data and process modeling, and system design.

CEI 224 Data Structures and Algorithms

This course is an introduction to Data Structures and the Analysis of Algorithms. It aims at the understanding of computational concepts, and of how computational problems can be solved efficiently by computers. This course enables students to: a) describe and implement in C/C++ basic data structures, such as lists, stacks, queues, search trees, sorting algorithms, hashing; b) implement programming techniques that are often encountered in dealing with computational problems such as recursion; c) to analyze the complexity of algorithms and assess

the computational cost of your algorithms; d) to choose correctly among algorithms and data structures for the most appropriate solution of a computational problem; e) to combine algorithms and data structures for the solution of complex computational problems.

CEI 225 Operating Systems

The course is an introduction to operating systems and related types of systems software. The topics covered are: process management (creation, synchronization, and communication), concurrency mechanisms and algorithms, (mutual exclusion and deadlocks), main and virtual memory management (swapping, paging, segmentation and page-replacement algorithms), uni- and multi-processor scheduling, control of disks and other input/output devices, file-system structure and implementation, protection and security.

CEI 226 Algorithms and Complexity

Topics in the design and analysis of efficient algorithms and their complexity. General techniques of algorithmic design (e.g. divide-and-conquer, backtracking, dynamic programming). Significant algorithms in Graph Theory, Algebra, Geometry, Number Theory, Combinatorics and Game Theory. Randomized algorithms. Approximation algorithms. Online algorithms. Lower bounds. Fast Fourier Transform. Advanced algorithmic topics (e.g. network sorting, cryptography). Prerequisite: Data Structures and Algorithms

CEI 227 Databases (5 ECTS)

The course gives a solid background in databases, with a focus on relational database management systems. Topics include data modeling, database design theory and methodology, data definition and manipulation languages, storage and indexing techniques, query processing and optimization, transactions, concurrency control and recovery. The course also covers fundamentals of database management system architecture and techniques for database application development.

CEI 228 Systems Programming

The course provides a deep understanding of concepts and practices of systems programming based on the Unix OS. File I/O, system calls and buffering. Assemblers, loaders, linkers, preprocessors, parsers and stack frames. Memory management, system processes (fork, exec, dup, pipe), system libraries, sockets, client-server programming, threads. Alternative OS (Linux, Android). Introduction to embedded systems. Prerequisite: CEI 225 - Operating Systems

CEI 229 Computer Organisation

Fundamental operational structure of uni-processor computer systems, an introduction to computer engineering. Fundamental building blocks of a computer system: arithmetic and logical unit, control unit (FSM-based), memory system, I/O system, datapath. Binary number systems, one's and two's complement arithmetic, floating point arithmetic, overflow and underflow, addition, subtraction, division and multiplication. Presentation of the RISC Central Processing Unit using the MIPS architecture as a basis. RISC Instruction Set Architecture (ISA). Assembly programming in MIPS. Pipelining, data, control and structural hazards. Interrupt and exception handling. RAM, cache memory organization (direct-

mapped and set-associative) and virtual memory. Performance measurement and enhancements in CPUs, branch prediction, assembly instruction re-ordering. Storage systems such as disks and optical media. The course includes a weekly lab for hands-on assembly language in the MIPS Instruction Set Architecture.

CEI 232 Introduction to Bioengineering and Bioinformatics

An introduction to the field of bioengineering, including the application of engineering principles and methods to problems in biology and medicine and the integration of engineering with biology. Application of analytic methods from Statistics, Mathematics and Computer Science to biological data so as to extract useful knowledge. Introduction to Bioinformatics. Pairwise sequence alignment and multiple sequence alignment algorithms. Statistical significance of alignment results. Phylogenetic prediction. Database searching for similar sequences, efficiency of relevant algorithms. Protein classification and structure prediction. Statistical analysis of DNA microarray experimental data. Special topics include, biomechanics and biomaterials, bioprocessing and telemedicine, biomedical instrumentation, signal processing and imaging modalities. Introduction to the emerging medical devices industry.

CEI 314 VLSI Systems Design

Analysis, design and architecture of VLSI technology. MOS structures, characteristics and fabrication. Digital logic design and implementation. VLSI design methodology, digital logic circuit simulation and verification. Design and algorithm analysis of special purpose VLSI architecture processors. Pipelined and systolic processors arrays. The module includes assignments with the use of Electronic Design Automation Tools such as high level VLSI synthesis tools. Prerequisites: digital design, computer organization.

CEI 321 Control Systems

Introduction to control systems. Mathematical modelling of dynamical systems. Differential equations and state space models. Nonlinear systems and linearization. Linear systems, transfer functions and state space representations. Observability and controllability. Stability of linear time invariant systems and the Routh Hurwitz criterion. Bode plots. Nyquist stability criterion. Design of phase lead and phase lag compensators.

CEI 321 Computer Networks and Communications

Data and computer communication fundamentals. Protocols and local and wide area networks. Introduction to Internet and networking technologies. TCP/IP suite of protocols, Quality of Service (QoS). New networking architectures. Protocols and standards (e.g. Diffserv, ipv6, MPLS). Network and protocol performance evaluation (queuing theory, and simulation tools). Traffic modeling and Engineering. Congestion control and resource allocation. Network design and optimisation.

CEI 322 Computer Networks and Communications Laboratory

The course provides the opportunity to students to interconnect LANs in the laboratory using switches, routers, terminal servers etc., and conduct various experiments relating to the TCP/IP protocol stack. Students perform

hands-on experiments in subnetting, DHCP, DNS, TCP handshaking and congestion mechanism, wireless protocols (WiFi), SSL, SIP-VoIP, router based firewall, RIP, OSPF and multicast routing. In the process, students learn to use network software tools, to perform network troubleshooting and configure network devices. The course covers basic practical aspects on network programming, the OSI model, the TCP and UDP protocols, ports and IP addressing (classes, addresses, subnet masks, networks, sub-networks, end-users), network devices (routers, switches, hubs, bridges), structured cabling, sockets and socket programming (commands socket, connect, bind, listen, accept, fork, exec, write, read) and the client-server model through sockets.

CEI 323 Computer Architecture

Presentation of advanced uni-processor architectures and parallel architectures such as multi-processors and multi-cores. Advanced pipelining; dynamic scheduling, Scoreboarding and Tomasulo's algorithms, out-of-order execution, precise interrupt handling. Multiple instruction issue in superscalar processors. Data, control and structural hazards minimization. Branch predictors and branch history tables. Techniques for exploiting sub-word parallelism, instruction-level parallelism and thread-level parallelism. Static parallel instruction scheduling in VLIW architectures, loop unrolling and software pipelining. Advanced memory system organization, interleaved memory, multiple cache architectures, virtual memory, TLBs. Storage systems, and reliability with RAID storage systems. Cache coherence protocols in multi-processors and multi-core architectures. Basic networks and interconnection networks, on- and off-chip. The course may include a hands-on project using academic or industrial architecture simulators. Prerequisite: CEI 229 - Computer Organisation

CEI 324 Software Engineering

Methods, tools, and procedures for the development and maintenance of large-scale software systems within specified quality and cost constraints. Life-cycle models, specification techniques, software development methodologies, verification and validation, CASE, and other tools. The Object-Oriented Paradigm and UML. Project planning and management. Practical experience with CASE tools for modeling data and functions. Prerequisite: CEI 223 - Information Systems Analysis and Design

CEI 325 Advanced Object Oriented Methodology and Programming (UML, Java)

Introduction to the Unified Modeling Language (UML): Class and object modeling, class diagrams, interactions diagrams (sequence, collaboration), use cases, activity diagrams, state modeling. Advanced object-oriented programming principles covering object-oriented data structures and their associated algorithms, such as lazy evaluation. Implementation of heaps, self-balancing trees, graphs, sorting, and generative recursion via objects. Applications of software engineering principles such as abstract decomposition, decoupling, and command passing to large- and small- scale component-framework systems. Multi-threaded event-driven applications. Prerequisite: CEI 123 -

Object Oriented Methodology and Programming (C++)

CEI 326 Web Engineering and Internet Technologies

This course introduces the students to the Web technologies, which are now becoming the main software application platforms. We will cover a wide range of frameworks for the development of web application, which are currently used in critical large scale business applications, such as in Online Social Networks, Banking, Online Stores, Online Video Services etc. We will describe the basic principles of Internet application design, including protocols, standards, data management, multi-tier architectures and security. We will study how we can implement reliable, user-friendly, scalable, flexible and maintainable applications. We will also study how we can convert common web applications to mobile applications. The core of the course comprises a series of software laboratory exercises, which provide the student with the knowledge and infrastructure for the creation of a complex Web application and an Android app.

CEI 327 Telecommunication Systems

Introduction to analog and digital telecommunication systems. Signals and signal space: analysis and transmission of signals. Modulation and demodulation: amplitude (AM) and angle (FM). Sampling and analog-to-digital conversion. Principles of digital data transmission. Introduction to information theory and coding.

CEI 327 Parallel Processing and Distributed Systems (6 ECTS)

The course is an integrated approach to concurrency, parallelism, and distribution issues in medium- and large-scale distributed systems. Concurrency issues include process cooperation schemes, concurrent programming models, data and control distribution, concurrency control and recovery in transactional systems. Parallel processing is focused on new multi-core architectures and appropriate systems and algorithms that take advantage of the underlying parallelism. Distribution covers selected topics such as a data and control distribution problem, and distributed transaction-based support systems.

CEI 328 Software Engineering Project and Professional Practice (7 ECTS)

Students are divided up into small groups to develop (analyze, specify, design, program, and document) a real-world software application with a client organization coming from the local market. The aim of the course is to gain experience in the various phases of software development and in different aspects of group working. Special attention is given to Project Management activities, such as scheduling, time and resource management, production of reports and deliverables, etc. The group develops abilities to "pick up" and use new development tools and environments without formal training. The final product is a fully operational software system which is installed at the client site with execution of professional user acceptance testing and appropriate training. Prerequisite: CEI 324 - Software Engineering

CEI 329 Artificial Intelligence

The course is an introduction of core concepts in artificial

intelligence. The topics include a survey on search and control methods (search space, uninformed and informed search, constraint satisfaction), probabilistic models (uncertainty, Bayesian networks), machine learning (inductive learning, linear separators, decision trees, reinforcement learning), and perception and cognition (natural language processing, computer vision, robotics). It covers also fundamentals and applications of neural networks, genetic algorithms and expert systems.

CEI 431 Advanced Operating Systems

The course covers a number of advanced topics in modern operating system technology and implementation techniques. The focus is on: distributed operating systems, file system design, virtual memory management, real-time systems, proportional share resource management, operating system structure and extension techniques, and protection and security. Prerequisite: CEI 225 – Operating Systems

CEI 433 Advanced Topics in Software Engineering (5 ECTS)

This course aims at introducing advanced topics in the field of Software Engineering: Project Management, Risk Analysis and Management, Software Quality Assurance, Software Reengineering and Business Process Reengineering, Design Principles of Distributed Software based on Components and Middleware. Special attention is given in large-scale software development in parallel and distributed systems. Prerequisite: CEI 324 - Software Engineering

CEI 448 Advanced Topics in Databases

The course covers advanced subjects in Database Management and novel Database applications. Such subjects include: database management systems with auto-configuration, Information flows, information revocation, web data management, data integration, data mining, temporal and spatial distributed databases. Prerequisite: ΜΗΥΠ 227 – Databases

PHY 102 Physics I

Electromagnetics and Optics. Electric fields, Coulomb's law. Gauss' law, Electric potential, Capacitors, dielectrics, current, and resistance, Circuits with DC current, magnetic fields, Sources of magnetic field, law of Biot - Savart and Ampere's. Faraday's law of induction. Inductors. Alternating current circuits. Maxwell's equations andelectromagnetic waves. The nature of light and laws of geometrical optics. Geometric optics. Reflectors and lenses. Infraction diffraction and polarisation of light.

ENG 102 English for Academic Purposes

This is a three-hour per week, 4-credit, required degree level course that concentrates on the learning of English for Academic Purposes (EAP). The course is particularly designed to support students' studies by developing their English language to an academic level. This course aims to familiarise the students with reading material related to general and academic topics. This material is used to acquaint students with writing styles, such as narration and description. It also develops students' listening skills. Furthermore, learners are expected to develop their speaking fluency by taking an active part in speaking tasks such as dialogues,

conversations, and oral presentations.

ENG 163 English for Computer Scientists and Engineers

This is a three hour per week, 4-credit, required level course that concentrates on the learning of English for Specific Academic Purposes. The course is particularly designed to meet the needs of university students studying in the field of Computer Engineering and Informatics. This course intends to familiarise the students with relevant reading material. This will be used to acquaint the students with writing styles, such as proposals, lab reports, process analysis, cause and effect. Furthermore, learners are expected to develop their listening comprehension and speaking fluency by taking an active part in discussions, giving oral presentations, defending their opinion etc. They are expected to develop sufficient range of language, phonological control and sociolinguistic awareness to be able to express themselves with a degree of clarity, fluency and spontaneity. Prerequisite: English for Academic Purposes.

Department of Mechanical Engineering and Materials Science and Engineering

Academic Staff

Andreas Anayiotos
Professor, Vice Rector for Economic Planning and Development

Pantelis Kelires
Professor

Stelios Choulis
Associate Professor, Department Chair

Tasos Georgiades
Associate Professor

Savvas Loizou
Assistant Professor

Georgios Constantinides
Assistant Professor

Faculty of Mechanical Engineering and Science and Materials Engineering

The Department of Mechanical Engineering and Science and Engineering Materials offers a modern undergraduate and graduate curriculum which promotes learning, thinking, understanding and solving engineering problems, skills that are necessary for scientific and technological needs 21st century.

The Department combines the advantages of consolidated knowledge and professional recognition of Mechanical Engineering with the innovative nature of Materials Science and Engineering in a unified curriculum. Therefore , it offers then clear advantage to graduates to be able to develop integrated engineering design starting from the preliminary design stage rather only the product but also the structure of the appropriate material , resulting in the final stage of production. The Department offers a four-year undergraduate program studies and awards a degree in Mechanical Engineering while offering specialized courses in Science and Engineering Materials. The program curriculum provides a strong foundation in the basic principles science and engineering in the first two years.

During the last two years of study, the curriculum offers additional deepening the fundamentals of Mechanical Engineering expertise in Science and Engineering Materials, as well as in specialized fields of Mechanical Engineering.

The curriculum has been recognized by the ETSC, which is the official State body of Cyprus and provides professional recognition to engineers . Graduates of the department of Engineering Science and Mechanics Materials have professional recognition as Mechanical Engineers.

COMMON COURSES FOR YEARS ONE AND TWO					
FIRST YEAR					
FALL SEMESTER			SPRING SEMESTER		
1st Semester			2nd Semester		
		ECTS			ECTS
MATH 101	Calculus I	5	MATH 102	Calculus II	5
PHYS 101	Physics I	6	PHYS 102	Physics II	6
CHEM 101	General Chemistry	6	ME-MSE 111	Programming Principles	6
ENG 122	English for Academic Purposes	4	ENG 162	English for Mechanical Engineers	4
ME-MSE 101	Introduction to Engineering	6	ME-MSE 112	Introduction to Material Science and Engineering	6
			ME-MSE 213	Computer-aided Design	5
Total		27	Total		32

SECOND YEAR					
FALL SEMESTER			SPRING SEMESTER		
3rd Semester			4th Semester		
		ECTS			ECTS
MATH103	Mathematics III	5	MATH 201	Differential Equations	6
ME-MSE 211	Mechanics: Statistics	5	CIS 245	Introduction to Electrical Engineering	5
ME-MSE 212	Introduction to Thermodynamics	5	ME-MSE 215	Mechanics and Testing of Materials	6
ME-MSE 214	Engineering Materials	6	ME-MSE 311	Manufacturing Engineering I	6
ME-MSE 216	Engineering Management and Economics	5	ME-MSE 221	Mechanics: Dynamics	5
			ME-MSE 217	Applied Thermodynamics	6
Total		26	Total		34

MECHANICAL ENGINEERING -STREAM 1 (COURSES FROM TABLE B1)			
THIRD YEAR			
FALL SEMESTER		SPRING SEMESTER	
5th Semester		6th Semester	
	ECTS		ECTS
ME-MSE 321 Fluid Mechanics	6	**ME-MSE 323** Heat and Mass Transfer	5
ME-MSE 222 Engineering Measurments I	6	**ME-MSE 322** Automatic Control I	6
ME-MSE 324 Dynamics of Mechanical Systems	5	STREAM 1: COURSE 1 (Table B1)	5
ME-MSE 421 Manufacturing Engineering II	5	**ME-MSE 326** Design of Machine Elements	6
ME-MSE 329 Numerical Methods in Engineering	5	**ME-MSE** STREAM 1: COURSE 2 (Table B1)	6
Technical Elective	5	**ME-MSE** Technical Elective	5
Total	32	**Total**	33

FOURTH YEAR			
FALL SEMESTER		SPRING	
7th Semester		8th Semester	
	ECTS		ECTS
ME-MSE STREAM 1: COURSE 3 (Table B1)	6	**ME-MSE 422** Microelectromechanical Systems-MEMS	5
ME-MSE 415 Design of Mechanical Systems	5	**ME-MSE** **STREAM 1**: COURSE 5 (Table B1)	5
ME-MSE 414 Stress Analysis	5	**ME-MSE** **STREAM 1**: COURSE 6 (Table B1)	5
ME-MSE STREAM 1: COURSE 4 (Table B1)	5	**ME-MSE** **STREAM 1**: COURSE 7 (Table B1)	5
ME-MSE 424 Diploma Thesis I / Design Project I	7	**ME-MSE 425** Diploma Thesis II / Design Project II	8
Total	28	**Total**	28

MECHANICAL ENGINEERING -STREAM 2 (COURSES FROM TABLE B2)			
THIRD YEAR			
FALL SEMESTER		SPRING SEMESTER	
5th Semester		6th Semester	
	ECTS		ECTS
ME-MSE 321 Fluid Mechanics	6	ME-MSE STREAM 2: COURSE 4 (Table B2)	5
ME-MSE STREAM 2: COURSE 1 (Table B2)	6	ME-MSE 422 Microelectromechanical Systems-MEMS	5
ME-MSE STREAM 2: COURSE 2 (Table B2)	6	ME-MSE STREAM 2: COURSE 5 (Table B2)	5
ME-MSE STREAM 2: COURSE 3 (Table B2)	5	ME-MSE 323 Heat and Mass Transfer	5
ME-MSE 329 Numerical Methods in Engineering	5	ME-MSE STREAM 2: COURSE 6 (Table B2)	5
ME-MSE 222 Engineering Measurements I	6	ME-MSE 326 Design of Machine Elements	6
Total	34	Total	31

FOURTH YEAR			
FALL SEMESTER		SPRING SEMESTER	
7th Semester		8thSemester	
	ECTS		ECTS
ME-MSE 421 Manufacturing Engineering II	5	ME-MSE STREAM 2: COURSE 7 (Table B2)	5
ME-MSE 415 Design of Mechanical systems	5	ME-MSE 322 Automatic Control I	6
ME-MSE 414 Stress Analysis	5	ME-MSE Technical Elective	5
ME-MSE 324 Dynamics of Mechanical Systems	5	ME-MSE Technical Elective	5
ME-MSE 424 Diploma Thesis I / Design Project I	7	ME-MSE 425 Diploma Thesis II / Design Project II	8
Total	27	Total	29

TABLE B - SCHEDULE OF TECHNICAL SPECIALTY OF SECTION

TABLE B1: Courses in Mechanical Engineering	
	ECTS
COURSE 1 **ME-MSE 412** – Statistics and Quality Control	5
COURSE 2 **ME-MSE 325** – Engineering Measurements II	6
COURSE 3 ME-MSE 328 - Mechatronics	6
COURSE 4 **ME-MSE 423** – Heating, Ventilation and Air-Conditioning	5
COURSE 5 **ME-MSE 416** – Finite Element Method in Mechanical Design	5
COURSE 6 **ME-MSE** – Technical Elective	5
COURSE 7 **ME-MSE** – Technical Elective	5

TABLE B2: Courses in Materials Science and Engineering	
	ECTS
COURSE 1 **ME-MSE 231** – Quantum Mechanics and Statistical Thermodynamics	6
COURSE 2 **ME-MSE 335** – Materials Laboratory	6
COURSE 3 **CHEM 201** – Organic Chemistry	5
COURSE 4 **ME-MSE 333** – Kinetics and Phase Transformations	5
COURSE 5 **ME-MSE 332** – Solid State Physics and Crystallography	5
COURSE 6 **ME-MSE 332** – Synthesis of Advanced Materials	5
COURSE 7 **ME-MSE 434** – Polymers and composites	5

	DEPARTMENT OF GENERAL ENGINEERING		DEPARTMENT OF ENGINEERING SPECIALIST WITH SCIENCE AND ENGINEERING ΥΛΙΚΩΝ
Category1	Naval Architecture and Marine Engineering	Category 5	Microtechnology and Nanotechnology
Category 2	Renewable Energy and Sustainable Development	Category 6	Biotechnology
Category 3	Production Engineering and Robotics	Category 7	Organic Electronics
Category 4	Biomedical Engineering	Category 8	Processing of Materials

TABLE C - LIST OF TECHNICAL ELECTIVE COURSES *

TECHNICAL COURSE	CATEGORY
ME-MSE 430 Introduction to Naval	1
ME-MSE 431 Mechanical Design Naval Systems	1
ME-MSE 423 Heating, Ventilation and Air Conditioning	2
ME-MSE 426 Energy Resources and Energy Efficiency of Buildings	2
ME-MSE 427 Renewable Energy	2
ME-MSE 428 Mechanical Vibrations	3
ME-MSE 429 AutoCheck II	3
ME-MSE 432 Biology and Biomaterials	4
ME-MSE 433 Introduction in Biomechanical	4

TABLE D - SCHEDULE COURSE SELECTION LIMITED (This table will be updated regularly)

GENERAL COURSES
ELECTIVE ENG 130
Advanced English
MMY 412 Statistics and Quality Control

TABLE E - STRUCTURE OF THE PROGRAM OF STUDIES - DEPARTMENT OF GENERAL ENGINEERING

COURSES	NUMBER	ECTS
REQUIRED COURSES	37-40	200-215
GENERAL ELECTIVE	0-1	0-5
TECHNICAL ELECTIVE	2-4	10-20
DISSERTATION / PROJECT DESIGN	2	15
TOTAL	**44**	**240**

TABLE F - STRUCTURE OF THE PROGRAM OF STUDIES - DEPARTMENT OF ENGINEERING SPECIALIST MATERIALS SCIENCE & ENGINEERING

COURSES	NUMBER	ECTS
REQUIRED COURSES	40	215
TECHNICAL ELECTIVE	2	12
DISSERTATION / PROJECT DESIGN	2	13
TOTAL	**44**	**240**

Course Description

1st and 2nd year courses are common to both streams

MATH 101 Calculus I

Domain and Range, Inverse Functions, Composite Functions, Families of Functions; Limits and Continuity: Computing Limits, Limits at Infinity, Continuity, Continuity of Trigonometric Functions; The Derivative: The Derivative Function , Techniques of Differentiation, The Product and Quotient Rules, Derivative of Trigonometric Functions, Chain Rule, Implicit Differentiation, Differentials, Applications of Derivatives; Integration: The Indefinite Integral, Integration Techniques, Definite Integral; Applications of Integration: Area Between Curves, Volumes of Revolution; First Order Differential Equations; Complex Numbers: Algebra, Geometry, Coordinate Systems, Applications; Infinite Series: Sequences, Infinite Series, Convergence Tests, Alternating Series; Conditional Convergence, Maclaurin and Taylor Series; Power Series, Convergence of Taylor Series, Differentiation and Integration of Power Series.

PHYS 101 Physics I

The main objective of the course is to familiarize the students with the basic principles of Mechanics and Waves. The class will examine statics and kinetics/kinematics of particles and rigid bodies, law of gravitation and basic wave motion. During the experimental part of the course, the students will familiarize themselves with pertinent instrumentation and appropriate measurement techniques of such fundamental mechanics variables as displacement, velocity, acceleration and force as well as data analysis and presentation. Physics I establishes the foundations on which the 2nd year courses of Statics and Dynamics are built. Through weekly assignments, tutorials and laboratory sessions, the students will have the opportunity to examine the application of theory to practically oriented problems that will aid in their overall comprehension of mechanics and mechanical engineering in general.

CHEM 101 General Chemistry

This is the introductory course in Chemistry (Inorganic). Topics include: Atoms and molecules, bonding types, chemical reactivity, states of matter; Periodic properties of elements; Thermodynamics: internal energy, enthalpy, free energy, equilibrium; Electrochemistry: galvanic cells, batteries, fuel cells, electrolysis, corrosion; Kinetics: reaction rate, catalysis; Colloids and surface chemistry: surface energy, wetting, absorption. The course is accompanied by 2-hour practice in the chemistry lab

ENG 122 English for Academic Purposes

ENG 122 is a three-hour per week, 4-credit, required degree level course that concentrates on the learning of English for Academic Purposes (EAP). ENG 122 is particularly designed to support students' studies by developing their English language to an academic level. This course aims to familiarise the students with reading material related to general and academic topics. This material is used to acquaint students with writing styles, such as narration and description. It also develops students' listening skills. Furthermore, learners are expected to develop their speaking fluency by taking an active part in speaking

tasks such as dialogues, conversations, and oral presentations.

ME-MSE 101 Introduction to Engineering Introduction to engineering and the engineering profession through application of physical conservation principles in analysis and design. Topics include: problem solving, conservation laws, materials properties and selection, engineering economics, group design projects, oral and written reports, introductory computer programming, and engineering graphics. Exposure of the students to the various engineering disciplines.

MATH 102 Calculus II

Techniques of integration, generalized integrals, l'Hospital´s rule. Sequences and series, convergence criteria of infinite series, ratio and root tests, relative and absolute convergence. Power series, Taylor και Maclaurin expansions, differentiation and integration of power series. Fundamentals of Probability theory, statistical distributions. Complex numbers and complex functions. Multivariable functions, partial derivatives, chain rule. Tangent planes, total derivative, directional derivatives, extrema of multivariable functions, Lagrange multipliers. Coordinate systems, vector functions, derivative of scalar field, divergence and curl. Prerequisite: MATH 101

PHYS 102 Physics II

This is the second introductory Physics course, dealing with the principles of Electromagnetism and Optics. Topics include: Electric fields, Coulomb's law, Gauss's law; Electric potential; Capacitors, dielectrics, current, resistance; Circuits of direct currents, magnetic fields; Sources of magnetic fields, law of Biot; Savart, Ampere's law; Faraday's law of induction, Lenz's law, inductors; Circuits of alternating currents; Maxwell's equations, electromagnetic waves; Nature of light, laws of geometrical Optics; Geometrical Optics, curved mirrors, lenses; Interference of light; Diffraction and polarization of light; synopsis. The course is accompanied by 2-hour practice in the physics lab.Prerequisite: PHYS 101

MATH 103 Mathematics III

The course aims at teaching the fundamental principles of linear algebra and its applications in the fields of numerical analysis, solution of differential equations, Fourier Transforms, System dynamics etc. The course focuses on the following basic concepts: Matrices-Determinants-Linear systems, Vector Spaces, Inner product spaces, Linear Transformations, Eigenvalues. If time permits, an introduction to probability theory and statistical distributions will be covered. Prerequisite: MATH 101

ME-MSE 111 Programming Principles

The course aims at introducing students to the programming principles that are essential for the solution of numerical problems. By making use of the FORTRAN 77/90/95 programming language and suitable operating environments (e.g. Force 2.0, Linux etc) the following topics are covered: Algorithms and programs. Pseudocode and flowcharts. High level languages and the compilation process. Introduction to FORTRAN (basic program structure, compiling and error handling). Arithmetic (numerical operators, order of execution, accuracy of calculations and types of variables). Input and

output statements. The format statement. Internal and external functions. Control statements and loops .Arrays for Vectors and Matrices. Multidimensional arrays. Input and output of arrays. Arithmetic statement functions. Function Subprograms and subroutine subprograms .File handling. Double precision numbers. Complex numbers. Character and logical data .The course is accompanied by laboratory sessions where programming is practised through applications on simple engineering problems.

ME-MSE 112 Introduction to Materials Science and Engineering

The course provides an introduction to material science and engineering. Subjects include: electronic structure, bonds between atoms, connection of type of bonding and material properties, introduction to crystalline and amorphous materials, point defects and doping of materials, introduction to microscopy, diffusion mechanisms and their connection with processing and applications. The course presents the basic categories of materials with emphasis in their electrical and optical properties: The students are taught the circle of choice of materials for advanced applications

ENG 162 English for Mechanical Engineering

ENG 162 is a three hour per week, 4-credit, required level course that concentrates on the learning of English for Specific Academic Purposes. ENG 162 is particularly designed to meet the needs of university students studying in the field of Civil Engineering. This course intends to familiarise the students with relevant reading material. This will be used to acquaint the students with genre (proposals, lab reports, ME-MSEos, instruction manuals) and writing styles (cause and effect). Furthermore, learners are expected to develop their listening comprehension and speaking fluency by taking an active part in discussions, giving oral presentations, defending their opinion etc. They are expected to develop sufficient range of language, phonological control and sociolinguistic awareness to be able to express themselves with a degree of clarity, fluency and spontaneity.Prerequisite: ENG 122

CHEM 201 Organics Chemistry

This course covers the most important aspects of Organic Chemistry and related topics. It includes: Structure and bonding; organic functional group chemistry; reactivity of organic molecules; aromaticity; stereochemistry; conformational analysis; reaction mechanisms; macromolecules, polymeric materials; carbohydrates; lipids; synthetic and functional aspects of nucleic acids and proteins.Prerequisites: CHEM 101

MATH 201 Differential Equations

This course introduces the student to the different types of differential equations, methods of solution, and their applications in engineering and materials science. Topics include: Simple differential equations (DE) of first order, applications; Simple DE of second order, applications (Newton's eqs.); General study of linear DE; Special methods for DE with constant coefficients: the method of Fourier series and its applications, the method of Laplace transformations and its applications; Eigenvalues and eigenvectors of matrices;

Systems of linear DE with constant coefficients, solution methods using matrices; Partial DE, boundary value problems (heat equation, wave equation, Laplace equation); Linear DE with variable coefficients, method of power series (applications to Bessel & Legendre equations); Stability of solutions, method of phase space. Prerequisite: MATH 102

ME-MSE 211 Mechanics I (Statics)

Fundamental concepts and methods of static mechanics are introduced. Topics include: two- and three-dimensional vector representation of forces, and moments; static equilibrium of particles, rigid bodies, and engineering structures; analysis of external and internal forces in structures via the methods of free-body diagrams; properties of cross-sectional areas; trusses, beams and frames. Prerequisites: MATH 101, PHYS 101

ME-MSE 212 Introduction to Thermodynamics

Introduction to thermodynamics. Thermodynamic properties. Properties and behavior of pure substances. Conservation of energy and mass. First law, second law, entropy. System and control volume analyses. Analysis of thermodynamic systems, gas cycles, vapor cycles and energy production. Mixtures of ideal gases and gas~vapor mixtures. Prerequisites: PHYS 102, CHEM 101, MATH 102

ME-MSE 213 Computer-Aided Design

An introduction to engineering graphics and visualization is given. Topics include: Basic concepts in technical sketching, computer-aided drawing and design, views, projections, sections, dimensioning, assembly drawings and solid modeling. Development and interpretation of drawings and specifications for product realization are also explored. The course is accompanied by 3-hour practice in the computer lab.

ME-MSE 218 Introduction to Energy Management and the Environment

The main objective of this course is to familiarize the students with the basic concepts and principles regarding Energy Management and help them appreciate the importance and impact of energy utilization on the environment. In particular, the course examines the various forms and sources of energy and the effectiveness and losses during transformation and distribution of each one of them as well as methods and technologies for energy saving. The course includes a historical overview of the global energy utilization, development and trends, the country energy balance and the various energy problems. The energy consumption by type and use, cost accounting, management, transport and energy storage techniques and technologies are also examined. The course covers issues such as national and international regulations and framework regarding management, utilization, pricing and licensing of conventional and alternative energy sources as well as the harmonizing actions of the national legislation with the relevant EU directives. The impact of the energy system on the environment is also analyzed together with other environmental issues regarding the type, form, quantification and risk management and data entry methodologies. More specifically, the main categories of pollutants,

the air and water resources pollution and the treatment, purification and recovery of waste materials technologies are examined. Finally the basic principles of environmental policy aimed at sustainable management of natural resources are taught Corequisite: ME-MSE 212

ME-MSE 214 Engineering Materials

Part A: Physical interpretation of thermodynamic behavior of materials in the presence or absence of natural phenomena, thermodynamic properties, equilibrium criteria, phase diagrams. Physical interpretation of mechanical behavior of materials in the presence or absence of imperfections, mechanical properties, strengthening mechanisms. Part A provides fundamental knowledge including the required background for specialized courses of higher level. Part B: Thermal processing of metal alloys, corrosion oxidation and protection of metallic materials. PREREQUISITE: ME-MSE112

ME-MSE 215 Mechanics and Testing of Materials

The objective of this course is to help students build upon and integrate the content of the previous courses Physics I and Mechanics I and apply them to the mechanics of deformable bodies. The basic loading modes (axial, shear, bending, torsional) are reviewed and discussed in terms of the fundamental tests that allow for the determination of material properties or structural limits in typical mechanical testing techniques. Application to simple engineering structures such as rods, shafts, beams, thin pressure vessels, and trusses. Prerequisites: ME-MSE 211

ME-MSE 216 Engineering Management and Economics

The course is designed to help the Mechanical Engineers to understand the basic principles of business administration such as modern methods of management , leadership, vision – targets setting, organization of work, motivation, teamwork, quality management, human resource management. In addition will provide insight on the structures, processes and financial underpinning of business organizations, and of the economic and social environments within which business organizations operate.

ME-MSE 217 Applied Thermodynamics

Thermodynamic Relations: Definitions and concepts, Maxwell and Clapeyron equations. Air and water vapour mixtures: basic definitions, relationships, saturation state. Psychrometry: Properties of moist air. Fundamental moisture parameters. Psychrometric chart. Adiabatic mixing of moist air streams. Psychrometric processes. Refrigeration: Definitions and concepts of refrigeration. Vapor compression refrigeration cycle, energy exchange, analytical relationships, refrigerants and their properties. Multi-stage refrigeration systems, compressors in series and in parallel. Absorption refrigeration cycle, ammonia-water system, applications. Heat pump, water chiller, other applications. Combustion: definitions and equations, AF, FA stoichiometry, excess air, combustion of mixtures, combustion of liquids, etc. First Law of Thermodynamics in chemical reactions. Internal energy, enthalpy, enthalpy of formation, entropy and adiabatic flame temperature. Second Law of

Thermodynamics in chemical reactions, real mixtures and entropy. Dissociation. Third Law of Thermodynamics, Gibbs Energy. Prerequisite: MEM 212

ME-MSE 221 Mechanics: Dynamics

The aim of the course is to introduce the students to the basic principles of dynamics, so that they will be able to analyze the two-dimensional motion of particles and rigid bodies. The topics that will be examined include kinematics of particles in fixed and moving reference frames, simple relative motion, second law application in rectilinear translation, projectile motion, energy and momentum principles for particles and for rigid bodies in plane motion, Euler's equations, moment of inertia properties, the simple oscillator and its applications, etc. Prerequisite: MEM 211

ME-MSE 222 Engineering Measurements I

The objective of this course is to familiarize the students with basic laboratory equipment and the pertinent experimental methods for the measurement of fundamental mechanical quantities such as displacement, stress, strain and temperature. Topics to be covered include, teaming, planning and collaboration, technical report writing, data acquisition systems, aliasing, data I/O, instrument response, calibration, precision, accuracy and error analysis. Basic sensors and transducers used in electromechanical and thermal systems measuring physical quantities like displacement, temperature, stress, strain, force, viscosity will be analyzed. Prerequisite: PHYS 101

ME-MSE 231 Quantum Mechanics and Statistical Thermodynamics

Science and Engineering, to the fundamental subjects of Quantum Mechanics and Statistical Physics. These fields provide the necessary knowledge needed for the understanding of the basic structural and optoelectronic properties of matter, and prepares the student to successfully follow up with the more specialized materials courses in the curriculum. The first part of this course introduces the fundamental principles of quantum mechanics, while the remainder of the course is dedicated to the study of the salient features of statistical physics. Topics include: Quantum mechanics - Schroedinger's equation and the probabilistic interpretation of the wave function, calculation of mean values, Heisenberg's uncertainty principle, quantization of energy, infinite potential well, harmonic oscillator, tunneling effect, hydrogen atom, angular momentum, spin and Pauli's principle, the periodic system. Statistical Physics – Classical statistical mechanics (statistical equilibrium, Maxwell-Boltzmann distribution, thermal equilibrium, ideal gas), review of the thermodynamic laws, thermodynamic potentials and equilibrium, thermal properties of gases (equations of state, equipartition theory), quantum statistics (Fermi-Dirac, Bose-Einstein, photon gas, ideal quantum gas).Prerequisite: PHYS 102

EEIT 245 Introduction to Electrical Engineering

Circuit Analysis: Kirchhoff's Laws, junction and loop rules, Thevenin and Norton theorems, forced electrical oscillations: R.M.S., phasor representation, power calculations. Semiconductor

Components: diodes, bipolar junction transistors and field-effect transistors, IC circuits. Transformers, converters, stabilizers, amplifiers, operational amplifiers. Logic circuits: gates, ME-MSEory. Applications. Prerequisite: PHYS 102

ME-MSE 311 Manufacturing Engineering I

Metal shaping: Fundamentals of metal casting and metal casting processes. Powder metallurgy and sintering. Bulk deformation and forming processes: Fundamentals of metal forming. Bulk deformation in metalworking, rolling, forging, extrusion, wire and bar drawing. Sheet metalworking, cutting, bending, drawing and other sheet-metal forming operations. Material removal processes: Theory of metal machining. Machining operations and machine tools. Cutting tool technology. Machining economics. Grinding and other abrasive processes. Surface processing operations: Cleaning and surface treatments. Coating and deposition processes. Joining of metals: Fundamentals of welding. Welding processes. Brazing, soldering and adhesive bonding. Prerequisite: ME-MSE 214

ME-MSE 321 Fluid Mechanics

This first course in fluid mechanics aims to familiarize the students with the basic principles of fluid statics and dynamics, so that they are able to analyze simple flows and prepare themselves for other more advanced courses. The course will examine the fundamentals of fluid statics, fluid velocity and acceleration fields, control-volume analysis, conservation of mass, momentum, angular momentum and energy, Bernoulli's equation, similitude/dimensional analysis, Navier-Stokes equations, simple viscous-flow solutions, inviscid flow, Turbulent flow, boundary layers, pipe flow, lift and drag. Prerequisites: PHYS 102, MATH 201

MEM 322 Automatic Control I

This course introduces the fundamental concepts of classic control theory. The course covers the following topics: basic characteristics of control systems, mathematical modeling of control systems and their components, the Laplace transform, transfer functions, block diagrams; transient response analysis and frequency response techniques including Bode and polar plots, stability analysis (poles and zeros, the Ruth-Hurwitz criterion, the root locus, the Nyquist criterion, phase and gain margin), feedback design using P-I-D control actions, phase-lead, phase-lag and phase lead-lag compensation. To complement the theory, students will be introduced to Matlab software for analysis and synthesis of feedback systems. Matlab/Simulink will also be used for implementation of basic concepts of control in weekly laboratory sessions.Prerequisites: MATH 201, ME-MSE 324

ME-MSE 323 Heat and Mass Transfer

This fundamental course aims to familiarize the students with the basic principles of heat and mass transfer, and transport coefficients. The students will then be able to apply their knowledge to design and analyze different thermomechanical systems of varying complexity. Topics to be examined include Fourier's law, Newton's law of cooling, Stefan-Boltzmann law, conservation of energy, one-,two- and three-dimensional steady-state conduction, transient conduction, fundamentals of thermal radiation

and convection, forced convection, external and internal flows, heat exchangers, - etc. Prerequisites: ME-MSE 212, MATH 201

ME-MSE 324 Dynamics of Mechanical Systems

The main objective of the course is to teach students a fundamental methodology pertinent to the modeling of dynamical systems (mechanical, electrical, hydraulic, thermal, etc) based on a generic approach that monitors how energy is stored in, dissipated by and/or transferred between the various components comprising the system. The emphasis of the course is on practically oriented hybrid systems. Following completion of the course the students will be able to deal with systems from all fields of engineering with the objective of analysis, design and optimization. The course is normally taught concurrently with Numerical Methods in Engineering and some assignments, particularly towards the end of the semester will require application of techniques taught in both courses. Prerequisite: PHYS 101

ME-MSE 325 Engineering Measurements II

The main objective of this course is to familiarize the students with the practical methods and techniques for data acquisition, processing, analysis and presentation. The students will be able to directly apply their knowledge in a working environment. The course deals with the measurement and analysis of data related to mechanical, industrial, thermal and fluid systems. The students will also study report writing as well as effective oral and audiovisual presentation techniques. Prerequisites: ME-MSE 222, ME-MSE 212, ME-MSE 321

MMY 326 Design of Machine Elements

The purpose of the course is to train students on the fundamental principles of designing mechanical and engineering systems, and on the principles of synthesis and analysis of machines both in static and dynamic conditions. The students will gain the necessary knowledge so that they will be capable to calculate forces and stresses in plane and space, stresses in both static and dynamic situations and select the appropriate dimensions and materials. Various machine elements will be covered both for static and fatigue loading, such as bolts and screws, power screws, welded joints, mechanical springs, rolling and journal bearings, principles of lubrication, gear systems, shafts, brakes and clutches, and flexible elements. Prerequisites: ME-MSE 215, MEM 221

ME-MSE 328 Mechatronics

This course will examine the following topics: Analog electronics (diodes, transistors, transistor-transistor logic, amplifiers operational amplifiers), Digital electronics (registers, counters, switches, actuators, Triggers, timers, gates, digital logic – boolean algebra, coding - decoding, multiplexors, summators, ROM, FLIP-FLOP, serial electronics, microprocessors, programmable logic controllers), Mechatronics (modeling of mechanical, electrical, electromechanical, thermal, fluid systems, microsensors, loading effects, scaling issues, DC motors, stepper motors, servo motors, relays, fundamentals of mechatronic system design and manufacture), Special subjects and applications (digitization of signals,

aliasing, signal processing and transmission, computer and microprocessor control, applications in industrial digital control systems). Use of MATLAB SIMULINK and other pertinent software. Prerequisites: EEIT 245, ME-MSE 322

ME-MSE 329 Numerical Methods in Engineering

Introduction to Numerical Analysis. Elements of the theory of errors in calculations. Solution of nonlinear equations: Bracketing methods (bisection, false position) Open methods: (basic iteration, Newton-Raphson). Systems of linear equations: Matrix inversion, Gauss και Gauss-Jordan elimination methods. Iteration methods (Jacobi and Gauss-Seidel).The Eigenvalue and eigenvector problem. Curve fitting: the least squares method to fit linear and nonlinear laws. Finite differences: forward, backward and central difference operators and notation. Detection and location of errors. Interpolation: Newton-Gregory forward and backward interpolation polynomials. Lagrange polynomials, splines. Numerical differentiation. Numerical integration: Trapezoidal and Simpson's rules, simple and composite. Romberg procedure. Gaussian integration. Solution of ODEs: Taylor series methods, simple and modified Euler methods, Runge-Kutta methods. Sets of ODEs. The subject is supplemented by laboratory work, with assignments implementing algorithms using FORTRAN and/or MATLAB, with emphasis on engineering applications. Prerequisites: MATH 102, MATH 201, ME-MSE 111.

ME-MSE 332 Solid State Physics and Crystallography

This course introduces the student, who chooses the specialization of Materials Science and Engineering, to the fundamentals of solid state physics and condensed matter physics after an examination of the salient features of crystallography. Topics to be covered are: Crystal structures and crystallography (symmetry, periodicity, unit cells, lattices, Fourier expansions, reciprocal lattice, Bloch theorem); The nature of the crystalline bond (molecular, ionic, covalent, metallic bond); Lattice waves (lattice dynamics and vibrations, phonons, lattice specific heat, diffraction by crystal); Electron states (diffraction of valence electrons, energy gaps, the nearly-free electron model, Bloch functions, theory of energy bands, Brillouin zones, the tight-binding method, types of solids: insulators, metals and semiconductors).Prerequisite: ME-MSE 231

ME-MSE 333 Kinetics and Phase Transformations

Application of thermodynamic concepts to the analysis of phase equilibria and phase transformations in one-component and multi-component systems. Analysis of phase diagrams of real materials and construction of phase diagrams from thermodynamic data. Basic concepts of kinetic phenomena, mechanisms of diffusion, analytical and numerical methods for describing diffusion. Interplay of thermodynamic driving forces and kinetics of mass transfer in defining the formation of complex microstructures of real materials Prerequisite: ME-MSE 231

ME-MSE 335 Materials Laboratory

This is the basic laboratory in which the student familiarizes itself with the basic experiments of characterization and processing of

materials. Subjects: Measurements of material hardness and creep experiments, metallography of weldings and precipitation hardening. Utilization of electronic materials (conductors, insulators, semiconductors) in experiments of processing and characterization, optical measurements and opto-electronic device applications. Prerequisite: MMY 112

ME-MSE 414 Stress Analysis

The main objective of the course is the correlation between the external loadings applied to a structure and the internal stresses, deformations and strain energy that develop as a consequence. Topics that will be covered include general state of stress, equilibrium equations, stress-strain-temperature relationships, plane stress, axisymmetric stress, pressure vessels, rotating disks, bending of rectangular and circular plates, torsional of ME-MSEbers with non-circular cross-section, asymmetric bending, strain energy and Castigliano´s theorems, failure theories, introduction to fracture mechanics, etc. Prerequisite: ME-MSE 215

ME-MSE 415 Design of Mechanical Systems

The aim of the course is to develop the capability to students to study and design complete complicated mechanical systems, so that they will be safe, efficient, reliable, economical, and optimal. Through the appropriate learning, the students will develop skills that will enable them to invent suitable solutions to mechanical design problems. At a theoretical level, topics on creativity, decision-making, safety, reliability and optimization (classical, evolutionary, heuristic, …) with emphasis in applications for the design of systems of mechanisms used in automated production and handling of materials and goods, as well as for the betterment of human life in a safe and sustainable environment. A systematic application on suitable complete design projects will help in the understanding and the development of professionalism in the design of mechanical systems composed of machine elements, mechanisms, power supplies (mechanical, electrical, hydraulic, pneumatic etc), as well as in methods of proper control in static and dynamic conditions. Prerequisite: ME-MSE 326

ME-MSE 416 Finite Element Method in Mechanical Design

The main objective of this course is the application of the finite element method in the analysis and design of various components and structures. The topics that will be covered include trusses, frames, plain stress and plane strain solids, axisymmetric solids, plates, shells, 3D solids, modeling techniques, P- and H- convergence, bodies in mesh etc. The students will make extensive use of appropriate FE software. Prerequisites: MATH 103, ME-MSE

MEM 421 Manufacturing Engineering II

The main objective of this course is to introduce the students to the industrial practices and principles of advanced manufacturing processes, so that they gain familiarity with the modern manufacturing industry. The course involves a study of advance machining processes such as chemical and electrochemical machining, electrical-discharge machining, Laser-beam machining, water-jet machining, etc., as well as the economic aspect of these

machining processes. Relationships between manufacturing processes and product design as well as the basic elements of numerically controlled metal processing systems will be examined. The course will also cover an introduction to automation of manufacturing processes; machining with computer numerical control (CNC), computer aided manufacturing (CAM), and computer integrated manufacturing (CIM) systems, flexible manufacturing systems, together with production economics and optimization of production systems.

ME-MSE 422 Microelectromechanical Systems (ME-MSES)

This course aims to address the ever-increasing applications of electromechanical systems in all platforms of modern engineering, and it exposes the students to all aspects of ME-MSES including manufacturing (CMOS, bulk and surface micromachining), specific mechanisms and sensors, mechanical properties of ME-MSES materials, microfluidics, and optical systems.

ME-MSE 423 Heating, Ventilating and Air Conditioning

The objective of this course is to help students use their knowledge in thermodynamics, fluid mechanics and heat transfer to analyze and size different components of heating, ventilating and air-conditioning systems (HVAC). The course will examine components of residential and commercial systems, psychrometrics, comfort conditions, calculation of heating and cooling loads, air conditioning systems, air distribution, design/sizing of systems and equipment, and energy usage estimating.

Prerequisite: ME-MSE 217

MEM 424 - MEM 425 Diploma Thesis/Design Project I & II

The purpose of these courses is to apply all the knowledge and fundamental theory accrued to the students during their years of study to the detailed design of a suitable project selected in consultation with the department. The students are expected to take the design project from its preliminary stages through the different design phases to ultimate completion, and will include a preliminary report (by the end of MEM 424) and a detailed final report (by the end of ME 425) both with calculations, technical drawings and other pertinent information. Deliverables may also possibly include a functioning model and a PowerPoint presentation to the Department.

Prerequisites: Enrollment in the final year of studies without any deficiencies

ME-MSE 434 Polymers and Composites

Polymers: This course focuses on synthesis, characterization, microstructure, rheology, and structure-property relationships of polymers, polymer directed composites and their applications in biotechnology. Topical coverage includes: polymer synthesis and functionalization; polymerization kinetics; structure of glassy, crystalline, and rubbery polymers; thermodynamics of polymer solutions and blends, and crystallization; liquid crystallinity, microphase separation in block copolymers; polymer directed self-assembly of inorganic materials; biological applications of polymeric materials. Case studies include thermodynamics of block

copolymer thin films and their applications in nanolithography, molecular templating of sol-gel growth using block copolymers as templates; structure-property of conducting and optically active polymers; polymer degradation in drug delivery; cell adhesion on polymer surface in tissue engineering. Composites: Introduction to the field of composite materials. The course will examine primarily polymer matrix composites. Topics to be discussed include classification of composites, types of reinforcements and resins (including advantages/disadvantages and applications), manufacturing, processing, testing, machining, bonding, designing/optimizing, classical plate theory. Prerequisite: CHEM 201

ME-MSE 437 Synthesis of Advanced Materials

Synthesis and characterization of nanostructured materials and thin films of significant technological potential and importance. The main synthesis techniques as well as the underlying scientific principles are introduced. Examples of techniques to be studied are Molecular Beam Epitaxy, Pulsed Laser Deposition, Chemical Vapor Deposition, Ion Beam Deposition, Sputtering, spin coating, Sol-Gel methods (based on liquid solutions), etc. Examples of materials to be examined include nanoporous oxides, nanoparticles, inorganic thin films and ME-MSEbranes and self-assembled structures. . Emphasis will be placed on the fundamental knowledge required to understand and control the "bottom-up" formation of these inorganic materials by polymerization, controlled precipitation, selfassembly, and controlled transport of matter and energy. The course will draw on elements of inorganic chemistry, physical chemistry, chemical kinetics, transport phenomena, and interfacial engineering to provide a survey of materials chemistry and the engineering of advanced materials. Prerequisites: ME-MSE 335

Elective Courses

ME-MSE 023 Biosensors and Systems

The objective of this course is to provide a broad overview of the different types and characteristics of biosensors, so that students are able to select the appropriate device for a given biomedical application. The course gives an introduction to acoustic, optical, electromagnetic electrochemical sensors and their application in the areas of pharmaceutical research, diagnostic testing, environmental detection, and others. Requirements for sensitivity, cost, size, and resolution for sensor elements as well as detection instrumentation are examined. Prerequisites: ME 325, EEIT 204

ME-MSE 024 Tissue Engineering

The objective of this course is to familiarize the students with basic engineering and biological principles involved in tissue engineering analysis along with examples and strategies to engineer specific tissues for clinical use such as skin, bone, cartilage, cardiac tissue and blood vessels. Prerequisite: EEIT 204, (Will not be offered in 2013-2014)

ME-MSE 031 Marine Hydrodynamics

The objectives of this course are to provide an introduction to classical and computational hydrodynamics and help the students develop the foundation on which other naval

engineering courses will be built. The course will cover fundamental equations of fluid mechanics and their applications to several areas of marine hydrodynamics, conservation of mass, momentum and energy, lift and drag forces, laminar and turbulent flows, dimensional analysis, added mass and linear surface waves, including wave velocities, propagation phenomena, descriptions of real sea waves, and wave forces on structures. In the area of computational hydrodynamics, the course will cover methods to compute and analyze flow around the hull, introduction to automatic shape optimization with respect to ship resistance, and basic sea-keeping analysis of ships and offshore platforms. Other topics that will be examined include geophysical fluid dynamics, salinity, temperature and density distributions, heat balance in the ocean, major ocean circulations and geostrophic flows, and the influence of wind stress. Experimental projects in ocean engineering, including ship resistance and model testing, lift and drag forces on submerged bodies, and vehicle propulsion will enhance the practical aspect of the course. Prerequisite: ME-MSE 321

ME-MSE 032 Design of Ocean Systems

This course aims to extend and apply the design-oriented studies accrued to the students to the engineering design of small-scale ocean systems. The course deals with the development of system definition, design process, construction and operation of small-scale ocean systems, instruction of the use of the machine shop and implementation of the mechanical, electrical and electronic components of the pertinent system. Finally, the course will demonstrate the operation of ocean systems in the laboratory or a marine environment. Prerequisites: ME-MSE 321, ME-MSE 326(Will not be offered in 2013-2014)

ME-MSE 033 Naval Fabrication Technology

The objective of this course is to provide an overview of a wide variety of technologies including welding, brazing, soldering, casting, forging and non-destructive testing, as they apply to ship building and heavy fabrication. Emphasis is on both the underlying science of a given process, as well as a detailed description of the technique and equipment. Prerequisite: ME-MSE 038(Will not be offered in 2013-2014)

ME-MSE 041 Introduction to Nanotechnology

The objective of this course is to provide an introduction and overview of nanotechnology. By the end of the course, the students will be familiar with the basic science, properties and characteristics of organic and inorganic nanomaterials and be better prepared to take other courses in this field. The course will cover nano and microsystems classification, the microscopic and macroscopic world, molecular manufacturing and self assembly, impact of nanotechnology on society, nanoscience /nanotechnology of organic materials, building blocks of living organisms, the cell, DNA, RNA, and genes, protein synthesis and protein engineering, biosensors, recombinant techniques, and genetic engineering. Other topics include nanoscience/nanotechnology of inorganic materials, introduction to

molecular chemistry, quantum and statistical mechanics, chemical, electrical, mechanical, magnetic ,optical, and thermal, properties of nanomaterials, and structure-properties-applications relationships of nanomaterials.(Will not be offered in 2013-2014)

ME-MSE 042 Nanodevices

This course is designed to provide a comprehensive understanding of the technologies used for structuring matter at the nanometer scale (approximately 100 nm and below). Different approaches for creating nanostructures and nanodevices, including "top down" and "bottom up" techniques, will be covered, with a discussion of the capabilities and limits of each. Students will learn the fundamental physics, chemistry and material science of nanofabrication, as well as the practical aspects of the creative process of building functional structures at the nanoscale. Each topic will be explored in terms of the underlying physics, chemistry and material science, how the various fabrication technologies are used, what their physical limitations are and why, and how they may be combined to build functional structures and devices. Prerequisite: ME-MSE 214 (Will not be offered in 2013-2014)

ME-MSE 043 Nanofabrication

This course aims at teaching the fundamentals of the design, fabrication, characterization and optimization of nanostructures and nanodevices. The students will apply their skills to specific practically-oriented examples. Topics that will be examined include fundamentals of microfabrication, taxonomy of micro and nanosystems as well as their design and synthesis, nanomechanics molecular manufacturing, and mechanosynthesis, components of nanosystems, micro and nanoelectromechanical systems (ME-MSES and NEMS), synthesis and processing of nanosystems, modeling and simulation of nanostructures and nanodevices, sensors, instrumentation and microcontrol systems, design, development, and optimization of nanosystems with specific examples, photolithography, micromachining, nanotubes, biomimetics, IC, rapid prototyping etc. Prerequisite: ME-MSE 031(Will not be offered in 2013-2014)

ME-MSE 044 Computational Materials Science

The objective of this course is to introduce the fundamental elements of computational methods, particularly as they apply to materials science. The course aims at preparing the students for graduate level studies in the fields of nanoscience and nanotechnology. Topics taught include basic elements of numerical analysis (diagonalisation and inversion of matrices, finding of eigenvectors and eigenvalues, solution of differential equations – methods of Euler, Runge-Kutta etc., applications: Laplace and Poisson equations, heat conduction equation., wave equation), calculations in crystal lattices (construction of vectors in the direct and reciprocal lattice, structure factor, applications in various crystal systems, Madelung constant, Bragg reflection), simulations and statistical physics (Monte Carlo and Molecular Dynamics methods with applications in crystalline and amorphous materials, comparison of experimental results), quantum mechanical simulations (Kroning-

Penney model, tight-binding method, Ashcroft's pseudopotential, first-principles methods, calculations of electronic structure, Molecular Dynamics with applications in simulations of nanostructures), and others. The course is accompanied by a 2h/week practice in the computer lab. Prerequisites: ME-MSE 111, ME-MSE 332(Will not be offered in 2013-2014)

MEM 045 Introduction to Microelectronics

The objective of this course is to introduce the basic elements of microelectronics and integrated circuits to enable students to design more complete microelectromechanical (ME-MSES) and related systems. Topics examined include electronic elements, semiconductor processing, devices and integrated circuits, electronic properties of semiconductors, diodes (p-n junctions, Schottky contacts, metal-semiconductor Ohmic contacts), bipolar transistors, field effect transistors (FET), optoelectronic semiconductor devices (LED, laser diodes, optical sensors, photodiodes, solar cells).Prerequisite: MEM 332(Will not be offered in 2013-2014)

MEM 053 Processing of Solid Waste

The course aims to explain the impact of sound solid waste processing practices on the environment and teach students proper design methodologies for safe land fills. The topics discussed in the course include environmental protection and environmental economics, requirements for an environmentally friendly system for solid waste management, sources of solid wastes, qualitative and quantitative characteristics, methods of reducing solid waste production, waste collection systems, waste transformation as well as transport, recycling, separation and selection of wastes with specific examples. Other topics include mechanical-biological processes, composting, design and standards for safe land filling, incineration, combustion and toxic waste management, and multivariable criteria analysis as a tool for solid waste management. Prerequisites: CHEM 101, EEIT 204(Will not be offered in 2013-2014)

MEM 054 Fundamentals of Combustion

The objective of this course is to help students apply the principles of thermodynamics, fluid mechanics and heat transfer to the study of combustion. The course is useful to those interested in graduate studies or research in internal combustion engines, gas turbines etc. Topics to be examined include introduction to combustion processes (combustion thermodynamics, reaction kinetics, and combustion transport), chain reactions, ignition, quenching, flammability limits, detonations, deflagrations, and flame stability. The course will also cover an introduction to turbulent premixed combustion, and the combustion theory will be applied to internal combustion engines, furnaces, gas turbines, and rocket engines. Prerequisites: CHEM 101, MEM 321, MEM 323(Will not be offered in 2013-2014)

MEM 055 Applied Heat Transfer

This course is the continuation of MEM 323 and its objective is to enhance student knowledge on heat transfer phenomena, so that they can analyze and design more

advanced thermomechanical systems. Topics covered include conduction, convection and radiation heat transfer, fluid flow, mass transfer and thermodynamic principles applied to the analysis and design of heat and mass exchangers, periodic regenerators and cooling towers etc. The course also introduces numerical methods in heat transfer (finite difference and finite elements methods). Prerequisites: MEM 321, MEM 323(Will not be offered in 2013-2014)

MEM 057 Compressible Flow

The objective of this course is to introduce the basic classical and numerical techniques of compressible and supersonic flow. Topics covered include conservation equations in integral and differential forms, one-dimensional flow, oblique shocks and expansion waves, nozzles and diffusers, unsteady wave motion, velocity potential equation, linearized flow, conical flow, and introduction to numerical techniques for supersonic flow. Prerequisite: ME-MSE 321(Will not be offered in 2013-2014)

ME-MSE 058 Applied Fluid Mechanics

This course is the continuation of ME-MSE 321 and its objective is to enhance student knowledge on fluid dynamics and complex flows. Topics to be discussed are potential flow, viscous flow, stability and transition to turbulence, fundamental concepts of turbulence, the turbulent boundary layer, and an introduction to turbulence modeling. Prerequisites: ME-MSE 321, ME-MSE 323

ME-MSE 061 Construction Materials

The objective of this course is to help students familiarize themselves with the criteria for the selection of different construction materials based on a thorough understanding of their properties and characteristics. The course will examine physical, chemical, mechanical, thermal, acoustic, and electromagnetic properties of construction materials, standards and quality control of construction materials, natural stones, inert materials (including geological and mineralogical characterization) for concrete and road making, extraction, production, classification, properties, conservation and protection of construction materials, lime, mortars, clays ,brick, wood, resins, cement production, methods of quality control and properties, special cements, concrete and its properties, metallic structural materials, structural steels and their properties, and quality control. Prerequisites: ME-MSE 214, MEM 434(Will not be offered in 2013-2014)

MEM 062 Corrosion and Protection

The objective of this course is to introduce the different forms of corrosion and ways to prevent/combat it. Students will be able to appreciate that corrosion can be a significant factor in an engineering design and the pertinent material selection. Topics covered include introduction to corrosion, electrochemical reactions, polarization, passivity, effects of environmental variables (effect of velocity, temperature, oxygen, corrosive concentration, microstructure), forms of corrosion (galvanic, pitting, crevice, intergranular, erosion-corrosion, stress-corrosion), corrosion testing and evaluation, corrosion of

specific alloy systems, oxidation, and high temperature corrosion, corrosion protection methods (anodic and cathodic protection, inhibitors, physical and chemical methods).Prerequisite: ME-MSE 214(Will not be offered in 2013-2014)

ME-MSE 063 Materials Joining

The purpose of this course is to familiarize students with some important materials joining techniques so that they are able to select the appropriate one for an engineering application given some constraints. Topics discussed include microstructural modification of the material during the weld thermal cycle, comparative analysis of various fusion welding processes (arc, electrical resistance and high energy beam welding processes), heat transfer considerations, residual stress formation and resulting distortion, fundamentals of solid phase welding, brazing and soldering principles, and applications. The course will also examine process selection, quality control and assessment of weldability. Prerequisite: ME-MSE 214 (Will not be offered in 2013-2014)

MEM 064 Composite Materials

The objective of this course is to introduce the students to the field of composite materials. The number of engineering applications of composites has increased dramatically in recent years, and today's engineer/designer is more than likely to incorporate composite materials in his or her work. This course will focus on polymer-matrix composites. Topics to be discussed include classification of composites, types of reinforcements and resins (including advantages/disadvantages and applications), manufacturing, processing, testing, machining, bonding, designing/optimising, classical plate theory, analysis of composite beams, laminates and shells etc. For the laboratory portion of the course, the students will gain hands on experience in hand lay-up, vacuum bagging, pultrusion and other manufacturing techniques, as well as integrating fiber-optic and piezoceramic sensors and actuators with advanced composites. Prerequisite: ME-MSE 215(Will not be offered in 2013-2014)

ME-MSE 65 Materials Thermodynamics

In this course, concepts and principles of thermodynamics are presented with emphasis on engineering applications. Topics include: Basic concepts and definitions; Forms of energy; First Law of thermodynamics, Enthalpy; Thermochemistry; Calorimetry and Heat Capacity, Second Law of Thermodynamics; Entropy and phase transformations; Third Thermodynamic Law; Gibbs Free Energy; Reversible and irreversible chemical reactions; Chemical potential; Phase diagrams; Homogeneous mixtures; Basic relations of thermodynamic properties; Phase and Chemical equilibrium; Chemical activities of materials in solutions; Clapeyron's equation; Electrochemical cells and electrochemical potential. Prerequisites: MATH 201, CHEM 101, ME-MSE 212(Will not be offered in 2013-2014)

ME-MSE 66 Advanced Materials Processing

Processing of reinforcements and composites through the solid, liquid and vapor phases; Structure-property relationships; Controlled

processing of semiconductors for optimum electronic and optical properties; Design and production of novel materials for superior performance of electronic devices. Processing of micro lithographic materials, conductors, and dielectrics for electronic applications; Discussion of processing techniques used in microelectronic circuit manufacture during metallization, dielectric formation, and lithography.

ME-MSE 67 Electrical, Optical and Magnetic Materials

This course is a continuation of the introductory course on solid state physics, emphasizing on the optical, electrical, and magnetic properties of materials. Topics include: Electrical conduction in metals and alloys, semiconductors and semiconductor devices, electrical conduction in polymers, ceramics, and amorphous materials. The dielectric function of the electronic gas, optical reflection, absorption, and emission, applications (measurement of optical constants, lasers, integrated optoelectronics, optical storage devices). Basic concepts of magnetism, magnetic phenomena (diamagnetism, paramagnetism, ferromagnetism, antiferromagnetism), measuring methods (NMR, EPR), applications (soft and hard magnetic materials, amorphous ferromagnets, magnetic recording, magnetic ME-MSEories, magnetic nanomaterials). Prerequisites: MSE 332(Will not be offered in 2013-2014)

ME-MSE 336 Atomic and Nanoscale Characterization

The interaction of electrons, ions and photons with materials; charged particle optics, image formation and sources; geometrical theory of diffraction from space lattice; Fourier methods; scanning probe microscopy (STM, AFM); scanning and transmission electron microscopy; X-ray microanalysis; electron energy loss spectroscopy; Auger spectroscopy and SIMS. Prerequisite: ME-MSE 332 (Will not be offered in 2013-2014)

ME-MSE 411 Failure Analysis and Materials Selection

The main objective of this course is to teach students the methodology for selecting the appropriate material and pertinent manufacturing process to meet the various criteria and constraints of a given engineering design. The course will cover mechanical failures, fracture mechanics, failure modes (fatigue, creep, wear, corrosion), diagnosis and prevention of failure, effect of material properties and manufacturing processes on design, reliability of components in service, economics of materials and manufacturing processes, integration of design and economic analysis with materials and process selection etc. The work will be illustrated by means of case studies in materials selection. Prerequisites: ME-MSE 215(Will not be offered in 2013-2014)

ME-MSE 412 Statistics and Quality Control

This course aims, primarily, to familiarize the student with the most important principles of Total Quality, quality assurance and control, the quality tools and to teach the importance and implementation of statistical process control. The course covers, after short evaluation of the basic principles of Total Quality Management and quality models, probability and statistics, analysis of data, analysis of spread, means, standard deviations, quality

control, modern quality tools, statistical process control with concentration to control charts of variables and attributes data, statistical design of experiments and Taguchi method for optimized design, factorial design, sampling of variables and attributes data. Case studies Prerequisite: MATH 101

ME-MSE 426 Building Energy Performance

Analysis of the basic principles and computational tools pertaining to the design of buildings with low energy consumption with respect to heating, air-conditioning, service hot water and lighting. Basic solar geometry. Adaptation of the building in the built and natural environment. Thermal protection of shells and exploitation of the thermal capacity of shells with respect to heating systems. Sizing of openings, solar gains and undesirable loads. Natural and artificial lighting. Optimization of ventilation, natural cooling and solar shading as means of reducing cooling loads. Alternative methods of heating and cooling by incorporating RES systems in the building shell. Cypriot and European legislation for new and existing buildings. Insulation regulation, techno economic studies, determination of building materials properties, thermo-photography and other measuring equipment. Determination of thermal comfort. Prerequisite: ME-MSE 423

MEM 427 Renewable Energy

The basic objective of this course is to help students appreciate the magnitude of the energy crisis and the importance of the various renewable energy sources. Topics studied include the energy problem and the renewable energy sources, history of renewable sources utilization, basic characteristics of the renewable energy sources, methods and technologies for utilization, economic improvement and dimensioning of the utilization systems, energy potential estimation, solar energy (active and passive solar systems, solar thermal power plants, photovoltaic systems), wind energy (types of wind engines, wind generation), geothermic energy (high-average and low enthalpy), biomass (forest biomass, by-products of agricultural production, cattle-farm waste, municipal waste characteristics, physical and chemical properties, management methods and utilization technologies), water power (water engines, water power plants), sea energy (tide, wave and temperature difference), energy storage systems (thermal, mechanical and chemical energy storage). Prerequisite: MEM 218(Will not be offered in 2013-2014)

ME-MSE 428 Mechanical Vibrations

The course will examine single and multiple degree of freedom lumped parameter systems subjected to harmonic and transient excitation. Analytical and numerical methods in vibration analysis will be covered. Emphasis will be placed on modeling of mechanical engineering systems, correlation of physical parameters with the coefficients of the pertinent differential equations, and the concepts of natural frequency, damping and resonance. Vibrations of rotating machinery and vibration monitoring and control in industrial applications will also be examined. Prerequisites: ΜΑΣ 201, ME-MSE 221

ME-MSE 429 Automatic Control II

This is the continuation of the course ME 322, “Automatic Control I” and it aims to teach the students elements of modern control theory. In particular, the following will be investigated: state space representation of linear systems, controllability, observability, stability, full state feedback, reduced order feedback, pole placement, optimal regulators, and optimal observers. Prerequisite: ME-MSE 322 (Will not be offered in 2013-2014)

ME-MSE 430 Introductions to Naval Architecture

This course aims at introducing the principles of ship geometry, hull structure strength calculations, ship resistance, calculation and drawing of displacement, intact and damaged ship stability, analysis of ship lines drawings, and ship model testing. Prerequisites: ME-MSE 321

ME-MSE 431 Introduction to Marine Mechanical Design

The objective of this course is to allow the students to use their knowledge in computer-aided design and marine hydrodynamics for the detailed mechanical design and fabrication of marine systems and their components. The course will cover analysis of the design, as well as fabrication and testing of systems that can serve as housings for marine systems. Computer-aided design (CAD) tools for assistance in 3-D modeling and development of final technical drawings will be used. The students build the end product using machine tools and procedures and test it in a tank or the sea.

ME-MSE 432 Biology and Biomaterials

An introduction to the basic principles of modern biology, including cell structure, organs and organismal levels with emphasis on physiological processes, homeostasis and evolution. The objective of this course is to familiarize the students with the basic characteristics and properties of biomaterials, so that they can understand the response of these materials to different biological systems and stimuli. The course will examine physical, chemical, and mechanical properties of materials such as metals, ceramics, polymers, composites, restorable smart, and natural materials used for biomedical applications, biomaterial response to biological systems (such as mechanical breakdown, corrosion, dissolution, leaching, chemical degradation, and wear), and living tissue response to biomaterials (such as inflammation, wound healing, carcinogenicity , immunogenicity , cytotoxicity, infection, local/systemic effects).Prerequisites: ME-MSE 214, ME-MSE 334(Will not be offered in 2013-2014)

ME-MSE 433 Introduction to Biomechanics

The scope of the course is to introduce the basic concepts of biomechanics and establish a foundation upon which other courses on biotechnology will be built. In particular, the course pertains to the applications of solid and fluid mechanics in problems of biomedical technology, stress-strain behavior of bones, viscoelastic behavior of tissues, blood flow in the cardiovascular system, and non-Newtonians characteristics of blood. Emphasis will be placed on modeling and clinical applications. Prerequisites: ME-MSE 221, ME-MSE 321

ME-MSE 435 Entrepreneurship

The aim of the course is to introduce engineering students (from all disciplines) to the basic principles, ideas, and processes of technology entrepreneurship: (a) evaluation of entrepreneurial opportunities, (b) strategy and protection of intellectual rights, (c) idea formulation into products for the appropriate market, (d) product placement strategy development, marketing, and day-to-day operations, (e) acquisition of the necessary resources for starting up a new technology company, (f) leadership issues. Particular emphasis is given to start-up companies and their structured development through a lean process.

ME-MSE 439 Internal Combustion Engines

Basic principles and operation of modern Otto and Diesel engines as well as gas turbine engines; Theoretical cycles for reciprocating engines and industrial gas turbines; Real engine operating cycles. Energy balance; Specific combustion conditions in engines; Mixture formation; Combustion problems; combustion chamber configuration; emission of pollutants. Prerequisites: ME-MSE 217, ME-MSE 321(Will not be offered in 2013-2014)

ME-MSE 440 Turbomachines

Introduction, morphology, operation and thermodynamics of thermal turbomachines; Basic equations of 1D and 2D flow; 1D analysis of axial and radial machines; Generation and use of turbine map and characteristics; Basic construction elements. Prerequisites: ME-MSE 217, ME-MSE 321(Will not be offered in 2013-2014)

ME-MSE 441 Special Topics in Mechanical Engineering

This course is intended for undergraduate students who are participating in the "Erasmus" exchange program and want to enroll in a mechanical engineering course (which is not offered by our Department) at a partner academic institution. The students are assigned an academic advisor from the Department who will examine the content and method of evaluation of the course at the partner institution. The students may register for this course or its counterpart, ME-MSE 442, only once. The course may also be credited to students that have been transferred from another University.

ME-MSE 442 Special Topics in Materials Science and Engineering

This course is intended for undergraduate students who are participating in the "Erasmus" exchange program and want to enroll in a materials science and engineering course (which is not offered by our Department) at a partner academic institution. The students are assigned an academic advisor from the Department who will examine the content and method of evaluation of the course at the partner institution. The students may register for this course or its counterpart, ME-MSE 441, only once. The course may also be credited to students that have been transferred from another University.

ME-MSE 443 Applied Petroleum and Reservoir Engineering

Introduction to on-land and offshore drilling, types of drilling rigs, types of oil platforms, drilling equipment, drill string, drill collars, drill bits, vertical drilling, directional, horizontal drilling, deviation control, drilling fluids, blowout prevention, solution of

problems. Introduction to reservoir engineering, how hydrocarbons are formed, types of formations, reservoir temperature and pressure, nature of reservoir fluids, rock reservoir characteristics, porosity of reservoir rock, permeability of reservoir rock, effective and relative permeability, properties of reservoir fluids, volumetric behavior and hydrocarbon phase diagrams, dry gas, gas condensates, measurement and prediction of reservoir fluid properties, ideal gases, non – ideal or real gases, volumetric calculation of reservoir gas, gas volume factor, gas deviation factor, connate water, gas condensates reservoir, bubble point or dissolved gas reservoir, dew point or retrograde gas – condensate reservoir, single phase gas reservoir, estimation of initial gas in – place, gas production/separation, under saturated oil reservoirs, compressibility of reservoir rock and reservoir fluids, reservoir water influx, production methods, by volumetric expansion, by water influx – water drive, segregation drive, estimation of initial gas and oil in – place, transportation of oil and gas.

MMY 444 Computational Fluid Dynamics

Fluid mechanics is typically being studied in three ways: a) theoretically β) experimentally and c) computationally (Computational Fluid Dynamics (CFD)). The objective of this course is to offer a thorough examination of computational fluid mechanics techniques so that students can analyze realistic flows with the help of modern software. The course will cover introduction to computational fluid dynamics (CFD) in mechanical engineering, governing equations of fluid dynamics (conservation of mass, momentum and energy), mathematical behavior of partial differential equations, basic aspects of discretization, the theory and numerical techniques of CFD, coordinate transformations, advanced numerical schemes, future CFD methodology, modern CFD software including grid generation and flow visualization tools. Students will work on projects with complex fluid flow systems. Prerequisite: MEM 321

Department of Civil Engeening and Geomatics

Academic Staff

Toula Onoufriou
Professor, Vice Rector for Academic Affairs

Diofantos Hadjimitsis
Associate Professor, Department Head

Christis Chrysostomou
Associate Professor

Evangelos Akylas
Assistant Professor

Nicholas Kathijotes
Assistant Professor

Chrystalla Demetriades
Assistant Professor

Michael Poullaides
Assistant Professor

Klitos Anastasiades
Senior Lecturer

Chryssis Papaleontiou
Lecturer (Entagmenos)

Dimitrios Skarlatos
Lecturer

Elia Tantele
Lecturer

Lysandros V. Pantelidis
Lecturer

Stylianos Yiatros
Lecturer

Ioannis Economides
Senior Lecturer

Andreas Kkolos
Senior Lecturer

Demetrios Andreou
Senior Lecturer

Stylianos Kyzas
Senior Tutor

George Alexandrou
Senior Tutor

Panayiotis Pelecanos
Tutor

Department of Civil Engineering and Geomatics

The Department of Civil Engineering Geo informatics at the University of Technology in Cyprus, offers high quality study programs leading to undergraduate and postgraduate degrees in the specialties of Civil Engineering and Surveying Engineering and Geomatics. These specializations implement the formation of what is called built environment , and ensure the latter consistent as possible with the corresponding natural. The objective is the excellent training of students and the development of skills to cope with claims in dynamic and competitive environment of the 21st century. Emphasis is given on the cultivation of critical thinking and autonomous learning through research , and encouragement of participation in transnational exchange programs and internships. Besides the strong ties developed by the Department with various public bodies and private (industry, consultants , etc.), and partnerships with other academic institutions from the European and international area students are enabled to have meaningful contact with the object of their study and be fully trained for direct integration into working space.

The Department offers four undergraduate programs studies in these two directions , recognized already by the ETSC . The choice of direction is made during the completion of the application of candidates for participating in the national exams . The first year of study is common, while the next year has an emphasis on lessons specialty.

The Department also offers one-year postgraduate Master's degrees entitled «MSc in Politics Engineering and Sustainable Design " and doctoral studies are possible in a wide range.

Bachelor in Civil Engineeing and Geomatics			
FIRST YEAR			
FALL SEMESTER		**SPRING SEMESTER**	
1st Semester		**2nd Semester**	
	ECTS		ECTS
CIV 111 Professional Studies and Skills I	3	**CIV 116** Engineering Mechanics-Statics	5
CIV 131 Geodesy I	5	**CIV 132** Geodesy II	5
CIV 112 Geology for Engineers	3	**CIV 117** Mathematics II	5
CIV 113 Technical Drawing & Computer Aided Design (CAD)	5	**CIV 118** Computer Programming for Engineers I	5
CIV 114 Physics I	6	**CIV 119** Statistics, Error Theory and Least Squares Method	5
CIV 115 Mathematics I	5	**CIV 181** Integrated Design for Civil Engineers & Surveying and Geoinformatics Engineers I	4
ENG 122 English for Academic Purposes	4	**ENG 160** English for Civil Engineering & Surveying and Geoinformatics Engineers	4
Total	31	**Total**	33

SECOND YEAR			
FALL SEMESTER		**SPRING SEMESTER**	
3rd Semester		**4th Semester**	
	ECTS		ECTS
CIV 221 Construction Materials	5	**CIV 225** Structural Analysis II	5
CIV 211 Mathematics III	5	**CIV 226** Soil Mechanics	5
CIV 222 Strength of Materials	5	**CIV 227** Highway Engineering I	5
CIV 212 Professional Studies and Skills II	3	**CIV 214** Principles of Geoinformatics and Geographical Information Systems (GIS)	4
CIV 223 Structural Analysis I	5	**CIV 215** Sustainability and Environmental Concepts	4
CIV 224 Hydraulics	5	**CIV 281** Integrated Design for Civil Engineers & Surveying and Geoinformatics Engineers II	4
CIV 213 Computer Programming for Engineers II	5		
Total	33	**Total**	27
CIV 271 Practical Training I: June to July (8 Weeks)	4		

THIRD YEAR					
FALL SEMESTER			SPRING SEMESTER		
5th Semester			6th Semester		
		ECTS			ECTS
CIV 321	Reinforced Concrete Structures I	5	CIV 313	Construction Management	4
CIV 311	Environmental Impact Assessment	4	CIV 325	Reinforced Concrete Structures II	5
CIV 322	Structural Dynamics	5	CIV 326	Earthquake Engineering	5
CIV 323	Foundation Engineering	5	CIV 327	Steel Structures	5
CIV 324	Water Supply & Waste Management in Structures	5	CIV 328	Smart Sensors for Infrastructure Engineering	5
CIV 312	Project Management and Economics	5	CIV 329	Transportation Planning	5
Total		29	Total		29
CIV 371 Practical Training II: June to July (8 Weeks) 4 ECTS					

FOURTH YEAR					
FALL SEMESTER			SPRING SEMESTER		
7th Semester			8th Semester		
		ECTS			ECTS
CIV 421	Prestressed Concrete	5	CIV 482	Thesis Project (7th & 8th Semester)	10
CIV 481	Thesis Project (7th & 8th Semester)	5	CIV 422	Durability of Infrastructures and Risk Management	5
CIV 411	Elements of Law and Engineering Legislation	2		Elective (Foreign Language)	4
	Choose 3 out of 5 INFRA/DOMO modules * table b	5		Choose 3 out of 7 INFRA/DOMO modules* table b	5
		5			5
		5			5
	Choose 1 out of 2 GEO modules* table b	5			
Total		32	Total		34

Table B: Compulsory choices for Civil Engineers

INFRA-1	CIV 441	Highway Engineering II	5	INFRA-4	CIV 444	Analyses of Bridges and Tunnels	5
DOMO-1	CIV 451	Building Technology I	5	INFRA-5	CIV 445	Coastal Engineering	5
INFRA-2	CIV 442	Hydrology	5	INFRA-6	CIV 446	Offshore Engineering	5
DOMO-2	CIV 452	Numerical Methods for Structural Analysis	5	DOMO-3	CIV 453	Building Technology II	5
INFRA-3	CIV 443	Water Supply Networks I	5	INFRA-7	CIV 447	Water Supply Networks II	5
GEO-1	CIV 361	Cadastre	5	INFRA-8	CIV 448	Water Resource Management	5
GEO-2	CIV 362	Land Management	5	DOMO-4	CIV 454	Steel Design and Composite Structures	5

Table C: Program Structure

COURSES	NUMBER	ECTS
Compulsory Courses	42	194
Electives	7	35
Free Electives	1	4
Project Thesis	2	15
Placement	2	8
Total	54	256

Bachelor in Surveying Engineering & Geoinformatics Engineering			
FIRST YEAR			
FALL SEMESTER		SPRING SEMESTER	
1st Semester		**2nd Semester**	
	ECTS		**ECTS**
CIV 111 Professional Studies and Skills I	**3**	**CIV 116** Engineering Mechanics-Statics	**5**
CIV 131 GeodesyI	**5**	**CIV 132** GeodesyII	**5**
CIV 112 Geology for Engineers	**3**	**CIV 117** Mathematics II	**5**
CIV 113 Technical Drawing & Computer Aided Design (CAD)	**5**	**CIV 118** Computer Programming for Engineers I	**5**
CIV 114 Physics I	**6**	**CIV 119** Statistics, Error Theory and Least Squares Method	**5**
CIV 115 Mathematics I	**5**	CIV 181 Integrated Design for Civil Engineers & Surveying and Geoinformatics Engineers I	**4**
ΑΓΓ 122 English for Academic Purposes	**4**	ENG 160 English for Civil Engineering & Surveying and Geoinformatics Engineers	**4**
Total	**31**	**Total**	**33**
SECOND YEAR			
FALL SEMESTER		SPRING SEMESTER	
3rd Semester		**4th Semester**	
	ECTS		**ECTS**
CIV 211 Mathematics III	**5**	**CIV 226** Soil Mechanics	**5**
CIV 222 Strength of Materials	**5**	**CIV 227** Highway Engineering I	**5**
CIV 212 Professional Studies and Skills II	**3**	**CIV 214 Principles of Geoinformatics and Geographical Information Systems (GIS)**	**4**
CIV 224 Hydraulics	**5**	**CIV 215** Sustainability and Environmental Concepts	**4**
CIV 213 Computer Programming for Engineers II	**5**	**CIV 281** Integrated Design for Civil Engineers & Surveying and Geoinformatics Engineers II	**4**
CIV 231 Databases for Surveying Engineers	**4**	**CIV 233** Photogrammetry	**5**
CIV 232 Remote Sensing I	**5**	**CIV 234** Cartography	**4**
Total	**32**	**Total**	**31**
CIV 273 Compulsory Summer Field Exercises n Surveying I (100 hours-2 weeks) – 4 ECTS			
CIV 272 Practical Training I: June to July (6 Weeks) – 3 ECTS			

THIRD YEAR			
FALL SEMESTER		**SPRING SEMESTER**	
5th Semester		**6th Semester**	
	ECTS		**ECTS**
CIV 331 Geodesy III	**4**	**CIV 334** Satellite Geodesy	**4**
CIV 311 Environmental Impact Assessment	**4**	**CIV 335** Photogrammetry II	**5**
CIV 361 Cadastre	**5**	**CIV 313** Construction Management	**4**
CIV 332 Remote Sensing II	**4**	**CIV 336** Thematic Cartography	**4**
CIV 333 Geography and Spatial Analysis	**4**	**CIV 337** Regional Planning	**5**
CIV 312 Project Management and Economics	**5**	**CIV 338** **Geodesy IV**	**5**
CIV 362 Land Management	**5**		
Total	**31**	**Total**	**27**
CIV 371 Compulsory Summer Field Exercises n Surveying I (100 hours-2 weeks) - 4 ECTS			

FOURTH YEAR			
FALL SEMESTER		**SPRING SEMESTER**	
7th Semester		**8th Semester**	
	ECTS		ECTS
CIV 481 Thesis Project (7th & 8th Semester)	5	**CIV 482** Thesis Project (7th & 8th Semester)	10
CIV 431 Cartography II	4	**CIV 435** GIS applications	4
CIV 432 Urban Planning	4	**CIV 436** Geometric Documentation of Monuments	3
CIV 433 Radiometry and Microwave Remote Sensing	4	**CIV 437** Digital Cartography	4
CIV 434 Real Estate Valuations	3	Free Elective (Foreign Language)	4
CIV 411 Elements of Law and Engineering Legislation	2	Choose1 of the remaining INFRA/DOMO / GEO modules *(Table B & E)	5
Choose 1 out of 2 INFRA/DOMO / GEO modules *(Table b)	5		
Total	27	**Total**	30

Table E: Compulsory choices for Surveying / Geoinformatics Engineers

GEO	CIV 461	Hydrography, Oceanography and Marine Geodesy	5	INFRA-6	CIV 446	Coastal Engineering	5
GEO	CIV 462	Photogrammetry III	5	INFRA-7	CIV 447	Water Supply Networks II	5
INFRA-9	Choose Infra from Table B		5	INFRA-8	CIV 448	Water Resources Management	5
INFRA-10	CIV 324	Water Supply and Waste Management in Structures	5				

Table F: Structure of the Curriculum (Topographic Engineering and Geomatics

Courses	AP.	ECTS
Compulsory Courses	49	213
Elective courses	2	10
Summer Field Training	2	8
Free Electives (Foreign language)	1	4
Final Year Project	2	15
Placement	2	6
Total	58	256

Course Description

CIV 111 Professional Studies and Skills I

The module will cover four main areas.

- Introduction to the civil engineering and surveying engineering and geo-informatics professions and opportunities for future work
- Study and learning skills
- Professional skills development
- Working with Engineering Modeling Activities

The study and learning skills will prepare the students for effective study, research and time management. The professional skills development will include teamwork, leadership, goal setting, presentation and negotiations. Modelling Activities will provide students with opportunities to work with complex engineering problems and integrate ideas and concepts from mathematics, science and technology. The module will start with a two day intensive course at the beginning of the semester and will be followed by weekly sessions throughout the semester. Different modes of learning will be combined which will include lectures, tutorials, workshops, individual projects, group projects and teamwork, presentations and research .Prerequisites: NI.

CIV 131 Geodesy II

Introduction and historical review. Shape and size of the earth. Reference surfaces. Introduction to geodetic observations and methods. Geometry of the sphere and the ellipsoid (basic concepts, p, N,r). Geodetic coordinates (q>,h). Arc length. Coordinate systems in two and three dimensions. Basic concepts and determination of reference systems: Astronomic, terrestrial, geodetic system. Topocentric and Geocentric systems. Determination of CGRS '87. Introduction to map projections. Difference between topographic plane coordinates and projection plane coordinates. Basic computations in the plane and the sphere. Significant digits. Applications. Hatt and Mercator projection used in CGRS '87. Reductions due to projection. Reference systems transformations. Transformation in the plane (x,y). Translation, rotation and scale. The course consists of field exercise with geodetic instruments (optical, digital, laser levels I tapes I optical squares, disto meters etc.). Prerequisites: NIL

CIV 112 Geology for Engineers

Endogenic dynamic geology. Earth's consist, temperature, isostasy. Endogenic energy, theory of tectonic plates. Tectonic processes, tectonic events. Earthquakes. Geological structure effect to the seismicity of Cyprus. Igneous processes. Volcanism. Minerals and rocks coming from the magma. Metamorphism, metamorphic rocks. Exogenic dynamic geology. Weathering, erosion denudation. Water action, water tables. Karst and fluvial cycle of erosion. Coasts and costs evolution, changes and protection of the coasts. This course includes field trips to several areas in Cyprus. Engineering description and case studies on Cyprus geological topics. Prerequisites: NIL

CIV 113 Technical Drawing and CAD

Description of drawing instruments. Principles of drawing. Legends. Definition of scale. Geometrical traces.

Representation of the building space. Design of a simple geometrical solid on the ground: floor plan, sections, elevations, axonometrics. Design of open, covered and enclosed buildings: site plan, floor plan, sections and elevations, in scales: 11200, 11100, 1150. Topographic design and the general rules of graphic design. The different scales of topographic design as related to the graphic accuracy. Constructing the grid, the layout and the legend. Portraying technical constructions. Drawing procedures in portraying the horizontal details. Portraying the land-surface form, contouring. System of horizontal coordinates. Cadastral and city-plan diagrams. The design of intersections and sections. Prerequisites: NIL

CIV 114 Physics I

Kinematics of the point mass. Statics. Dynamics. Work, energy. Principles of conservation. The dynamics of a system of particles. Rotational motion. Gravitation. Central forces. Special theory of relativity. Elasticity. Oscillations. Mechanical waves. Sound. Thermodynamics: first and second law of thermodynamics .The principles of Optics. Prerequisites: NIL

CIV 115 Mathematics I

Introductory math course covering the basic principles of calculus and its applications. The material includes: Functions, limits and continuity. Derivatives, differentials, differentiation theorems, and applications of derivatives. Indefinite and definite integral, applications of integration. Sequences, series and power series. Complex numbers and introduction to statistics. Prerequisites: NIL

ENG 122 English Language I

ENG 122 is a three-hour per week, 4-credit, required degree level course that concentrates on the learning of English for Academic Purposes (EAP). ENG122 is particularly designed to support students' studies by developing their English language to an academic level. This course aims to familiarise the students with reading material related to general and academic topics. This material is used to acquaint students with writing styles, such as narration and description. It also develops students' listening skills. Furthermore, learners are expected to develop their speaking fluency by taking an active part in speaking tasks such as dialogues, conversations, and oral presentations.

CIV 116 Engineering Mechanics and Statics

Introduction. Systems of forces. Equilibrium of rigid solids. Distributed forces. Centroids. Structural systems (trusses, frames). Internal forces. Bending moment, shear and normal force diagrams of straight and curved beams. Three-dimensional bending moment, shear and normal force diagrams of beams. Stress and strain. Materials with time-independent behaviour in simple tension. Materials with time-dependent behaviour in simple tension. Torsion of thin cylindrical tube. Moments of inertia. Tensors. Prerequisites: NIL

CIV 132 Geodesy II

Theory of observations-Elementary error theory-Propagation of errors-Significant figures. Definitions of geodetic elements (directions, angles,

distances, height differences). Instruments and methods for direction and angle measurements-Corrections and reductions. Instruments, systems and methods for distance measurements-Corrections and reductions. Instruments and methods for the determination of height differences. Tacheometry. EDM. Elements of G.P.S. positioning. Areas. Volumes. Traverses

Practical field courses (laser & digital levels, theodolite, total station, GPS). Practical exercises using total station. Prerequisites: Geodesy I

CIV 117 Mathematics II

Introduction to the basic principles of linear algebra including vectors, matrices, determinants and their applications. Advanced subjects of calculus including: Equations of lines and planes in vector form, surfaces, multi-variable functions, parametric representation of surfaces, curvilinear coordinates, multiple integrals, line and surface integrals Prerequisites: Mathematics I

CIV 118 Computer Programming for Engineers I

Introduction to informatics and computers. Internal representation of numbers in computers, conversions. Main computer components - hardware and software Operating systems, processing, and application software. Introduction to Programming, computer languages Principles of programming, algorithms and flow-charts. Evolution of computer languages. Introduction to C++. The environment and editor of C++. Data types and their characteristics (arithmetic, alphanumeric and logical constants or variables). Arithmetic, relational and logical operators and expressions. Declaring and using array variables. Syntax and usage of commands in QB. Input I output of data from the console. Control-flow structures (decision structures, looping structures) and corresponding commands. Prerequisites: NIL

CIV 119 Statistics, Error Theory and Least Squares Method

Descriptive statistics. Concept, rules and properties of probability. Conditional probability, independence of events, Bayes theorem. Distributions of random variables. Expected value and variance. Basic distributions and applications. Bivariate distributions, independence of random variables. Central limit theorem. Sampling distributions. Point estimation, confidence intervals and statistical hypothesis testing. Linear model: estimation and testing of parameters, coefficient of determination, prediction. X2- goodness of fit test, probability plotting. Contingency tables. Applications using computer packages. Introduction to adjustment theory, principle of Least Squares. Estimation of a single variable from direct measurements (equally and unequally weighted). Multidimensional variables. Variance-Covariance propagation. Bivariate normal distribution, error ellipse. Least Squares adjustments by the methods of observation and condition equations. Estimation of Variance-Covariance matrices. Geodetic applications. Prerequisites: NI.

CIV 181 Integrated Design for Civil Engineers & Surveying and Geoinformatics Engineers I

The purpose of this module is to assist students in integrating the knowledge and skills that they have acquired in other courses and provide them with the necessary tools required in solving contemporary engineering problems in Civil Engineering and Geoinformatics.

Students are expected to develop their skills in the:

- Integration of knowledge and skills from different disciplines
- Solution of contemporary engineering problems through group participation
- Methodology for solving engineering problems
- Collection and use of information from the library, Internet and other information sources
- Preparation of a portfolio for a given project
- Preparation of a report for a given project
- Visual, oral and written presentation of their project Prerequisites: NIL

ENG 160 Technical English and Report Writing

ENG 160 is a three hour per week, 4-credit, required level course that concentrates on the learning of English for Specific Academic Purposes. ENG 160 is particularly designed to meet the needs of university students studying in the field of Civil Engineering. This course intends to familiarise the students with relevant reading material. This will be used to acquaint the students with genre (proposals, lab reports, memos, instruction manuals) and writing styles (cause and effect). Furthermore, learners are expected to develop their listening comprehension and speaking fluency by taking an active part in discussions, giving oral presentations, defending their opinion etc. They are expected to develop sufficient range of language, phonological control and sociolinguistic awareness to be able to express themselves with a degree of clarity, fluency and spontaneity. Prerequisites: NIL

CIV 221 Construction Materials

Introduction, General properties of materials, Measurement techniques. Mortars, cement, protection against heat and frost. Methods and materials for heat insulation. Protection against moisture: methods and moisture proof materials. Asphalt materials. Plastic materials. Sealing applications. Surface coating materials. Paints and adhesives. Filling materials: natural stones, marble, artificial stones and plaques. Timber, glass, other materials. Inert materials, gravel, concrete, iron, steel and other metals. Soundproofing: methods and materials. Laboratory and blackboard exercises. Prerequisites: NIL

CIV 211 Mathematics Ill

This is a first course on differential equations and covers the basic principles of the subject. The material includes: Techniques for solving first order differential equations and their applications. Theorem of existence and uniqueness of solutions. Linear systems and the exponential of a matrix. Linear systems of higher order. Power-series method, dependence of solutions on parameters, separable equations, Fourier series. First order, non-

linear differential equations. Second order linear equations. Parabolic, elliptic and hyperbolic equations. Numerical analysis of linear and non-linear differential equations. Numerical integration and study of numerical error, orthogonal polynomials and Gauss integration techniques Prerequisites: Mathematics II

CIV 222 Strength of Materials

Introduction. Stress and strain under axial loading. Compatibility requirements. Stress tensor. Strain tensor. Constitutive equations. Plain stress and plain strain. Theories of failure. Torsion. Pure bending of symmetric beams. Elastoplastic bending. Skew and eccentric bending. Bending and shear. Bending of composite sections. Deformed elastic shape. Statically indeterminate structures. Energy methods (virtual work principle, complementary virtual work principle, unit load method, Castigliano's theorem, applications to statically indeterminate structures, Betti's theorem) Prerequisites: Engineering Mechanics & Statics

CIV 212 Professional Studies and Skills II

The module will cover three main areas.

- Familiarization with complex civil engineering and surveying engineering and geo-informatics projects
- Professional skills development
- Working with Engineering Modeling Activities

The professional skills development part of this module will cover more advanced skills, compared to Professionals Skills and Studies I. This will also include additional skills including entrepreneurship and understanding of the business world. Modeling Activities will provide students with opportunities to work with complex engineering problems and integrate ideas and concepts from mathematics, science and technology.

The module will start with a two day intensive course at the beginning of the semester and will be followed by weekly sessions throughout the semester. Different modes of learning will be combined which will include lectures, tutorials, workshops, individual projects, group projects and teamwork, presentations and research. Prerequisites: Professional Studies and Skills I.

CIV 223 Structural Analysis I

Simple statically determinate structures. Disks, beams, plane trusses. Calculation of reactions, internal forces, and influence lines. Statically determinate structural systems. The principle of virtual work. Formation and analysis of structural systems, checking of support conditions, influence lines, and application of virtual work principle. Statically determinate space structures. Deformation of statically determinate structures. Energy principles, unit displacements, deformed elastic shape. Calculation of displacements of linear structures under external loading and imposed deformations, elastic loads, applications of Mohr's principle. Force method: The primary structural system, compatibility conditions, stress under external loading and imposed deformations, displacements and deformations, influence lines. Typical statically indeterminate

structures: continuous beams, strengthened beams, frames, trusses. Thermal loading and imposed displacements. The statically indeterminate primary structural system. Symmetry and anti-symmetry in statically indeterminate structures Prerequisites: Engineering Mechanics & Statics

CIV 224 Hydraulics

Basic properties of fluids. Hydrostatics. Deformation of a fluid element. Piezometric and energy line. General differential equations for continuity and motion (Navier-Stokes). Ideal fluids. Euler equations. Bernoulli equation. Reynolds number. Laminar and turbulent flow.

Hydraulic and piezometric load; energy losses; characteristics of conduits. Uniform flow in open channels. Specific energy. Critical flow. Hydraulic jump. Gradually varying non-uniform flow. Weirs. Pumps. Prerequisites: Nil

CIV 213 Computer Programming for Engineers II

Basics (elements of language C++). Revision of control-flow structures and programming in C++.

Function parameters. Passing arrays as function parameters. Variable scope. Strings in C++. Input/Output with C++ functions, output data formatting. 110 streams, 1/0 using data files. Sorting and searching algorithms for array structures. Data structures, declaration and referencing of classes. Using structures in arrays and files. Recursive functions. Pointers, dynamic memory allocation. Classes, scope, polymorphism, applications. Complex applications with classes and files. Object-oriented analysis and programming in Windows. Software applications and examples.

CIV 225 Structural Analysis II

Introduction to displacement method: Conceptual basis of the method, geometric primary system,

procedure for estimating stress and strain in fully-supported structures. Cross method - Application to fully-supported structures. General form of the classic displacement method: Conceptual basis and analysis procedure for fully-supported and movable structures. Analogies with force method. Presentation of the method for structures without axial deformations, calculation of stress and strain. Treatment of structures with axial deformations in all or some of their members, cables, spring connections, temperature gradients and support settlements. Use of symmetry and anti-symmetry, combined use of force and displacement methods, influence lines. Application to space structures, to elastically supported structures and to second-order and elastic stability problems. Matrix formulation of displacement method (Matrix Analysis): Discretisation and degrees of freedom, stiffness matrices, load matrices, finite elements for bars and beams in 2D and 3D analysis. Computer-aided analysis procedure. The iterative Cross method: Generalised application to fully-supported and movable structures. Prerequisites: Structural Analysis I

CIV 226 Soil Mechanics

Nature and properties of soils. Categorization and classification schemes. Ground water and its influence on its mechanical behaviour. Mechanical behaviour

of soils. Calculation of stresses in the soil. Deformation of soil. Settlement of soil. Time-dependent behaviour (creep). Lateral pressure of soils. Bearing capacity of surface foundations. Stability of slopes. Slope failures. The course consists of laboratory sessions. Prerequisites: Nil

CIV 227 Highway Engineering I

Introduction to Highway Engineering. Basic Traffic Features. Vehicle dynamics. Elements of road geometry: alignment, transition curves, super elevation, widening of curves, longitudinal profile, grades and vertical offset, cross-sections, mass-haul diagrams. Visibility. Principles of highway design. Road Safety criteria. Elements of crossroads and interchanges design. The road and the environment. Prerequisites: Nil

CIV 214 Principles of Geoinformatics and GeographicalInformation Systems (GIS)

The course introduces the students to the basic elements of Geospatial information and Geographic Information Systems (GIS). The course consists of two Parts (A & B), which progress simultaneously. Part A is designed in such way to familiarize the students with concepts of space and to provide elementary knowledge of GIS use and development, including data models, data collection, data structures, data representation and cartographic principles. Part B introduces the technical issues of GIS regarding object oriented and relational models, spatial database design, spatial analysis and decision making. During the course the students practice with GIS software, conducting a series of exercises that constitute a semester project. Prerequisites: Nil

CIV 215 Sustainability and Environmental Concepts

Sustainability-introduction, significance. Climate Change-Integrated Overview. Environmental Crisis- Global warming and severe global events and disruptions. Energy- The Impact and Role of Energy. Energy Solutions. Renewable Energy Sources. Energy Efficient Buildings and Energy Conservation. Water-Carbon and nitrogen cycles, water quality and water treatment principles. Wastewater-Evaluation and treatment fundamentals, wastewater reuse. Solid Waste- Management and material recycling. Air Quality Characteristics- Major air pollutants and sources of air pollution, effects on environment, air pollution control methods. Prerequisites: Nil

CIV 281 Integrated Design for Civil Engineers & Surveying and Geoinformatics Engineers II

The purpose of this module is to assist students in integrating the knowledge and skills that they have acquired in other courses and provide them with the necessary tools required in solving contemporary engineering problems in Civil Engineering and Geoinformatics. Students are expected to develop their skills in the:

- Integration of knowledge and skills from different disciplines
- Solution of contemporary engineering problems through group participation
- Methodology for solving engineering problems

- Development of interpersonal skills, Leadership in engineering, and Engineering Ethics
- Engineering Design and Modeling Activities
- Preparation of a portfolio for a given complex project
- Preparation of a report and a Gantt chart for a given project
- Visual, oral and written presentation of their project. Prerequisites: CIV 181 Integrated Design for Civil Engineers & Surveying and Geoinformatics Engineers I

CIV 321 Reinforced Concrete Structures (I)

Introduction. Concrete strength. Statistical analysis of concrete properties. Characteristic strength. Grades of concrete. Required strength. Experimental determination of concrete strength. Tensile strength. Biaxial load. Stress-strain diagram. Modulus of elasticity and Poisson's ratio. Creep. Drying shrinkage.

Structural steel. Categories. Characteristic strength. Stress-strain diagrams. Bond. Cabling and lapping of reinforcement. Durability of concrete. Calculation methods for reinforced concrete. Basic design principles. Limit state design. Response of reinforced concrete members. Member design for axial loads. Distribution of strain, idealized stress-strain diagrams, design procedure. Uniaxial bending ofT-sections. Compressive stress. Tensile stress. Biaxial bending of rectangular sections. Ultimate limit state for shear. Ultimate limit state for torsion. Ultimate limit state for buckling. Serviceability limit state. Prerequisites: Structural Analysis II

CIV 311 Environmental Impact Assessment

Scientific knowledge concerning the impacts which the critical development caused. Methods of the environmental impact assessment. Provides the opportunity to the students the required tools to evaluate the impacts and restore the environment. Methods of scoping and screening. Existing legislation in Cyprus. Prerequisites: Nil CIV 322 Structural Dynamics Dynamic loading. Inertial forces. Singe-degree-of-freedom oscillator. Equation of motion. Natural period of vibration. Stiffness of elastic structures. Damping of vibration. Free and forced vibration of singe-degree- of-freedom system. Response to harmonic, periodic, and random loading. Numerical methods for estimating the dynamic response. Earthquake response of singe-degree-of-freedom system. Natural periods and natural modes of vibration. Mass and stiffness matrices. Forced vibration of multi-degree-of-freedom system. Modal spectrum analysis. Prerequisites: Structural Analysis I

CIV 323 Foundation Engineering

Surface foundations: Analysis and design of footings, foundation beams, and rafts. Types of piles and construction methods. Analysis of individual piles and pile groups: Bearing capacity, negative skin friction, settlements, lateral loading, piles in laterally-moving soil. Design of pile foundations. Retaining structures: Analysis and design of permanent and temporary retaining structures.

CIV 324 Water Supply & Waste Management in Structures

Quantitative and qualitative classification of wastes. Design of

liquid waste treatment installations - Sanitary considerations, hydraulic calculations, technological options. Pre-processing. First stage treatment, activated sludge systems. Aeration systems. Final sedimentation tanks. Third stage treatment: sludge treatment, bio-gas utilization. Analysis and design of drainage networks. Works for protecting the slopes of rivers, for the stabilization of the bed, and for flow control. Prerequisites: Hydraulics, Sustainability and Environmental Concepts

CIV 312 Project Management and Economics

Project Characteristics and life Cycle. Principles of Project Management. Initiation. Project Development and Capital Improvement Process. Project Management Plan. Design Management. Construction Planning. Schedule and Cost Control. Quality Assurance and Quality Control. Safety. Commissioning. Procurement and Records Management. Closeout Phase. Political Economy aims to acquaint students with the basic notions of contemporary economic science, giving special gravity to macroeconomic analysis. By the completion of the course, the students shall be capable to understanding and analyse the statistical data of the national and international economy, as well as to investigate the relations and mechanisms that determine the immediately detectable economic phenomena. At the same time, students shall also be capable to form a scientific opinion on economic policy. The course extends to the following major areas:

- The National Income Accounts
- Equilibrium Output
- Money, Interest and Income
- International Linkages
- Aggregate Supply and Demand
- Long-term Growth and Productivity Prerequisites: Nil

CIV 313 Construction Management

The financial assessment of technical projects (methods for infrastructure project assessment, cost- benefit assessment, capital investment on the purchase and replacement on machinery and equipment used for technical projects, cost functions, risk management-probabilistic cost-benefit functions, sensitivity analysis). Elements of construction management economy. Assessment of plant and labour production. Organization and management of construction sites. Preliminaries and general works for construction site installation (materials, safety measures, utilities, temporary services, traffic arrangements, plants, formwork etc.). On-site treatment of materials (concrete production etc). Prerequisites: Project Management and Economics

CIV 325 Reinforced Concrete Structures II Conceptual design of concrete structures. Ultimate and serviceability limit states (basic principles). Design actions and combinations of actions. Partial safety factors for actions. Analysis methods. Linear elastic analysis. Linear elastic analysis with limited redistribution. Plastic analysis. Serviceability limit states of cracking and deformation. Design of structural members. Beams, T-beams, columns, slabs and footings. General and specific rules for design of structural configuration, analysis, section

design, and detailing. Prerequisites: Reinforced Concrete Structures I.

CIV 326 Earthquake Engineering

Fundamental concepts of earthquake engineering. Earthquakes: seismic waves - recording of seismic waves - accelerograms - basic principles of seismic hazard analysis. Response spectra - effects of foundation soil on seismic behaviour - design spectrum. Seismic analysis of: single storey and multistorey structures with torsional response. Seismic methods of analysis: response spectrum method, equivalent lateral loading, inelastic static (pushover) analysis. Basic principles of the Seismic Eurocode: design seismic actions - behaviour factors - principles of earthquake resistant analysis and design. Performance objectives and criteria. Design for selected plastic mechanisms - Capacity design requirements. Seismic isolation and passive control. Prerequisites: Structural Analysis II

CIV 327 Steel Structures

Introduction to the technology of metal structures. Iron, steel, and aluminium. Properties of structural steels. Welding methods. Loadings in metal structures. Design criteria. Design of steel members subjected to tension, compression, bending, shear and/or torsion. Design of connections. Static and dynamic analysis of metal structures. Principles of design of metal buildings. Codes for the design of metal structures. Applications. Prerequisite: Structural Analysis II

CIV 328 Smart Sensors for Infrastructure

The course will give an overview of the emerging sensing technology field for smart structures. Smart structural systems are designed in such a way so as to adapt to the change of external operating conditions of their environment. The course will enable students to gain an appreciation of the state-of- the-art Smart structural systems and learn their main concepts that contain the technologies of sensing, data processing and control. Hands-on experiments will be emphasized in this course where students will have an opportunity to experiment with sensor selection and deployment on structures, real-time data acquisition and post-processing of acquired data. Prerequisites: Nil

CIV 329 Transportation Planning

The planning process in transportation. Basic principles, stages, and correlation with the planning and construction or transport works. Basic elements in the construction and evaluation of models. Theoretical issues and practical estimations of the four stages for the prediction of future needs for trips. Examples and solved problems. A) Trip Generation B) Trip Distribution C) Modal Split D) Traffic Assignment A critical approach of the aggregate methods of predicting future trips and introduction into the disaggregate models of prediction. Examples and presentations of specific studies in Transportation Planning and discussion of various subjects of interest in the field presently. Prerequisites: Nil

CIV 421 Prestressed Concrete

Types of prestressing. Pre-tensioning and post-tensioning. Load balancing method.

Applications of prestressed concrete. Steel and concrete in prestressed construction. Design for bending and axial loading. Design for shear, torsion, and punching. Statically-indeterminate prestressed structures. Design of anchorage zones. Partial prestressing. Prestressed concrete structures under seismic actions. Prerequisites: Reinforced Concrete Structures II

CIV 411 Elements of Law and Engineering Legislation I Elements of Law

Introduction. Fundamental concepts and legal aspects on the following branches of the law: Public Law (Constitutional, Administrative, Protection of Environment, Environmental Impact Studies). Private Law (General Principles, Property Law, Obligations Law, Copyright Law) Commercial Law (Mercantile Law, Commercial Transaction Law, Company Law, Security Law, Industrial Property Law, Assurance Law, Merchant Marine and Bankruptcy Law) Labour Law (Personal and Collective, Workers Safety and Health, Labour Accidents, Liability of Engineers) European Law (Sources, Institutions, Directives, Internal Market) Legislation on Regional Development of Infrastructure. Technical Legislation: National and E.U. Legislation on Public Works {Tendering, Authorities, Construction Companies, Contracts, Contract Misconduct, etc.) Urban Law (Object and Purpose of the Law, the Relationships with Rural Law, Protection of the Environment, Architectural Heritage, Development Sustenance) Prerequisites: Nil

CIV 441 Highway Engineering II

Earthwork. Soil materials and highway engineering. Embankments cuttings, slope protection and reinforcement, soil improvement (stabilisation, geosynthetics). Compaction of Soil layers. Methods and equipment for earthwork operations. Drainage and Culverts. Elements of pavement engineering, materials, types, design. Methods and equipment for pavement construction. Geosynthetics in Highway Engineering Prerequisites: Highway Engineering II

CIV 451 Building Technology I

Selection of building materials. Load-bearing reinforced concrete structure. Internal and external masonry, openings. Floors and ceilings. General insulation against heat, water and sound. Waterproofing of exposed ceilings and underground structures. Roofing. Internal and external door and window frames. Staircases. Fire protection of buildings Prerequisites: Construction Materials

CIV 442 Hydrology

Introductory concepts. Description, analysis and measurement of hydrological processes (atmospheric precipitation, hydrologic losses, surface drainage, ground water, utilization of aquifers). Probabilistic and statistical methods of engineering hydrology (probabilistic description of hydrological processes, risk factors, standard statistical analysis and forecast of hydrological variables, statistical investigation of hydrological parameter correlation, optimization of hydrological information). Calculation methods (flood hydrogram, linear basins,

unitary hydrogram, flood routing, introduction to simulation models of drainage basins). Prerequisites: Hydraulics

CIV 452 Numerical Methods for Structural Analysis

Use of the finite element method for the dynamic analysis of bars. Numerical integration of the equations of motion and computer implementation. Numerical methods for natural frequency/ state calculation. Dynamic analysis of multi-storey buildings. Computer Programming Prerequisites: Structural Analysis II

CIV 443 Water Supply Networks I

Introduction to hydraulic works. Water quality (potable water). Water requirements. Water collection and supply works. Case studies from water works in the wider area of Cyprus. External hydraulic networks: supply calculations, general layout, transportation works, conduits and technical works, piping and pumping stations, reservoirs. Internal hydraulic networks: supply calculations, general layout, piezometric zones, pressure reduction mechanisms, minimum pressure control. Mathematical models: Schematic diagram, output supply, calculations. Representative sewerage and rainwater networks: volume calculations, general layout hydraulic calculations, pipe technology, quality matters. Prerequisite: Hydraulics

CIV 422 Durability of Infrastructures and Risk Management

Integrity and risk management of infrastructure, deterioration modelling and prediction, inspection and maintenance planning, updating predictions, optimization methods, life cycle approaches, non-destructive testing and monitoring, implementation of new technology, use of new materials in infrastructure management repair strengthening, decision making, infrastructure networks management, applications I areas such as bridges, roads, offshore structures, water distribution systems. Prerequisites: Nil

CIV 444 Analysis of Bridges and Tunnels

Introduction. Bridge aesthetics. Design actions. Common bridge types: Slab-decks- Bridges with beams

- Box girders - Composite sections. Piers and abutments. Cast-in-drilled-hole piles. Analysis of bridge structures. Influence lines. Bridge deck analysis. Seismic design of bridge structures. Analysis and design of tunnels. Prerequisites: Reinforced Concrete Structures II

CIV 445 Offshore Engineering

Introduction to offshore structural engineering, design, fabrication, installation and maintenance management of fixed and floating offshore oil installations, sub-sea systems and pipelines. Hydro- dynamics affecting off-shore structures, formulation of the interaction problem on sea waves and solid objects, loads on cylindrical elements due to wave action, mooring systems and loadings due to wave action and operational loads, catenaries, hydrostatic stability of floating structures, stability of underwater pipes. Prerequisites: Nil

CIV 446 Coastal Engineering

Introduction to Coastal Engineering. Coastal wave generation. Wave breaks. Theory of tension radiation. Wave generated currents. Sea sediments, sample collection, statistical parameters. Sediment motion. Sea bed shears. Sea bed roughness. Wave friction coefficient. Start of motion. Positional sediments suspension. Sediment transport by the coastal zone. Neutral line. Sediment motion monitoring techniques. Solid particle transportation along and perpendicular to the coastline. Calculation of solid particle transportation rate. CERC methods and others. Sediment accumulation on the coastal zone and natural accumulations. Influence of coastal obstacles and works. Mathematical study on coastal line evolution. Introduction to coastal protection works. Works parallel to the coastline. Works perpendicular to the coastline. Coastal reclamation. Types and roles of ports. Design criteria of harbour works. Vessel characteristics. General layout of harbour works. Navigation channels, port entrance, manoeuvring area. Wharves and piers. Protection works: types and functioning. Design of rubble-mound breakwaters. Walls with vertical face: calculations understanding or breaking wave conditions. Design of quaywalls. Berth outfits. Planning of back - up area of general cargo area. Sheds and related installations. Prerequisites: Hydraulics

CIV 447 Water Supply Networks II

Characteristic and hydraulic design of reservoirs. Environmental issues: reservoir works. Issues on slopes and dykes, land expropriation. Design and construction of energy routing and energy collapse works. River diversion works, canals and tunnels, auxiliary dams, design and operation of basin drainage works. Sluices (low and high pressure), control vanes. Types of weirs-hydraulic and technical design. NaviQational installations. Environmental design and riverbed reformation. River water outlet works and water transportation. Environmental dam design (impact assessment to the nearby area). Types of dams and selection criteria. Design of dams, methods and materials of construction. Design of gravity dams and cylindrical concrete technology (R.C.C.) design of earth dams and rock fill dams with antecedent concrete slab (C.F.R.D.) design of arch dam and buttress dam. Instruments for monitoring the behaviour of hydraulic works and dams. Recording and assessment of sagging, displacement, pressure and temperature. Dam operation safety. Site Visits in various dams in Cyprus Prerequisites: Hydraulics

CIV 448 Water Resources Management Introduction to design and analysis of water resource systems. Analysis methods. Objectives of design of water resources, design models, dynamic programming, simulation. Probabilistic design approach, stochastic processes and time-series. Applications: Design and operation of dams, prediction of river stream supply, combined use of surface and underground waters. Prerequisites: Water Supply Networks

CIV 454 Design of Steel and Composite Structures

Elements of elastic stability. Buckling. Design of bars in compression. Design of columns with or without bending moment. Design of trusses and frames. Design of connections in metal structures. Composite steel-concrete structures. Special problems, creep and drying shrinkage of concrete, behaviour under high temperatures. Shear connectors. Design codes-Eurocode 4. Methods of analysis and design of composite structures. Construction details. Prerequisites: Steel Structures

CIV 231 Databases for Surveying Engineers Introduction to databases. Data modeling. The E-R model. Classical database models (hierarchical, network, relational). Database Management Systems and their architecture. Relational algebra - SQL. Physical database design. Introduction to UML. Logical design and normalization. Management and operational issues (integrity, optimization, recovery, security, functionality). Database architecture (client-server, distributed DB). Data access on heterogeneous systems Prerequisites: Computer Programming for Engineers

CIV 232 Remote Sensing I

Introduction. Basic concepts and Philosophy of Photointerpretation and Remote Sensing. Basics from physics and mathematics. Electromagnetic radiation. Sensors and images. Photointerpretation and Remote Sensing instruments and measurements. Satellite Remote Sensing Programs and operational applications. Possibilities and constraints. Prospects. Photointerpretation and Remote Sensing analogue and digital methods and techniques for Earth Observation and Monitoring by airborne and satellite systems. Applications in the scientific/technical and professional fields of the Spatial Infrastructure and Geomatics Engineer. Remote Sensing and GIS Integration Applications for Land and Environment Inventories, Mapping and Monitoring Prerequisites: Nil

CIV 233 Photogrammetry I

Introduction to the photogrammetric process-Photogrammetry and Surveying. Applications and subdivision of Photogrammetry. Data collection-Geometry of the camera. Measurement and corrections of image- coordinates-Interior orientation. Photogrammetric cameras. Image and space coordinate systems. Exterior orientation. Collinearity equation. Monoplotting. Parallax and elevation determination. Geometry of stereopair-General principles of photogrammetric instruments. Stereoplotting instruments. Relative and absolute orientation. General principles of analytical and digital instruments, DTM's, orthophotos and aerialtriangulation. Prerequisites: Nil

CIV 234 Cartography I

Introduction (cartography and earth science, the concept of cartography, principles of cartography, map definition, map classification). History of cartography. Cartographic data (nature of cartographic data, data sources-data acquisition, data analysis). Elements of mathematical cartography (physical earth surface and projection on plane, principles of maps projections, study of map distortions, basic map projections). Cartographic

visualisation. The concept of colour in cartography. Cartographic generalisation. Topographic relief presentation. Map composition. Name placement. Map production. Measurements from maps (length, angle, area, volumes, accuracy issues). Greek cartographic publications and organisations. Prerequisites: Nil

CIV 331 Geodesy III

Geodetic Networks-Horizontal and Vertical Control Networks-State and local Coordinate Systems. Triangulation-Intersection, Resection. Traversing (high accuracy traverses and networks)-Urban traverse networks. Topographical surveys-Topographical diagrams (by using modern technology): Field work, computations and plotting-Profiling and cross sectioning-Earth work computations. Setting out of straight lines and basic curves- Setting out of roads-Urban applications. Prerequisites: Geodesy I & II

CIV 361 Cadastre

The importance of Land and the concept of real estate property. Ownership, use, acquisition and ownership restrictions, special rights. Elements of technical legislation, title implementation. Urban, forest and rural Land-parcel topology. Cadastral issues from transforming rural grounds to urban. Cadastral concept and evolution through the years. Cadastral systems. Cadastral Books-Cadastral Maps-Cadastral Identification Numbers. Implementation of the Cyprus Cadastre. Digital Cadastral Map. Analog diagrams digital and analytical data. Digital transformation and orthophotography. Hardware. Software. Cyprus Cadastre. Users, recoverability. Implementation procedure. Cadastral information collection methods. Legislation, technical specifications and operational cost. Administrative structure, setting-up, management and maintenance-updating of the system. Prerequisites: Nil

CIV 332 Remote Sensing II

Pre-processing steps: geometry radiometric corrections. Atmospheric Correction theory-algorithms

-Computational Image Interpretation. Image Histogram. Contrast enhancement and stretching linear histogram stretching, histogram equalisation, histogram saturation. Display alternatives, colour processing. Filters, edge enhancement, high pass filtering, smoothing, low pass filtering, gradient, Laplacian. Spatial registration, geometric manipulation, co-ordinate transformation, interpolation. Feature extraction: spectral rationing, principal component analysis, vegetation indices. Mathematical concepts for image classification, discriminant functions, Bayes theory, Density slicing. Supervised training and classification: parallelepiped, table look-up, decision tree, minimum distance, maximum likelihood. Unsupervised training and clustering, Algorithms: K-means, ISODATA. Post-classification processing. Classification accuracy. Data merging, Geographic information systems. Change detection. Applications. Introduction to computer vision.

-The students will have the opportunity to apply most of the pre-processing and post-processing techniques to the following satellite imagery of

Cyprus: Quickbird, lkonos, Landsat TM & ETM+, and SPOT etc. Spectroradiometric Measurements. Prerequisites: Remote Sensing I

CIV 333 Geography and Spatial Analysis

This course introduces the students to the principles of human geography and the basic methods of spatial analysis and is divided into three interrelated parts. The first part examines the basic components of human geography: population, environment and resources. The second part introduces the methodological principles applied in human geography and the last part presents the most commonly used methods such as regression, factor analysis and location-allocation methods. Prerequisites: Nil

CIV 362 Land Management

Land Management, Tools for land management, Land Information management systems, Financial possibilities and legal restrictions for investments in Real Estate development. Special applications and case studies Prerequisites: Nil

CIV 335 Photogrammetry II

Review of Photogrammetry 1: image and stereopair orientation, coplanarity condition, analogue stereo plotters. Aerial cameras. Planning and specifications of flight. Analytical processing of photogrammetric measurements. Bundle adjustment. Principles and methods of aerotiangulation and phototriangulation. Principles, types, work-flow and potential of analytical stereo plotters. Photogrammetric mapping and types of photogrammetric products. Photogrammetric production of digital elevation models. Monoplotting. Aspects of digital photogrammetric techniques. Geometric transformations of digital images, digital products. Orthophotography: method, specifications, accuracy. Planimetric and heighting accuracy. Accuracy specifications of photogrammetric mapping. Close-range photogrammetry. Prerequisites: Photogrammetry I

CIV 336 Thematic Cartography

Introduction (definitions, basic principles, classification of thematic maps, spatial information and cartographic language, visual variables, visual perception). Thematic data (data sources, geo-reference, nature of thematic data, accuraQY asp_ects, absolute-derived values}. Data _Qrocessingjdata classification, statistical processing, spatial interpolation). Methods of data representation (qualitative data, quantitative data, isarithmic mapping, choropleth mapping, oblique views, cartograms, dot maps, topological transformations). Representation of spatial relationships. Diagrams. Atlases. Thematic maps and multimedia. Thematic map composition and production. Prerequisites: Cartography I

CIV 337 Regional Planning

Introduction to Regional Planning. Planning and development. Spatial Planning Approach. Planning Process I. Planning Process II. Regional Planning in Cyprus. Regional Planning and Legal framework in Cyprus. Introduction to interregional Analysis. Introduction to interregional Analysis. European Union and Regional Planning in Europe. Prerequisites: Nil

CIV 338 Geodesy IV

Introduction. Reference surfaces. Shape and size of the Earth. Geometry of the ellipsoid. Reference systems. Geodetic Datum. Datum transformations. Geodetic networks for horizontal and vertical control. 3D networks. The influence of the atmosphere on geodetic measurements. Field work. Instruments and measurement methods for first order networks. Deflection of the vertical. Astrogeodetic methods. First order levelling, accuracies and computations. Dynamic theory of heights. Corrections and reductions of geodetic measurements on the reference surface. Computations on the ellipsoid for positioning. Elements of map projections. Distortions. Prerequisites: Geodesy Ill

CIV 431 Cartography II

Introduction. Physical earth surface-geoid-ellipsoid. Geographical co-ordinates. Plane co-ordinates. Principles of map projections. Study of map distortions. Study of map projections (cylindric, conic, azimuthal). Greek and Cypriot cartographic systems. Transformations between cartographic systems. Measurements from maps-cartometry (measurements of length-area, error analysis, data reduction, statistical sampling and cartography). Interpolation methods (one-dimensional interpolation, two- dimensional interpolation, digital terrain models, data smoothing, hill shading algorithms). Geometrical transformations. Polygon transformations. Data structure transformations. Line simplification algorithms. Prerequisites: Carto raphy I

CIV 432 Urban Planning

Introduction to urban planning: Aim, objectives, laws. Urban standards and functions. Types of plans, land uses. Systematic planning and post-modern trends. Introduction to forms and procedures of town planning. Cyprus law of town planning. Techniques and models of town planning. Development plans and projects (e.g. local plans) in Cyprus Development Control and Planning Implementation in Cyprus Application town-planning forms Housing and Cultural Heritage (Cyprus law) Exercise in preparing all the required documents for town-planning permission. Prerequisites: Nil

CIV 433 Radiometry & Microwave Remote Sensing

Introduction. Atmospheric radiative transfer process. Electro-Optical sensors. Radiometric instruments. Measurements and applications in the scientific field of the Surveying & Geomatics Engineer. Hyperspectrometry and applications. Radar fundamentals. Geometry of the SAR images. SAR imagery processing and interpretation. SAR interferometry. Digital Terrain Models based on the interferometry. Comparison with other methods. Applications of SAR imagery analysis and processing methods and techniques in land use/cover inventories mapping and monitoring. Applications of the SAR imagery processing and interpretation in Hydrology, Oceanography, Geology and Forestry. Prerequisites: Remote SensinII

CIV 434 Real Estate Valuation

Real Estate Valuation. Content. Concepts. Definitions. "Real Estate Market" analysis and operation. Equilibrium and adequacy conditions. Demand-Supply interdependence. Prices evolution. The need to define the Value. Law previsions. Real Estate taxing. "Real Estate Market" affecting factors. Classification. Impacts. Spatial interdependence. Real Estate use as an element primarily affecting price setting. Use restrictions. Best use. Classic valuation methods accordingly applied. Developing a Real Estate "Massive Valuation" system. Valuation using G.I.S. Land Management. Land Information management system. Special categories and special applications. Methods of Land Valuation (Projects with real estate valuation offices in Cyprus) Prerequisites: Nil

CIV 461 Hydrography, Oceanography and Marine Geodesy

Historical evolution of Hydrography and Oceanography. Chemistry of water, physical parameters. Oceanology. Tides, classical and dynamic theory, tide gauges, tidal maps, energy from tides. Sea currents, thermohaline and geostrophic, current measurements. Law of the sea. Delimitation of the Seas. Standards for Hydrographic surveying. Position lines and their mathematical models. Classical methods for hydrographic surveying. Electronic, satellite, acoustic, airborne and inertial positioning. Physics of echosounding. Vertical echosounders and side-looking sonars. Sub-bottom profilers. Modern Hydrographic Surveying. Prerequisites: Geodesy IV

CIV 462 Photogrammetry III

Introduction to digital procedures. The digital image. Digital image acquisition, instrumentation for data collection. Elements of digital image processing. Measurements on the digital image. Digital image matching. Automation of photogrammetric procedures including interior relative and absolute orientation, DTM collection, automatic aerial monument recording. Monument surveying applications. Site visits in cultural areas in Cyprus. Prerequisites: Geodesy III

CIV 437 Digital Cartography

Introduction (basic principles, the impact of technology in cartography). Data structures (data models, vector-raster data structures, raster to vector conversion). Data collection (digitization from paper maps, manual-automated digitization, data editing). Cartographic database design (user needs assessment, logical design, normalization, physical design, map library, networks of cartographic databases, accuracy and errors issues). Algorithms for cartographic generalization (data reduction algorithms, knowledge-based generalization systems). Digital data representation (digital mapping, the color and computer display, color separation, cartographic applications and multi-media, electronic map-atlas). Cartographic data exchange. Prerequisites: Cartography I

Field Course I in Geodesy

(Compulsory Summer course-100 hours, 2 weeks)Summer field course based on geodetic subjects taught up to the 4th semester. Students' practice includes: establishment and measurements of a network and a traverse, detail

surveying, setting out of a road axis and measurements for its longitudinal section and cross sections. Written or oral examination with the delivery of the final technical report and drawings. The course takes place in CUT Campus or in the greater Limassol area. Prerequisites: Geodesy I

Summer Field Exercises in s ecial Geo-informatics subjects (2 weeks) Summer field course based on geodetic subjects taught up to the 6th semester. The site and the exact subject is decided each year by the tutor after arrangements made with organizations and local authorities, in places outside the greater Limassol area. Technical report composition. Field Course in Photogrammetry Compilation of an integrated project, which constitutes a practical work for the solution of photogrammetric issues. The project includes: The compilation of digital rectification of an object, such as the facades of a building or monument, by using control points or known distance lengths, or the compilation of stereo- restitution at an analytical or digital photogrammetric instrument, through air-photos or close-range photos taken either by a metric or an amateur camera, or the compilation of integrated photogrammetric surveys, which include both field work and office work, or the solution of special problems, by writing the proper software, or the use of specialised photogrammetric software, or the appropriate modification of general usage software packages for photogrammetric purposes. Field Course in Remote Sensing Practical exercise involving applications of analogue and digital image analysis methods and techniques applied to projects of natural resources inventories and monitoring and in specific fields of interest to the students. Field work techniques for image processing and classification algorithms. Field spectra-radiometric measurements will be undertaken during the course (using field spectroradiometers).Sun-photometers will be used to measure the atmospheric optical properties for supporting remote sensing measurements. Field Course in Higher and Satellite Geodesy Training of instruments and measurements of Higher and Satellite Geodesy (GPS). Planning lay out and execution of works and measurements for the establishment geodetic networks of higher order using satellite techniques. Reductions and calculations on the reference ellipsoid and in cartesian reference systems GPS baselines computation and analysis.

Project (Thesis)

The Project Thesis is a major piece of work of analytic, synthetic, experimental or applied character undertaken over a period of two semesters. Each project will be linked with industry so that the students can reinforce their appreciation of industry practice and needs and increase their awareness of the application and benefits of their work. It is required from students to prepare a short proposal at the beginning of the 71h semester of their studies and submit their projects at the end of the eight semester.

Practical Training I (second year)

Students are required to undertake practical training for a period of 8 and 6 weeks for civil engineering and surveying

engineering courses, respectively, in design and construction companies in order to get first hand professional experience. They are required to apply and consolidate the knowledge they have received during their studies, to develop initiative and familiarize with matters requiring combination of high level theoretical knowledge and relevant experience. Their work will be supervised by an industry supervisor and monitored by an academic supervisor. They students are required to maintain a diary of their work, and present their practical experience work for assessment through a technical report and a presentation.

engineering courses, respectively, in design and construction companies in order to get first hand professional experience. They are required to apply and consolidate the knowledge they have received during their studies, to develop initiative and familiarize with matters requiring combination of high level theoretical knowledge and relevant experience. Their work will be supervised by an industry supervisor and monitored by an academic supervisor. They students are required to maintain a diary of their work, and present their practical experience work for assessment through a technical

Practical Training II (third year)

Students are required to undertake practical training for a period of 8 and 6 weeks for civil engineering and surveying

LANGUAGE CENTRE

Academic Staff

Dr.Salomi Papadima
Language center director

ENGLISH

Maro Neophytou
Assistant Professor

Anastasia Peck- Mouskou
Lecturer

Christina Yerou
Special Teaching Staff

Panayiota Hadjicostantinou
Special Teaching Staff

Dimitrios Boglou
Special Teaching Staff

Stavroula Hadjicostantinou
Special Teaching Staff

Dr. Androulla Athanasiou
Special Teaching Staff

Elis Kakoulli Constantinou
Special Teaching Staff

Anna Nicolaou
Special Teaching Staff

Marina Charalambous
Special Scientist

RUSSIAN

Stalo Tsapparella
Special Scientist

FRENCH

Olga Georgiadou
Special Scientist

GERMAN

Dimitrios Boglou
Special Teaching Staff

Academic Staff

GREEK

Antigoni Parmaxi
Special Scientist

Fotini Efthimiou
Special Scientist

Stelios Kyriacou
Special Scientist

Kostas Stylianou
Special Scientist

SPANISH

Chrysoula Constantinou
Special Scientist

ITALIAN

Eftychia Xerou

RESEARCH FELLOWS

Jack Burston
Research Fellow

Monique Burston
Research Fellow

Olga Georgiadou
Research Fellow

Dr. Christina Nicole Giannikas
Research Fellow

Courses Description

ENG 122 English for Academic Purposes

ENG 122 is a three-hour per week, 4-ECTS credit (European Credits Transfer and Accumulation System) required degree level course that concentrates on the learning of English for Academic Purposes (EAP). ENG 122 is particularly designed to support students' studies by developing their English language to an academic level, equivalent to Common European Framework of Reference (CEFR) for languages level B1-B2. This course, based on the blended learning approach, aims to familiarise students with authentic reading material related to general and academic topics. This material is used to acquaint students with writing styles, such as process and argumentation. It also develops students' listening and speaking skills. Learners are expected in this way to develop their speaking and listening abilities by taking an active part in tasks such as dialogues, conversations, and oral presentations. The course focuses on learner-centred methods of teaching, as well as on the development of learner autonomy. The use of New Technologies (Computer Assisted Language Learning) constitutes a vital part in the learning process, so that students are provided with opportunities to develop their language and other skills.

ENGLISH FOR STUDENTS WITH DIFFERENTIATED ABILITIES

ENG 110 English for Academic Purposes for Students with Differentiated Abilities

ENG 110 is a three-hour per week, 4-ECTS credit, required degree level course that concentrates on the learning of English for Academic Purposes (EAP) for students with differentiated abilities. ENG 110 is particularly designed to help students familiarize themselves with the English language and develop their skills to an academic level equivalent to Common European Framework of Reference (CEFR) for languages (level A1) in all four areas -speaking, listening, reading and writing. In this course the material is designed based on the learners' abilities and needs. The course takes a learner-centred communicative approach while concentrating on further enriching students' knowledge of English, as well as developing their English language and Academic skills. The use of New Technologies (Computer Assisted Language Learning) constitutes a vital part in the learning process, so that students are provided with opportunities to develop their language and other skills.

ENG 111 English for Specific Academic Purposes for Students with Differentiated Abilities

ENG 111 is a three-hour per week, 4-ECTS credit, required degree level course that concentrates on the learning of English for Specific Academic Purposes (ESAP) for students with differentiated abilities. ENG 111 is particularly designed to help students familiarize themselves with the English language and develop their skills to an academic level equivalent to A1- A2 level of the Common European Framework of Reference (CEFR) for languages. The various learning difficulties of the students are enhanced and their English language skills are enriched based on their field of studies and their educational

needs. The course focuses on learner-centred methods of teaching, as well as on the development of learner autonomy. The use of New Technologies (Computer Assisted Language Learning) constitutes a vital part in the learning process, so that students are provided with opportunities to develop their language and other skills.

Prerequisite: ENG 110

ENG 112 English for Specific Academic Purposes for Students with Differentiated Abilities

ENG 112 is a three-hour per week, 4-ECTS credit, required degree level course that concentrates on the learning of English for Specific Academic Purposes (ESAP) for students with differentiated abilities. ENG 112 is particularly designed to help students familiarise themselves with the English language relevant to their field of studies and develop their skills to an academic level equivalent to A2 –B1 level of the Common European Framework of Reference (CEFR) for languages. This course seeks to introduce students with material from their field of study in all areas of the English language (listening, speaking, reading and writing). All matters covered are according to the learners' abilities and needs. The course focuses on learner-centred methods of teaching, as well as on the development of learner autonomy. The use of New Technologies (Computer Assisted Language Learning) constitutes a vital part in the learning process, so that students are provided with opportunities to develop their language and other skills.

Prerequisite: ENG 111

ENG 113 English for Specific Academic Purposes for Students with Differentiated Abilities

ENG 113 is a three-hour per week, 4-ECTS credit, required degree level course that concentrates on the learning of English for Specific Academic Purposes (ESAP) for students with differentiated abilities. ENG 113 is particularly designed to help students familiarise themselves with English language relevant to their field of studies and develop their skills to an academic level equivalent to B1-B2 level of the Common European Framework of Reference (CEFR) for languages. All the material covered is structured on the students' abilities and educational needs as well as on their field of study. The course focuses on learner-centred methods of teaching, as well as on the development of learner autonomy. The use of New Technologies (Computer Assisted Language Learning) constitutes a vital part in the learning process, so that students are provided with opportunities to develop their language and other skills.

Prerequisite: ENG 112

COMPULSORY COURSES FOR THE 2ND SEMESTER

FACULTY OF GEOTECHNICAL SCIENCES AND ENVIRONMENTAL MANAGEMENT

ENG 180 English for Agricultural Sciences, Biotechnology and Food Science

ENG 180 is a three-hour per week, 4-ECTS credit, required degree level course that concentrates on the learning of English for Specific Academic Purposes (ESAP). ENG 180 is particularly designed to meet the needs of university students studying in the field of

Agricultural Sciences, Biotechnology and Food Science and to develop their English language to an academic level equivalent to Common European Framework of Reference (CEFR) for languages (level B2). The course intends to familiarise the students with relevant reading material. This will be used to acquaint the students with genre (reports, articles, emails), and writing styles (classification and argumentation) relevant to their field of study. Furthermore, learners are expected to develop their listening skills and their speaking fluency by taking an active part in discussions, giving oral presentations, etc. Students are expected to develop sufficient range of language, phonological control and sociolinguistic awareness to be able to express themselves with a degree of clarity, fluency and spontaneity. The course focuses on learner-centred methods of teaching, as well as on the development of learner autonomy. The use of New Technologies (Computer Assisted Language Learning) constitutes a vital part in the learning process, so that students are provided with opportunities to develop their language and other skills.

Prerequisite: ENG 122

ENG 181 English for Environmental Science and Technology

ENG 181 is a three-hour per week, 4-ECTS credit, required degree level course that concentrates on the learning of English for Specific Academic Purposes (ESAP). ENG 181 is particularly designed to assist the English Language development of university students studying in the field of Environmental Management to an academic level equivalent to the Common European Framework of Reference (CEFR) for languages (level B2). The course intends to familiarise the students with relevant reading material. This will be used to acquaint the students with genre (curriculum vitae, emails, lab reports, memos, articles), and writing styles (classification and argumentation, cause and effect, description of a process) relevant to their field of study. Furthermore, learners are expected to develop their listening skills and speaking fluency by taking an active part in discussions, giving oral presentations, etc. Students are expected to develop a sufficient range of language, phonological control and sociolinguistic awareness to be able to express themselves with a degree of clarity, fluency and spontaneity. The course focuses on learner-centred methods of teaching, as well as on the development of learner autonomy. The use of New Technologies (Computer Assisted Language Learning) constitutes a vital part in the learning process, so that students are provided with opportunities to develop their language and other skills.

Prerequisite: ENG 122

Faculty of Management and Economics

ENG190 English for Hotel and Tourism Management

ENG 190 is a three-hour per week, 4-ECTS credit, required degree level course that concentrates on the learning of English for Specific Academic Purposes (ESAP). ENG 190 is particularly designed to meet the needs of university students studying in the field of Hotel and Tourism Management.

The course intends to familiarize the students with relevant reading material. This will be used to acquaint the students with genre (CVs and cover letters, writing formal letters, reports, emails), and writing styles (comparison and contrast). Furthermore, learners are expected to develop their listening comprehension and speaking fluency by taking an active part in discussions, giving oral presentations, etc. Students are expected to develop sufficient range of language, phonological control and sociolinguistic awareness to be able to express themselves with a degree of clarity, fluency and spontaneity. The course focuses on learner-centred methods of teaching, as well as on the development of learner autonomy. The use of New Technologies (Computer Assisted Language Learning) constitutes a vital part in the learning process, so that students are provided with opportunities to develop their language and other skills.

Prerequisite: ENG 122

ENG 191 English for Commerce, Finance and Shipping

ENG 191 is a three-hour per week, 4-ECTS credit, required degree level course that concentrates on the learning of English for Specific Academic Purposes (ESAP). ENG 191 is particularly designed to meet the needs of university students studying in the field of Commerce, Finance and Shipping and to develop their English language to an academic level equivalent to Common European Framework of Reference (CEFR) for languages (level B2). The course intends to familiarise the students with relevant reading material. This will be used to acquaint the students with genre and writing styles specific to students' specialisation. Furthermore, learners are expected to develop their listening comprehension and their speaking fluency by taking an active part in discussions, giving oral presentations, etc. Students are expected to develop sufficient range of language, phonological control and sociolinguistic awareness to be able to express themselves with a degree of clarity, fluency and spontaneity. The course focuses on learner-centred methods of teaching, as well as on the development of learner autonomy. The use of New Technologies (Computer Assisted Language Learning) constitutes a vital part in the learning process, so that students are provided with opportunities to develop their language and other skills.

Prerequisite: ENG 122

Faculty of Communication and Media Studies

ENG 170 English for Communication and Internet Studies

ENG 170 is a three-hour per week, 4-ECTS credit, required degree level course that concentrates on the learning of English for Specific Academic Purposes (ESAP). ENG 170 is particularly designed to meet the needs of university students studying in the field of Communication, Mass Media and Internet Studies and to develop their English language to an academic level equivalent to Common European Framework of Reference (CEFR) for languages level B2. Students become familiar with texts relevant to the field of communication, the media and the Internet as well as rhetoric styles (process analysis, comparison and contrast, cause

and effect analysis and classification). Students are expected to develop their listening comprehension and speaking fluency by taking part in discussions, giving oral presentations. They are also expected to develop sufficient range of language, phonological control and sociolinguistic awareness, to be able to express themselves with a sufficient degree of clarity, fluency and spontaneity. The course focuses on learner-centred methods of teaching, as well as on the development of learner autonomy. The use of New Technologies (Computer Assisted Language Learning) constitutes a vital part in the learning process, so that students are provided with opportunities to develop their language and other skills.

Prerequisite: ENG 122

Faculty of Health Sciences

Department of Nursing

ENG 150 English for Nursing-

ENG 150 is a three-hour per week, 4-ECTS credit, required degree level course that concentrates on the learning of English for Specific Academic Purposes (ESAP). ENG 150 is particularly designed to meet the needs of university students studying in the field of Nursing and aims to assist them in developing their English language to an academic level equivalent to the Common European Framework of Reference (CEFR) for languages (level B2). The course aims to enable students to acquire and use the English language efficiently and fluently in the performance of their duties as qualified nurses. This is accomplished through the use of a variety of topics and genre. Relevant material will be used to acquaint the students with different writing styles (patient summary, patient record form, pain report, symptom report). Furthermore, learners are expected to develop their listening skills and their speaking fluency by taking an active part in discussions, giving oral presentations, etc. Special effort will be made so that students exercise and improve their critical thinking abilities. Students are expected to develop sufficient range of language, phonological control and sociolinguistic awareness to be able to express themselves with a degree of clarity, fluency and spontaneity. The course focuses on learner-centred methods of teaching, as well as on the development of learner autonomy. The use of New Technologies (Computer Assisted Language Learning) constitutes a vital part in the learning process, so that students are provided with opportunities to develop their language and other skills.

Prerequisite: ENG 122

ENG 151 English for Rehabilitation Sciences

ENG 151 is a three-hour per week, 4-ECTS credit, required degree level course that concentrates on the learning of English for Specific Academic Purposes (ESAP). ENG 151 is particularly designed to meet the needs of university students studying in the field of Rehabilitation and aims to assist them in developing their English language to an academic level equivalent to the Common European Framework of Reference (CEFR) for languages (level B2). The course aims to enable students to acquire and use the English language efficiently and fluently in the performance of their duties as

qualified nurses. This is accomplished through the use of a variety of topics and genre. Relevant material will be used to acquaint the students with different writing styles (patient summary, patient record form, pain report, symptom report). Furthermore, learners are expected to develop their listening skills and their speaking fluency by taking an active part in discussions, giving oral presentations, etc. Special effort will be made so that students exercise and improve their critical thinking abilities. Students are expected to develop sufficient range of language, phonological control and sociolinguistic awareness to be able to express themselves with a degree of clarity, fluency and spontaneity. The course focuses on learner-centred methods of teaching, as well as on the development of learner autonomy. The use of New Technologies (Computer Assisted Language Learning) constitutes a vital part in the learning process, so that students are provided with opportunities to develop their language and other skills.

Prerequisite: ENG 122

Faculty of Fine and Applied Arts

ENG171 for Multimedia and Graphic Arts

ENG 171 is a three-hour per week, 4-ECTS credit, required degree level course that concentrates on the learning of English for Specific Academic Purposes. ENG 171 is particularly designed to meet the needs of university students studying in the field of Multimedia and to develop their English language to an academic level equivalent to Common European Framework of Reference (CEFR) for languages (level B2). This course intends to familiarise the students with relevant reading material. This material will be used to acquaint the students with writing styles, such as process analysis, comparison and contrast, cause and effect and classification. Furthermore, learners are expected to develop their listening comprehension and speaking fluency by taking an active part in discussion, giving oral presentations, defending their opinion etc. They are expected to develop sufficient range of language, phonological control and sociolinguistic awareness to be able to express themselves with a degree of clarity, fluency and spontaneity. The course focuses on learner-centred methods of teaching, as well as on the development of learner autonomy. The use of New Technologies (Computer Assisted Language Learning) constitutes a vital part in the learning process, so that students are provided with opportunities to develop their language and other skills.

Prerequisite: ENG 122

Faculty of Engineering and Technology

ENG 161 English for Electrical Engineering

ENG 161 is a three-hour per week, 4-ECTS credit, required degree level course that concentrates on the learning of English for Specific Academic Purposes. ENG 161 is particularly designed to meet the needs of university students studying in the field of Electrical Engineering and to develop their English language to an academic level equivalent to Common European Framework of Reference (CEFR) for languages (level B2). This course intends to familiarize the students with

relevant reading material. This material will be used to acquaint the students with writing styles, such as process analysis, comparison and contrast, cause and effect and classification. Furthermore, learners are expected to develop their listening comprehension and speaking fluency by taking an active part in discussion, giving oral presentations, defending their opinion etc. They are expected to develop sufficient range of language, phonological control and sociolinguistic awareness to be able to express themselves with a degree of clarity, fluency and spontaneity. The course focuses on learner-centred methods of teaching, as well as on the development of learner autonomy. The use of New Technologies (Computer Assisted Language Learning) constitutes a vital part in the learning process, so that students are provided with opportunities to develop their language and other skills.

Prerequisite: ENG 122

ENG 163 English for Computer Engineering and Informatics

ENG 163 is a three-hour per week, 4-ECTS credit, required degree level course that concentrates on the learning of English for Specific Academic Purposes. ENG 163 is particularly designed to meet the needs of university students studying in the field of Computer Engineering and Informatics and to develop their English language to an academic level equivalent to Common European Framework of Reference (CEFR) for languages (level B2). This course intends to familiarize the students with relevant reading material. This material will be used to acquaint the students with writing styles, such as process analysis, comparison and contrast, cause and effect and classification. Furthermore, learners are expected to develop their listening comprehension and speaking fluency by taking an active part in discussions, giving oral presentations, defending their opinion etc. They are expected to develop sufficient range of language, phonological control and sociolinguistic awareness to be able to express themselves with a degree of clarity, fluency and spontaneity. The course focuses on learner-centred methods of teaching, as well as on the development of learner autonomy. The use of New Technologies (Computer Assisted Language Learning) constitutes a vital part in the learning process, so that students are provided with opportunities to develop their language and other skills.

Prerequisite: ENG 122

ENG162 English for Mechanical Engineering and Materials Science and Engineering

ENG 162 is a three-hour per week, 4-ECTS credit, required degree level course that concentrates on the learning of English for Specific Academic Purposes (ESAP). ENG 162 is particularly designed to meet the needs of university students studying in the field of Mechanical Engineering and Material Science and Engineering and to develop their English language to an academic level equivalent to Common European Framework of Reference (CEFR) for languages (level B2). This course intends to familiarize the students with relevant reading material. This material will be used to acquaint the students with writing styles, such as reports, proposals, letters, cause and effect and comparison and contrast essays, etc. Furthermore,

learners are expected to develop their listening comprehension and speaking fluency by taking an active part in discussions, giving oral presentations etc. They are expected to develop sufficient range of language, phonological control and sociolinguistic awareness to be able to express themselves with a degree of clarity, fluency and spontaneity. The course focuses on learner-centred methods of teaching, as well as on the development of learner autonomy. The use of New Technologies (Computer Assisted Language Learning) constitutes a vital part in the learning process, so that students are provided with opportunities to develop their language and other skills.

Prerequisite: ENG 122

ENG 160 English for Civil, Surveying and Geomatics

ENG 160 is a three hour per week, 4-ECTS credit, required level course that concentrates on the learning of English for Specific Academic Purposes. ENG 160 is particularly designed to meet the needs of university students studying in the field of Civil Engineering and Geomatics and to develop their English language to an academic level equivalent to Common European Framework of Reference (CEFR) for languages (level B2). This course intends to familiarise the students with relevant reading material. This will be used to acquaint the students with genre (proposals, lab reports, memos, instruction manuals) and writing styles (cause and effect, description of a process). Furthermore, learners are expected to develop their listening comprehension and speaking fluency by taking an active part in discussions, giving oral presentations, etc. Students are expected to develop sufficient range of language, phonological control and sociolinguistic awareness to be able to express themselves with a degree of clarity, fluency and spontaneity. The course focuses on learner-centred methods of teaching, as well as on the development of learner autonomy. The use of New Technologies (Computer Assisted Language Learning) constitutes a vital part in the learning process, so that students are provided with opportunities to develop their language and other skills.

Prerequisite: ENG 122

COMPULSORY COURSES FOR THE 3RD SEMESTER

Department of Hotel and Tourism Management

ENG240 English for Business Communication

ENG240 is a three-hour per week, 4-ECTS credit, required degree level course that concentrates on the learning of English for Specific Academic Purposes (ESAP). ENG240 is particularly designed to acquaint students of the Department of Hotel and Tourism Management to the various forms of written and oral communication skills and to develop their English language to an academic level equivalent to Common European Framework of Reference (CEFR) for languages level B2-C1. Students are expected to maximise their personal business communication skills, necessary both within the organisation and for communication with external audiences. They will develop public speaking skills (speaking to a group of people in a structured, deliberate manner intended to inform, influence or entertain the

listeners). Students will also develop their communication skills in writing clear, concise, complete and correct business correspondence. Moreover, they will develop an understanding and compose a variety of business communication, including memorandums and formal reports. The course also looks at how new technologies are changing the way people in business communicate. The course focuses on learner-centred methods of teaching, as well as on the development of learner autonomy. The use of New Technologies (Computer Assisted Language Learning) constitutes a vital part in the learning process, so that students are provided with opportunities to develop their language and other skills.

Prerequisite: ENG 190

Department of Communications and Internet Studies

ENG 220 English for Communication Studies II

ENG 220 is a three-hour per week, 4-ECTS credit, required degree level course that concentrates on the learning of English for Specific Academic purposes (ESAP). Being the second in a series of three ESAP courses it is particularly designed to meet the needs of university students studying in the field of communication and media studies and to develop their English language to an academic level equivalent to Common European Framework of Reference (CEFR) for languages (level B2-C1). This course aims to acquaint students with the English theory and terminology relating to the field. This is achieved by providing students with opportunities to involve themselves in analysing and producing different types of communication media such as articles, reviews editorials etc. Students also study different types of print media and write news stories, analyse coverage of national events, and write in other print media genres. Media sources may include, among others, the internet, newspapers, and television. Special attention is also placed on the development of skills in critical thinking and evaluation of authentic material from the field of Mass media and communication. Oral work includes discussions of topics and other speaking projects, such as social conversation, meetings, debates, public speaking, news panels, and interviews. The course focuses on learner-centred methods of teaching, as well as on the development of learner autonomy. The use of New Technologies (Computer Assisted Language Learning) constitutes a vital part in the learning process, so that students are provided with opportunities to develop their language and other skills.

Prerequisite: ENG 170

COMPULSORY COURSES FOR THE 4th SEMESTER

Department of Communications and Internet Studies

ENG270 English for Communication Studies III

ENG 270 is a three-hour per week, 4-ECTS credit, required degree level course that concentrates on the learning of English for Specific Academic purposes (ESAP). It is the last in a series of three courses particularly designed to meet the needs of university students in the field of communication and media studies and to develop their

English language to an academic level equivalent to Common European Framework of Reference (CEFR) for languages (level C1-C2). This course aims at enabling students to gain a deeper knowledge of the theory and practice concerning their area of interest. Special emphasis is placed on the topics of intercultural communication and the preparation of various types of Communication messages. Opportunities will be provided by the instructor for further assimilation of the theory behind effective communication on one hand, and on the other hand, application of this theory in the organization and production of written and oral communication through especially designed authentic tasks. More specifically students will have practice in composing various types of written messages used for communication purposes such as correspondence (letters, emails etc.) as well as various print media genres (advertisements, editorials and so on). Furthermore opportunities will be provided for the development of listening and speaking skills by taking an active part in activities such as discussions, speeches, seminars and oral presentations. By improving their communication skills this course aims to equip students with the necessary skills and abilities they will need in order to deal with the challenges which they will face both at university and in the workplace. The course focuses on learner-centred methods of teaching, as well as on the development of learner autonomy. The use of New Technologies (Computer Assisted Language Learning) constitutes a vital part in the learning process, so that students are provided with opportunities to develop their language and other skills.

Prerequisite: ENG 220

COMPULSORY COURSES FOR THE 8th SEMESTER

Department of Commerce, Finance and Shipping

ENG 491 English for Commerce and Finance

ENG 491 is a three-hour per week, 4-ECTS credit, required degree level course that concentrates on the learning of English for Specific Academic Purposes (ESAP). ENG491 is particularly designed to meet the needs of university students studying in the field of Finance and to develop their English language to an academic level equivalent to Common European Framework of Reference (CEFR) for languages (level C1). The course aims to enable students to understand spoken and written English in a number of realistic contexts of the kind Commerce and Finance practitioners are likely to encounter in their daily working lives. Spoken texts include presentations, lectures, news broadcasts, discussions and interviews on finance-related issues, while written texts include texts such as e-mails, faxes, journal articles, business letters, financial reports, memos, and others. The course focuses on learner-centred methods of teaching, as well as on the development of learner autonomy. The use of New Technologies (Computer Assisted Language Learning) constitutes a vital part in the learning process, so that students are provided with opportunities to develop their language and other skills.

Prerequisite ENG191

ENG 492 English for Shipping

ENG 492 is a three-hour per week, 4-ECTS credit, required degree level course that concentrates on the learning of English for Specific Academic Purposes (ESAP). ENG 492 is particularly designed to meet the needs of university students studying in the field of Shipping. The course intends to familiarise the students with relevant reading material, procedures and various fields that are interconnected with shipping. This will be used to acquaint the students with genre and writing styles specific to students' specialisation. Furthermore, learners are expected to develop their listening comprehension and their speaking fluency by taking an active part in discussions, giving oral presentations, etc. Students are expected to develop sufficient range of language, phonological control and sociolinguistic awareness to be able to express themselves with a degree of clarity, fluency and spontaneity. The course focuses on learner-centred methods of teaching, as well as on the development of learner autonomy. The use of New Technologies (Computer Assisted Language Learning) constitutes a vital part in the learning process, so that students are provided with opportunities to develop their language and other skills.

Prerequisite: ENG191

COMPULSORY ELECTIVE

Department of Mechanical Engineering and Materials Science and Engineering

ENG 131 – Advanced English for Mechanical Engineers

ENG 131 is a four-hour per week, 6-ECTS credit, elective degree level course, which is offered specifically for Mechanical Engineers. It concentrates on the development of students English language skills at an advanced level, specifically C1 according to the Common European Framework of Reference for Languages. This course is designed for third- or fourth-year students and aims to provide input and practice to students (speaking, listening, reading and writing) in a wide range of academic related topics. Students have the opportunity to develop a variety of language skills, so by the end of the course, they will be able to comprehend, as well as infer meaning of academic discourse. The final aim is to prepare students for their future social, academic and professional life. The course focuses on learner-centred methods of teaching, as well as on the development of learner autonomy. The use of New Technologies constitutes a vital part in the learning process, so that students are provided with opportunities to develop their language and other skills.

Prerequisite ENG 162

GREEK COURSES FOR UNDERGRADUATE NON-GREEK NATIVE /FOREIGN NEW STUDENTS

GRE111 - Intensive Greek Language and Culture Course I

The course addresses the needs of students who plan to conduct their undergraduate studies at the Cyprus University of Technology. It aims at developing the four basic language skills (reading, listening, speaking and writing), focusing on all levels of language (phonetics, phonology, morphology, syntax, semantics, pragmatics and sociolinguistics) and promoting

students' contact with cultural elements. The course is designed to make students effective users of Greek language, so that they realise their studies at a Greek-speaking university. The course adopts student-centered teaching methods whereas the use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process so that students can fully develop language competence and other skills. At the end of the course students are expected to meet the requirements of A1 and A2 levels and partially the requirements of B1 level of the Common European Framework of Reference for Languages. Total duration of the course: 325 hours.

GRE112 - Intensive Greek Language and Culture Course II

The Greek Language and Culture Course II is the second part of the foundation language programme. This course is specially designed for foreign students who plan to study at the Cyprus University of Technology and aims at familiarising students with relevant communicative material in order to meet the expectations of a Greek-speaking undergraduate curriculum. Students are expected to develop further all basic language skills, become familiar with the stages of academic writing and develop "Limited Operational Proficiency" in Greek language (CEFR, B2). The course aims at the development of communicative skills that stem from the field of study of the students and also the introduction of cultural elements from the field of Cypriot reality. The course adopts student-centered teaching methods whereas the use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process so that students can fully develop language competence and other skills. Upon completion of the course students are expected to fully meet the requirements of B1 Level and partially the requirements of B2 level of the Common European Framework of Reference for Languages. Total duration of the course: 325 hours.

Prerequisite: GRE111

GRE122 - Advanced Greek Language and Culture I

The Advanced Greek Language and Culture I course is the third part of the foundation programme for foreign students who have started their studies at the Cyprus University of Technology. The course aims at familiarising students with relevant communicative material in order to enable them to meet the demands of the undergraduate curriculum. At the end of the course students will be able to use language effectively for social, academic and professional purposes (CEFR C1). More specifically, students will raise awareness on a wide range of demanding texts, will be able to express themselves fluently and spontaneously and produce structured texts on complex subjects, showing controlled use of organisational patterns and connectors (CEFR C1). The course adopts student-centered teaching methods whereas the use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process so that students can fully develop language competence and other skills. Upon completion of the course students are expected to fully meet the requirements of B2 level, and partially the requirements of C1 level of the

Common European Framework of Reference for Languages.

Prerequisite: GRE 112

GRE123 - Advanced Greek Language and Culture II

The Advanced Greek Language and Culture II course is the fourth part of the foundation programme for students who are in their first year of studies at the Cyprus University of Technology. This course develops mainly sociolinguistic competence of students in order to enable them to express adequately taking in consideration sociolinguistic elements and gain high control of the levels of style and idiomatic expressions. Upon completion of the course students are expected to recognize a wide range of idiomatic and colloquial elements and attend university lectures that use dialectical elements (CEFR C1). The course adopts student-centered teaching methods whereas the use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process so that students can fully develop language competence and other skills. At the end of the course students are expected to cover almost entirely the requirements of C1 level of the Common European Framework of Reference for Languages.

Prerequisite: GRE122

EILC 110 Erasmus Intensive Greek Language and Culture Course

100-hour intensive course, 5-ECTS credit. The course is offered within the framework of Erasmus Intensive Language Courses for Erasmus students who will complete part of their studies in Cyprus. The course provides the basic communicative skills to students, enabling them to respond to basic daily needs both orally and in writing. At this level, the language and content is drawn from students' experiences. Upon completion of this course, students will be able to understand and use basic everyday expressions that meet immediate basic needs in social and academic environment. An extensive cultural programme also takes place, through which students have the opportunity to experience the culture of Cyprus (eg, visits to archaeological sites, museums, etc.). The course adopts student-centered teaching methods whereas the use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process so that students can fully develop language competence and other skills. By the end of the course, students are expected to have covered most part of the A1 level of the Common European Framework of Reference for Languages, with greatly enhanced the cultural aspect of the programme

GREE111

Three-hour weekly course, 4-ECTS credit. This course is specifically designed to meet the needs of Erasmus and foreign students who will complete part of their studies at Cyprus University of Technology. The course provides the basic communicative skills to students, enabling them to respond to basic daily needs both orally and in writing. At this level, the language and content is drawn from students' experiences. Upon completion of this course, students will be able to understand and use everyday expressions that meet immediate basic needs in social and academic environment. By the end of the

course, students are expected to have covered most part of the A1 level of the Common European Framework of Reference for Languages.

GREE112

Three-hour weekly course, 4-ECTS credit. This course is specifically designed to meet the needs of Erasmus and foreign students who will complete part of their studies at Cyprus University of Technology. The main objective of this course is to prepare students for basic communication in Greek. At this level, the language and content is drawn from students' experiences and interests, as well as from other key learning areas and the world of the media. Students will be able to understand and use Greek in more complex everyday situations, exchanging information on familiar topics and activities. The course adopts student-centered teaching methods whereas the use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process so that students can fully develop language competence and other skills. Upon completion of the course, students are expected to fully meet the requirements of A1 level and partially the requirements of A2 level of the Common European Framework of Reference for Languages.

Prerequisite: EILC110 or GREE111

GREE113

Three-hour weekly course, 4-ECTS credit. The course is designed to meet the needs of Erasmus and foreign students who undertake part of their studies at Cyprus University of Technology. The course aims at familiarising students with cultural elements and circumstances of academic and social life. Students become familiar with material relevant to their fields of study and develop their listening comprehension and oral fluency by taking part in discussions and giving oral presentations. The course adopts student-centered teaching methods whereas the use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process so that students can fully develop language competence and other skills. At the end of the course, students are expected to fully meet the requirements of A2 level of the Common European Framework of Reference for Languages.

Prerequisites: GREE112 Greek Language and Culture II

ELECTIVES

GRE410 – Greek for academic purposes/Dissertation Writing I

Four-hour course, six ECTS, elective. This course is primarily designed for third-year and fourth-year students who need to familiarise with academic writing and produce written and spoken language at an academic level in order to be able to complete their dissertation. During this course, students develop a wide range of skills, so that they can understand demanding, lengthy texts, recognise implicit meaning and be in position of developing clear, well-structured, detailed texts on complex subjects, showing controlled use of organisational patterns and connectors. In addition, students become familiar with the stages of academic writing. The course is based on student-centered teaching methods, whereas the use of new technologies

Greek I

(Computer Assisted Language Learning) is an integral part of the learning process so that students fully develop language and other skills.

GRE 411 - Greek for Academic Purposes / Dissertation Writing II

Four-hour course, six ECTS, elective. This course offers opportunities to practice a wide range of skills through understanding and analysis of academic topics, including discussions on technical issues of their expertise. In particular, in the context of this course, students will have the opportunity to further develop a variety of skills, so that they can understand demanding, lengthy texts, and produce clear, well-structured texts in preparation for academic research papers at an undergraduate and postgraduate level. The material used is designed to acquaint students with the structure and content of the standard parts of an academic paper, dissertation or thesis, as well as the methods and strategies required in becoming an effective researcher, such as gathering information and evaluating theory. This course also aims to equip students with effective communication skills both in their academic and professional environment. Also, the course prepares students for writing various types of texts such as letter and curriculum vitae in the form of European Passport (Europass). Finally, learners are expected to develop their listening and speaking skills by taking an active part in oral presentations, at an academic level, either as presenters or as attendees and evaluators. The course is based on student-centered teaching methods, whereas the use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process so that students fully develop language and other skills.

Prerequisite: GRE410

ENG 130 –Advanced English

ENG 130 is a four-hour per week, 6-ECTS credit, elective degree level course. It concentrates on the development of students English language skills at an advanced level, specifically C1 according to the Common European Framework of Reference for Languages. This course is designed for third- or fourth-year students and aims to provide input and practice to students (speaking, listening, reading and writing) in a wide range of academic related topics. Students have the opportunity to develop a variety of language skills, so by the end of the course, they will be able to comprehend, as well as infer meaning of academic discourse. The final aim is to prepare students for their future social, academic and professional life. The course focuses on learner-centred methods of teaching, as well as on the development of learner autonomy. The use of New Technologies constitutes a vital part in the learning process, so that students are provided with opportunities to develop their language and other skills.

Prerequisite: any one of the English for Specific Academic Purposes with final grade over 8.

ENG 140 - Academic English for Research Purposes

ENG 140 is a four-hour per week, 6-ECTS credit optional degree level course, equivalent to the Common European Framework of

References (CEFR) for languages (level C1-C2).

It is particularly designed for students who need to develop their English language skills, at a level appropriate to complete a dissertation or thesis. It aims to familiarize students with reading, understanding and processing academic material. Special emphasis is placed on the production of correct, coherent, detailed and accurate language in preparation for academic research papers at an undergraduate and postgraduate level. The material used is designed to acquaint students with the structure and content of the standard parts of an academic paper, dissertation or thesis, as well as the methods and strategies required in becoming an effective researcher, such as gathering information and evaluating theory. This course also aims to equip students with effective communication skills both in their academic and professional environment. Finally, learners are expected to develop their listening and speaking skills by taking an active part in oral presentations, at an academic level, either as presenters or as attendees and evaluators. The course focuses on learner-centred methods of teaching, as well as on the development of learner autonomy. The use of New Technologies (Computer Assisted Language Learning) constitutes a vital part in the learning process, so that students are provided with opportunities to develop their language and other skills.

Prerequisite: ENG 130 or ENG 131 or any one of the English for Specific Academic Purposes with final grade over 8.

ELECTIVE COURSES FOR FOREIGN/OTHER LANGUAGES

GER 111 –German Language I

Four-hour per week, 6-ECTS credit, free elective course that concentrates on the learning of German at beginner level. GER 111 is particularly designed to meet the needs of university students studying in various fields. The course provides the basic communicative skills to students, enabling them to respond to basic daily needs both orally and in writing. At this level, the language and content is drawn from students' experiences. Upon completion of this course, students will be able to understand and use everyday expressions that meet immediate basic needs in social and academic environment. They are expected to develop sufficient range of language to be able to express themselves with a degree of clarity, at beginner level equivalent to Common European Framework of Reference (CEFR) for languages level A1.

GER 112 –German Language II

Four hour per week, 6 ECTS credit, free elective course that concentrates on the learning of beginner German. GER 112 is particularly designed to meet the needs of university students planning to visit, study, or work in Germany. This course intends to familiarise the students with relevant reading, writing and audio visual material to prepare them accordingly. Furthermore, learners will be introduced to technical and specific purpose language related to their studies. Also, learners are expected to develop their speaking and listening skills by taking active part in discussions, giving oral

presentations, etc. Upon completion of the course, students are expected to develop sufficient range of language to be able to express themselves with a degree of clarity, fluency and spontaneity. The program is based on learner-centered teaching methods and autonomous learning for students. The use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process, enabling students to develop all their language skills. At end of the semester students are expected to have fully covered the requirements of the A1 level and partially the requirements of level A2 of the Common European Framework Reference for Languages. Lesson Prerequisite: GER 111

GER 113 –German Language III

Four-hour per week, 6 ECTS credits, free elective course. In this course students develop an advance vocabulary through the introduction of various trade and career publications and also improve their writing skills in various writing genres such as messages, note keeping and simple personal letters. Furthermore, students will develop a higher degree of fluency through class discussions and oral presentations. They will also develop a better phonological control and sociolinguistic perception of the German Language with clarity and fluency. Students will be also able to exchange information with German speakers in Cyprus, native speakers from German-speaking countries, or students attending German-speaking Universities. Upon completion of the course, students are expected to have developed sufficient range of language to be able to express themselves and describe familiar situations with a degree of clarity, fluency and spontaneity .The program is based on learner-centered teaching methods and autonomous learning. The use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process, enabling students to develop all their language skills. At the end of the semester students are expected to have covered entirely the requirements of level A2 of the Common European Framework Reference for Languages. Lesson Prerequisite: GER 112

GER 114 –German Language IV

GER 114 - is a four-hour per week, 6 ECTS credits, free elective course. The course prepares students to achieve a higher level of oral fluency and accuracy in their social and professional working environment. In addition, students will become more proficient in their writing skills. Students will also be able to exchange information with German speakers in Cyprus, native speakers from German-speaking countries, or students attending German-speaking Universities. The program is based on learner-centered teaching methods and autonomous learning. The use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process, enabling students to develop all their language skills. At the end of the semester students are expected to have covered entirely the requirements of level A2 and partial B1 of the Common European Framework Reference

for Languages. Lesson Prerequisite: GER 113

FR 111 - French Language I

French 111 is a four-hour per week, 6-ECTS credit elective course that focuses on the learning of French at beginners' level. The course is designed to meet the needs of university students from various fields and focuses on the development of speaking, writing, reading and listening skills. Students learn to communicate so as to satisfy their basic needs and interests. They are expected to understand simple phrases and basic everyday life vocabulary, talk about themselves and ask similar questions, talk about their daily activities and their place of residence. They will also be able to exchange information with French-speaking people at a social and professional level, in case of visiting a French-speaking country or studying there. Students will also be able to understand and use French for specific purposes relevant to their field of studies. The program is based on student-centered teaching methods, and on students' autonomous learning. The use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process so that students can fully develop language and other skills. At the end of the semester, students will have met many of the requirements of A1 level of the Common European Framework of Reference for Languages.

FR 112 - French Language II

French 112 is a four-hour per week, 6-ECTS credit elective course that concentrates on the learning of French at a pre-intermediate level. At this level, students will acquire the necessary language communication skills at written and oral level so as to be able to respond to situations of everyday social exchanges (holidays, shopping, signs, restaurants, fashion). Knowledge and skills in speaking, writing, listening and understanding through communication material are enhanced. They will also be able to exchange information with French-speaking people at a social and professional level, in case of visiting a French-speaking country or studying there. The program is based on student-centered teaching methods, and on students' autonomous learning. The use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process so that students can fully develop language and other skills. At the end of the semester, students will have met the requirements of A1 level, and partially the requirements of A2 Level of the Common European Framework of Reference for Languages.

Prerequisite: FR 111

FR 113 - French Language III

French 113 is a four-hour per week, 6-ECTS credit elective course that concentrates on the learning of French at an intermediate level. The third level further strengthens communication skills, in order for the students to gain more fluency in writing and speaking and more competence in oral and written comprehension. They will be able to communicate successfully on subjects like sports, travel, health, employment, purchases, media, and leisure activities. They will also be capable of understanding announcements and messages and exchanging information with

French-speaking people at a social and professional level, in case of visiting a French-speaking country or studying there. The program is based on student-centered teaching methods, and on students' autonomous learning. The use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process so that students can fully develop language and other skills. At the end of the semester students are expected to have covered almost entirely the requirements of A2 Level of the Common European Framework of Reference for Languages.

Prerequisite: FR 112

FR 114 - French Language IV

French 114 is a four-hour per week, 6-ECTS credit elective course that concentrates on the learning of French at a pre-advanced level. The objective of this level is that students become more independent in all language skills (speaking, writing, listening and understanding) to communicate confidently on issues such as the description of experiences and events, future plans, desires, dreams and goals. It is expected that students will be able to explain their views on culture, inventions, education, outings, work, etc. They will thus be capable of coping with most situations that they might face while travelling in French-speaking countries. They are expected to understand simple authentic texts in order to talk or write about them. In addition, they will be able to exchange information with French-speaking people at a social and professional level, in case of visiting a French-speaking country or studying there. The program is based on student-centered teaching methods, and on students' autonomous learning. The use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process so that students can develop full linguistic and other skills. At the end of the semester, students will have met the requirements of A2 level and partially the requirements of B1 Level of the Common European Framework of Reference for Languages.

Prerequisite: FR 113

FRH112 French for Hotel and Tourism Management I

French for Hotel and Tourism Management I is a four-hour per week, 6-ECTS credit, elective degree level course that concentrates on the development of all language skills based on professional expertise. Students will practise functional language skills in French targeted at their professional environment through thematic units such as: presentations/ greetings, welcoming guests at a hotel / keeping customer details during reservations, providing guidance and assistance to French-speaking customers (weather, directions, roads, transport), reservations / cancellations / refunding. At this level students will be able to present their profession, the main features of a hotel and a tourist business, professions in the field of hotel and tourism, etc. The course also enhances the students' knowledge and skills in using communication material aiming at oral and written comprehension and expression. Furthermore, students will be able to exchange information with speakers of French, when they reside in French-speaking countries or study at a French-speaking university. Upon

completion of the course students are expected to have fully covered the requirements of level A1, and partially the requirements of level A2 of the Common European Framework of Reference for Languages.

Prerequisites: FR 111 French Language I.

FRH113 French for Hotel and Tourism Management II

French for Hotel and Tourism Management II is a four-hour per week, 6-ECTS credit, elective degree level course that concentrates on the development of all language skills based on professional expertise. Students will practise functional language skills in French targeted at their professional environment through thematic units such as: hotel services/ meals/ food / drinks / orders / serving / room service in the hotel, understanding and provision of tourist services taking into account the expectations of the guests/ complain handling (letter of apology, etc.), selling of tourist services and support after selling, CV and Cover letter. This level further enhances communication skills, in order for students to acquire more fluency and understanding of the written and spoken word. Furthermore, students will be able to exchange information with speakers of French, when they reside in French-speaking countries or study at a French-speaking university. Upon completion of the course students are expected to have covered almost entirely the requirements of level A2 of the Common European Framework of Reference for Languages.

Prerequisites: FRH112 French for Hotel and Tourism Management II

FRP114 French for Hotel and Tourism Management IV

French for Hotel and Tourism Management IV is a four-hour per week, 6-ECTS credit, elective degree level course that concentrates on the development of all language skills based on professional expertise. Students will practise functional language skills in French targeted at their professional environment through thematic units such as: oral communication (through phone or in person) or written communication (letters, e-mail) with tourist partners, understanding and processing of informative documents or documents which promote tourist products (brochures, printed and electronic material), organising events, conferences, seminars / offers at the hotel or tourist town/ village, tours in Cyprus: information and suggestions for Cyprus and the city where the hotel is situated (history, culture, attractions, monuments, places of leisure). The objective of this level is that students become more independent in the use of language and to communicate with confidence orally and in writing as far as the above topics are concerned. Additionally, students will be able to exchange information with speakers of French, when they reside in French-speaking countries or study at a French-speaking university. Upon completion of the course students are expected to have fully covered the requirements of level A2 and partially the requirements of level B1 of the Common European Framework of Reference for Languages.

Prerequisites: FRH113

FRH115 French for Hotel and Tourism Management V

French for Hotel and Tourism Management V is a four-hour per week, 6-ECTS credit, elective degree level course that concentrates on the development of all language skills based on professional expertise. Students will practise functional language skills in French targeted at their professional environment through thematic units such as: 1) the tourist and hotel industry in France and French speaking countries: popular destinations, the treasures of France related to tourism (art, gastronomy, vineyards and wineries, culture, local products), climate, geography, transport 2) the French tradition in the market of luxury tourism and the 'good life' in Paris, Cannes, Monaco, Saint-Tropez and Provence: the centres of well-being and relaxation with spa services and the French version of zen, the French sophisticated luxurious restaurants, the palaces (special kind of luxurious hotels typical of French tradition and culture), the culture of savoir vivre (the values of superiority and good taste 3) other thematic units that will be necessary related to the particular field of study. Upon completion of the course students are expected to have fully covered the requirements of Level B1 of the Common European Framework of Reference for Languages.

Prerequisites: FRH 114

SPA111 – Spanish Language I

Four-hour course, 6-ECTS credit, free elective. The course is designed to meet the needs of university students from various fields and focuses on the development of speaking, writing, reading and listening skills. The course provides the basic communicative skills to students, enabling them to respond to basic daily needs both orally and in writing. At this level, the communication situations shall be determined mainly by the students' experiences. Upon completion of this course, students will be able to understand and use basic everyday expressions that meet immediate basic needs in social and academic environment. Students will also be able to understand and use Spanish for specific purposes relevant to their field of studies. They will be able to share information with Spanish speakers in case they live in Spanish-speaking countries or when studying in a Spanish university. The program concentrates on a student-based teaching method and on students´ autonomous learning. The use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process in order to fully develop the language and other skills. At the end of the semester students are expected to partially meet the requirements of the A1 level of the Common European Framework.

SPA 112 – Spanish Language II

An elective, 6-ECTS credit, four-hour course per week. At this level, communication skills are improved and the students are expected to gain more confidence in their oral expressions when offering or asking for information related to daily life. They will be able to describe in simple terms, aspects of their immediate environment and needs (shopping, family, occupation). They will be able to share information with Spanish speakers

in case they live in Spanish-speaking countries or when studying in a Spanish university. The program concentrates on a student-based teaching method and on students´ autonomous learning. The use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process in order to fully develop the language and other skills. At the end of the semester students are expected to fulfill the requirements of the A1 level and partially meet the requirements of the A2 level of the Common European Framework of Reference for Languages.

Prerequisite: ESP 111

SPA113 – Spanish Language III

An elective, 6-ECTS credit, four hour course per week. This level further enriches students' communication skills, enabling them to understand simple texts and express themselves briefly orally or in writing. In addition, this level investigates various aspects of the history of contemporary Spain via audiovisual material. At the end of the course students will be able to describe in simple terms, aspects of their past as well as issues related to their immediate needs. They will be able to share information with Spanish speakers in case they live in Spanish-speaking countries or when studying in a Spanish university. The program concentrates on a student-based teaching method and on students´ autonomous learning. The use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process in order to fully develop the language and other skills. At the end of the semester students are expected to have almost covered all the requirements of the A2 level of the Common European Framework of Reference for languages.

Prerequisite: SPA 112

SPA 114 – Spanish Language IV

An elective, 6-ECTS credit, four-hour course per week. Students will be able to understand the main points of conversation usually encountered in contexts such as their work, study or entertainment. They will be able to deal with most situations likely to arise whilst travelling in an area where the spoken language is Spanish. Students will also be able to produce simple texts on topics which are familiar to them or of their personal interest. They will be able to describe briefly, experiences and events, dreams and ambitions; give explanations for opinions and plans. They will be able to share information with Spanish speakers in case they live in Spanish-speaking countries or when studying in a Spanish university. The program concentrates on a student-based teaching method and on students´ autonomous learning. The use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process in order to fully develop the language and other skills. At the end of the semester students are expected to have fully covered the requirements of the A2 level and partially of B1 level of the Common European Framework of Reference for languages.

Prerequisite: SPA113

ITA111 - Italian Language I

Four-hour course, 6-ECTS credit, free elective. The course is designed to meet the needs of university students from various

fields and focuses on the development of speaking, writing, reading and listening skills. The course provides the basic communicative skills to students, enabling them to respond to basic daily needs both orally and in writing. At this level, the communication situation shall be determined mainly by the students' experiences. Upon completion of this course, students will be able to understand and use basic everyday expressions that meet immediate basic needs in social and academic environment. Students will also be able to share information with Italian speakers in case they live in Italian-speaking countries or when studying in an Italian university. The course is based on learner-centred teaching methods and promotes autonomous learning. The use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process, enabling students to develop all their language skills. At the end of the semester students are expected to have covered a large part of the A1 Level requirements from of the Common European Framework of Reference for Languages

ITA112 - Italian Language II

Four-hour course, 6-ECTS credit, elective. The main objective of Italian Language II is to provide additional material in order to allow students to navigate and communicate through more complex everyday situations communication, sharing information on familiar topics and activities. Language skills are enhanced, developing further written communication and expression. Students can also exchange information with Italian speakers in Cyprus or in Italy. The course is based on learner-centered teaching methods and autonomous learning for students. The use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process, enabling students to develop all their language skills. At end of the semester students are expected to have fully covered the requirements of the A1 level and partially the requirements of level A2 of the Common European Framework Reference for Languages.

Prerequisite: ITA 111

ITA 113 - Italian Language III

Four-hour course, 6-ECTS credit, elective. In this course students develop an advance vocabulary, phonological control and sociolinguistic perception to be able to express themselves with a degree of clarity, fluency and spontaneity. Students can write messages, notes and simple personal letters. They may also exchange information with Italian speakers in Cyprus or in case of stay in Italian-speaking countries or schooling in Italian-speaking University. The program is based on learner-centered teaching methods and autonomous learning. The use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process, enabling students to develop all their language skills. At the end of the semester students are expected to have covered entirely the requirements of level A2 and partially the requirements of level B1 of the Common European Framework Reference for Languages.

Prerequisite: ITA 112

ITA 114 - Italian Language IV

Four-hour course, 6-ECTS credit, elective. The primary goal of the course is that students become more independent in the use of language and to communicate confidently orally and in writing on topics related with the description of experiences and events, future plans, desires, dreams and goals. Students can write simple and structured texts. Students can also exchange information with Italian speakers in Cyprus or in Italy. The program is based on learner-centered teaching methods and autonomous learning for students. The use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process, enabling students to develop all their language skills. At the end of the semester students are expected to have fully covered the requirements of the A2 level and partially the requirements of level B1 of the Common European Framework of Reference (CEFR) for Languages.

Prerequisite: ITA 113

RUS111 - Russian Language I

Four-hour course, 6-ECTS credit, free elective. The course is designed to meet the needs of university students from various fields and focuses on the development of speaking, writing, reading and listening skills. The course provides the basic communicative skills to students, enabling them to respond to basic daily needs both orally and in writing. At this level, the communication situations shall be determined mainly by the students' experiences. Upon completion of this course, students will be able to understand and use basic everyday expressions that meet immediate basic needs in social and academic environment. Students will be able to understand and use Russian for specific purposes relevant to their field of studies. They will also be able to exchange information with speakers of Russian, when they reside in Russian-speaking countries or study at a Russian-speaking university. The course is based on student-centred teaching methods and on autonomous learning. The use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process so that students can fully develop language competence and other skills. Upon completion of the course students are expected to have covered several of the requirements of level A1 of the Common European Framework of Reference for Languages.

RUS112 - Russian Language II

RUS112 is a four-hour per week, 6-ECTS credit, elective degree level course. At this level students will acquire the basic language communication skills orally and in writing required to respond to everyday social exchanges (holidays, shopping, signs, restaurants, fashion). The course also enhances the students' knowledge and skills in using communication material aiming at oral and written comprehension and expression. Students will also be able to exchange information with speakers of Russian, when they reside in Russian-speaking countries or study at a Russian-speaking university. The course is based on student-centred teaching methods and on autonomous learning. The use of

new technologies (Computer Assisted Language Learning) is an integral part of the learning process so that students can fully develop language competence and other skills. Upon completion of the course students are expected to have fully covered the requirements of level A1 and partially the requirements of level A2 of the Common European Framework of Reference for Languages.

Prerequisite: RUS 111

RUS113 - Russian Language III

RUS 113 is a four-hour per week, 6-ECTS credit, elective degree level course. This level further enhances communication skills, in order for students to acquire more fluency and understanding of the written and spoken language. Students will be able to communicate successfully on topics such as sports, travelling, health, labor, markets, media, and leisure activities. Furthermore, they will be able to understand announcements and messages. Students will also be able to exchange information with speakers of Russian, when they reside in Russian-speaking countries or study at a Russian-speaking university. The course is based on student-centred teaching methods and on autonomous learning. The use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process so that students can fully develop language competence and other skills. Upon completion of the course students are expected to have covered almost entirely the requirements of level A2 of the Common European Framework of Reference for Languages.

Prerequisite: RUS 112

RUS 114 - Russian Language IV

RUS 114 is a four-hour per week, 6-ECTS credit, elective degree level course. The objective of this level is that students become more independent in the use of language and communicate with confidence orally and in writing on topics such as the description of experiences and events, future plans, desires, dreams and targets. It is expected that students will be able to explain their view of the culture, inventions, education, going out, labour, etc. They will thus be able to cope with most situations they may encounter when travelling to Russian-speaking countries. Students will also be able to understand simple authentic texts which they will be able to present in writing and orally. Furthermore, they will also be able to exchange information with speakers of Russian, when they reside in Russian-speaking countries or study at a Russian-speaking university. The course is based on student-centred teaching methods and on autonomous learning. The use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process so that students can fully develop language competence and other skills. Upon completion of the course students are expected to have fully covered the requirements of level A2 and partially the requirements of level B1 of the Common European Framework of Reference for Languages.

Prerequisite: RUS 113

Degree level course that concentrates on the learning of English for Specific Academic purposes (ESAP). It is the last in a series of three courses particularly designed to meet the needs of

university students in the field of communication and media studies and to develop their English language to an academic level equivalent to Common European Framework of Reference (CEFR) for languages (level C1-C2). This course aims at enabling students to gain a deeper knowledge of the theory and practice concerning their area of interest. Special emphasis is placed on the topics of intercultural communication and the preparation of various types of Communication messages. Opportunities will be provided by the instructor for further assimilation of the theory behind effective communication on one hand, and on the other hand, application of this theory in the organization and production of written and oral communication through especially designed authentic tasks. More specifically students will have practice in composing various types of written messages used for communication purposes such as correspondence (letters, emails etc.) as well as various print media genres (advertisements, editorials and so on). Furthermore opportunities will be provided for the development of listening and speaking skills by taking an active part in activities such as discussions, speeches, seminars and oral presentations. By improving their communication skills this course aims to equip students with the necessary skills and abilities they will need in order to deal with the challenges which they will face both at university and in the workplace. The course focuses on learner-centred methods of teaching, as well as on the development of learner autonomy. The use of New Technologies (Computer Assisted Language Learning) constitutes a vital part in the learning process, so that students are provided with opportunities to develop their language and other skills.

Prerequisite: ENG 220

COMPULSORY COURSES FOR THE 8th SEMESTER

Department of Commerce, Finance and Shipping

ENG 491 English for Commerce and Finance

ENG 491 is a three-hour per week, 4-ECTS credit, required degree level course that concentrates on the learning of English for Specific Academic Purposes (ESAP). ENG491 is particularly designed to meet the needs of university students studying in the field of Finance and to develop their English language to an academic level equivalent to Common European Framework of Reference (CEFR) for languages (level C1). The course aims to enable students to understand spoken and written English in a number of realistic contexts of the kind Commerce and Finance practitioners are likely to encounter in their daily working lives. Spoken texts include presentations, lectures, news broadcasts, discussions and interviews on finance-related issues, while written texts include texts such as e-mails, faxes, journal articles, business letters, financial reports, memos, and others. The course focuses on learner-centred methods of teaching, as well as on the development of learner autonomy. The use of New Technologies (Computer Assisted Language Learning) constitutes a vital part in the learning process, so that students are provided with

opportunities to develop their language and other skills.

Prerequisite ENG191

ENG 492 English for Shipping

ENG 492 is a three-hour per week, 4-ECTS credit, required degree level course that concentrates on the learning of English for Specific Academic Purposes (ESAP). ENG 492 is particularly designed to meet the needs of university students studying in the field of Shipping. The course intends to familiarise the students with relevant reading material, procedures and various fields that are interconnected with shipping. This will be used to acquaint the students with genre and writing styles specific to students' specialisation. Furthermore, learners are expected to develop their listening comprehension and their speaking fluency by taking an active part in discussions, giving oral presentations, etc. Students are expected to develop sufficient range of language, phonological control and sociolinguistic awareness to be able to express themselves with a degree of clarity, fluency and spontaneity. The course focuses on learner-centred methods of teaching, as well as on the development of learner autonomy. The use of New Technologies (Computer Assisted Language Learning) constitutes a vital part in the learning process, so that students are provided with opportunities to develop their language and other skills.

Prerequisite: ENG191

COMPULSORY ELECTIVE

Department of Mechanical Engineering and Materials Science and Engineering

ENG 131 – Advanced English for Mechanical Engineers

ENG 131 is a four-hour per week, 6-ECTS credit, elective degree level course, which is offered specifically for Mechanical Engineers. It concentrates on the development of students English language skills at an advanced level, specifically C1 according to the Common European Framework of Reference for Languages. This course is designed for third- or fourth-year students and aims to provide input and practice to students (speaking, listening, reading and writing) in a wide range of academic related topics. Students have the opportunity to develop a variety of language skills, so by the end of the course, they will be able to comprehend, as well as infer meaning of academic discourse. The final aim is to prepare students for their future social, academic and professional life. The course focuses on learner-centred methods of teaching, as well as on the development of learner autonomy. The use of New Technologies constitutes a vital part in the learning process, so that students are provided with opportunities to develop their language and other skills.

Prerequisite ENG 162

GREEK COURSES FOR UNDERGRADUATE NON-GREEK NATIVE /FOREIGN NEW STUDENTS

GRE111 - Intensive Greek Language and Culture Course I

The course addresses the needs of students who plan to conduct their undergraduate studies at the Cyprus University of Technology. It aims at developing the four basic language skills (reading, listening, speaking and writing), focusing on all levels of language (phonetics,

phonology, morphology, syntax, semantics, pragmatics and sociolinguistics) and promoting students' contact with cultural elements. The course is designed to make students effective users of Greek language, so that they realise their studies at a Greek-speaking university. The course adopts student-centered teaching methods whereas the use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process so that students can fully develop language competence and other skills. At the end of the course students are expected to meet the requirements of A1 and A2 levels and partially the requirements of B1 level of the Common European Framework of Reference for Languages. Total duration of the course: 325 hours.

GRE112 - Intensive Greek Language and Culture Course II

The Greek Language and Culture Course II is the second part of the foundation language programme. This course is specially designed for foreign students who plan to study at the Cyprus University of Technology and aims at familiarising students with relevant communicative material in order to meet the expectations of a Greek-speaking undergraduate curriculum. Students are expected to develop further all basic language skills, become familiar with the stages of academic writing and develop "Limited Operational Proficiency" in Greek language (CEFR, B2). The course aims at the development of communicative skills that stem from the field of study of the students and also the introduction of cultural elements from the field of Cypriot reality. The course adopts student-centered teaching methods whereas the use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process so that students can fully develop language competence and other skills. Upon completion of the course students are expected to fully meet the requirements of B1 Level and partially the requirements of B2 level of the Common European Framework of Reference for Languages. Total duration of the course: 325 hours.

Prerequisite: GRE111

GRE122 - Advanced Greek Language and Culture I

The Advanced Greek Language and Culture I course is the third part of the foundation programme for foreign students who have started their studies at the Cyprus University of Technology. The course aims at familiarising students with relevant communicative material in order to enable them to meet the demands of the undergraduate curriculum. At the end of the course students will be able to use language effectively for social, academic and professional purposes (CEFR C1). More specifically, students will raise awareness on a wide range of demanding texts, will be able to express themselves fluently and spontaneously and produce structured texts on complex subjects, showing controlled use of organisational patterns and connectors (CEFR C1). The course adopts student-centered teaching methods whereas the use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process so that students can fully develop language competence and other skills. Upon completion of the

course students are expected to fully meet the requirements of B2 level, and partially the requirements of C1 level of the Common European Framework of Reference for Languages.

Prerequisite: GRE 112

GRE123 - Advanced Greek Language and Culture II

The Advanced Greek Language and Culture II course is the fourth part of the foundation programme for students who are in their first year of studies at the Cyprus University of Technology. This course develops mainly sociolinguistic competence of students in order to enable them to express adequately taking in consideration sociolinguistic elements and gain high control of the levels of style and idiomatic expressions. Upon completion of the course students are expected to recognize a wide range of idiomatic and colloquial elements and attend university lectures that use dialectical elements (CEFR C1). The course adopts student-centered teaching methods whereas the use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process so that students can fully develop language competence and other skills. At the end of the course students are expected to cover almost entirely the requirements of C1 level of the Common European Framework of Reference for Languages.

Prerequisite: GRE122

EILC 110 Erasmus Intensive Greek Language and Culture Course

100-hour intensive course, 5-ECTS credit. The course is offered within the framework of Erasmus Intensive Language Courses for Erasmus students who will complete part of their studies in Cyprus. The course provides the basic communicative skills to students, enabling them to respond to basic daily needs both orally and in writing. At this level, the language and content is drawn from students' experiences. Upon completion of this course, students will be able to understand and use basic everyday expressions that meet immediate basic needs in social and academic environment. An extensive cultural programme also takes place, through which students have the opportunity to experience the culture of Cyprus (eg, visits to archaeological sites, museums, etc.). The course adopts student-centered teaching methods whereas the use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process so that students can fully develop language competence and other skills. By the end of the course, students are expected to have covered most part of the A1 level of the Common European Framework of Reference for Languages, with greatly enhanced the cultural aspect of the programme.

GREE111

Three-hour weekly course, 4-ECTS credit. This course is specifically designed to meet the needs of Erasmus and foreign students who will complete part of their studies at Cyprus University of Technology. The course provides the basic communicative skills to students, enabling them to respond to basic daily needs both orally and in writing. At this level, the language and content is drawn from students' experiences. Upon completion of this course, students will be able to

understand and use everyday expressions that meet immediate basic needs in social and academic environment. By the end of the course, students are expected to have covered most part of the A1 level of the Common European Framework of Reference for Languages.

GREE112

Three-hour weekly course, 4-ECTS credit. This course is specifically designed to meet the needs of Erasmus and foreign students who will complete part of their studies at Cyprus University of Technology. The main objective of this course is to prepare students for basic communication in Greek. At this level, the language and content is drawn from students' experiences and interests, as well as from other key learning areas and the world of the media. Students will be able to understand and use Greek in more complex everyday situations, exchanging information on familiar topics and activities. The course adopts student-centered teaching methods whereas the use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process so that students can fully develop language competence and other skills. Upon completion of the course, students are expected to fully meet the requirements of A1 level and partially the requirements of A2 level of the Common European Framework of Reference for Languages.

Prerequisite: EILC110 or GREE111

GREE113

Three-hour weekly course, 4-ECTS credit. The course is designed to meet the needs of Erasmus and foreign students who undertake part of their studies at Cyprus University of Technology. The course aims at familiarising students with cultural elements and circumstances of academic and social life. Students become familiar with material relevant to their fields of study and develop their listening comprehension and oral fluency by taking part in discussions and giving oral presentations. The course adopts student-centered teaching methods whereas the use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process so that students can fully develop language competence and other skills. At the end of the course, students are expected to fully meet the requirements of A2 level of the Common European Framework of Reference for Languages.

Prerequisites: GREE112 Greek Language and Culture II

ELECTIVES

GRE410 – Greek for academic purposes/Dissertation Writing I

Four-hour course, six ECTS, elective. This course is primarily designed for third-year and fourth-year students, who need to familiarise with academic writing and produce written and spoken language at an academic level in order to be able to complete their dissertation. During this course, students develop a wide range of skills, so that they can understand demanding, lengthy texts, recognise implicit meaning and be in position of developing clear, well-structured, detailed texts on complex subjects, showing controlled use of organisational patterns and connectors. In addition, students become familiar with the stages of

academic writing. The course is based on student-centered teaching methods, whereas the use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process so that students fully develop language and other skills.

GRE 411 - Greek for Academic Purposes / Dissertation Writing II

Four-hour course, six ECTS, elective. This course offers opportunities to practice a wide range of skills through understanding and analysis of academic topics, including discussions on technical issues of their expertise. In particular, in the context of this course, students will have the opportunity to further develop a variety of skills, so that they can understand demanding, lengthy texts, and produce clear, well-structured texts in preparation for academic research papers at an undergraduate and postgraduate level. The material used is designed to acquaint students with the structure and content of the standard parts of an academic paper, dissertation or thesis, as well as the methods and strategies required in becoming an effective researcher, such as gathering information and evaluating theory. This course also aims to equip students with effective communication skills both in their academic and professional environment. Also, the course prepares students for writing various types of texts such as letter and curriculum vitae in the form of European Passport (Europass). Finally, learners are expected to develop their listening and speaking skills by taking an active part in oral presentations, at an academic level, either as presenters or as attendees and evaluators. The course is based on student-centered teaching methods, whereas the use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process so that students fully develop language and other skills.

Prerequisite: GRE410

ENG 130 –Advanced English

ENG 130 is a four-hour per week, 6-ECTS credit, elective degree level course. It concentrates on the development of students English language skills at an advanced level, specifically C1 according to the Common European Framework of Reference for Languages. This course is designed for third- or fourth-year students and aims to provide input and practice to students (speaking, listening, reading and writing) in a wide range of academic related topics. Students have the opportunity to develop a variety of language skills, so by the end of the course, they will be able to comprehend, as well as infer meaning of academic discourse. The final aim is to prepare students for their future social, academic and professional life. The course focuses on learner-centred methods of teaching, as well as on the development of learner autonomy. The use of New Technologies constitutes a vital part in the learning process, so that students are provided with opportunities to develop their language and other skills.

Prerequisite: any one of the English for Specific Academic Purposes with final grade over 8.

ENG 140 - Academic English for Research Purposes

ENG 140 is a four-hour per week, 6-ECTS credit optional degree level course, equivalent to the Common European Framework of References (CEFR) for languages (level C1-C2).

It is particularly designed for students who need to develop their English language skills, at a level appropriate to complete a dissertation or thesis. It aims to familiarize students with reading, understanding and processing academic material. Special emphasis is placed on the production of correct, coherent, detailed and accurate language in preparation for academic research papers at an undergraduate and postgraduate level. The material used is designed to acquaint students with the structure and content of the standard parts of an academic paper, dissertation or thesis, as well as the methods and strategies required in becoming an effective researcher, such as gathering information and evaluating theory. This course also aims to equip students with effective communication skills both in their academic and professional environment. Finally, learners are expected to develop their listening and speaking skills by taking an active part in oral presentations, at an academic level, either as presenters or as attendees and evaluators. The course focuses on learner-centred methods of teaching, as well as on the development of learner autonomy. The use of New Technologies (Computer Assisted Language Learning) constitutes a vital part in the learning process, so that students are provided with opportunities to develop their language and other skills.

Prerequisite: ENG 130 or ENG 131 or any one of the English for Specific Academic Purposes with final grade over 8.

ELECTIVE COURSES FOR FOREIGN/OTHER LANGUAGES

GER 111 –German Language I

Four-hour per week, 6-ECTS credit, free elective course that concentrates on the learning of German at beginner level. GER 111 is particularly designed to meet the needs of university students studying in various fields. The course provides the basic communicative skills to students, enabling them to respond to basic daily needs both orally and in writing. At this level, the language and content is drawn from students' experiences. Upon completion of this course, students will be able to understand and use everyday expressions that meet immediate basic needs in social and academic environment. They are expected to develop sufficient range of language to be able to express themselves with a degree of clarity, at beginner level equivalent to Common European Framework of Reference (CEFR) for languages level A1.

GER 112 –German Language II

Four hour per week, 6 ECTS credit, free elective course that concentrates on the learning of beginner German. GER 112 is particularly designed to meet the needs of university students planning to visit, study, or work in Germany. This course intends to familiarise the students with relevant reading, writing and audio visual material to prepare them accordingly. Furthermore, learners will be introduced to technical and specific purpose language related to their studies. Also, learners are expected to develop their speaking and

listening skills by taking active part in discussions, giving oral presentations, etc. Upon completion of the course, students are expected to develop sufficient range of language to be able to express themselves with a degree of clarity, fluency and spontaneity. The program is based on learner-centered teaching methods and autonomous learning for students. The use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process, enabling students to develop all their language skills. At end of the semester students are expected to have fully covered the requirements of the A1 level and partially the requirements of level A2 of the Common European Framework Reference for Languages. Lesson Prerequisite: GER 111

GER 113 –German Language III

Four-hour per week, 6 ECTS credits, free elective course. In this course students develop an advance vocabulary through the introduction of various trade and career publications and also improve their writing skills in various writing genres such as messages, note keeping and simple personal letters. Furthermore, students will develop a higher degree of fluency through class discussions and oral presentations. They will also develop a better phonological control and sociolinguistic perception of the German Language with clarity and fluency. Students will be also able to exchange information with German speakers in Cyprus, native speakers from German-speaking countries, or students attending German-speaking Universities. Upon completion of the course, students are expected to have developed sufficient range of language to be able to express themselves and describe familiar situations with a degree of clarity, fluency and spontaneity .The program is based on learner-centered teaching methods and autonomous learning. The use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process, enabling students to develop all their language skills. At the end of the semester students are expected to have covered entirely the requirements of level A2 of the Common European Framework Reference for Languages. Lesson Prerequisite: GER 112

GER 114 –German Language IV

GER 114 - is a four-hour per week, 6 ECTS credits, free elective course. The course prepares students to achieve a higher level of oral fluency and accuracy in their social and professional working environment. In addition, students will become more proficient in their writing skills. Students will also be able to exchange information with German speakers in Cyprus, native speakers from German-speaking countries, or students attending German-speaking Universities. The program is based on learner-centered teaching methods and autonomous learning. The use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process, enabling students to develop all their language skills. At the end of the semester students are expected to have covered entirely the requirements of level A2 and partial B1 of the Common European Framework Reference

for Languages. Lesson Prerequisite: GER 113

FR 111 - French Language I

French 111 is a four-hour per week, 6-ECTS credit elective course that focuses on the learning of French at beginners' level. The course is designed to meet the needs of university students from various fields and focuses on the development of speaking, writing, reading and listening skills. Students learn to communicate so as to satisfy their basic needs and interests. They are expected to understand simple phrases and basic everyday life vocabulary, talk about themselves and ask similar questions, talk about their daily activities and their place of residence. They will also be able to exchange information with French-speaking people at a social and professional level, in case of visiting a French-speaking country or studying there. Students will also be able to understand and use French for specific purposes relevant to their field of studies. The program is based on student-centered teaching methods, and on students' autonomous learning. The use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process so that students can fully develop language and other skills. At the end of the semester, students will have met many of the requirements of A1 level of the Common European Framework of Reference for Languages.

FR 112 - French Language II

French 112 is a four-hour per week, 6-ECTS credit elective course that concentrates on the learning of French at a pre-intermediate level. At this level, students will acquire the necessary language communication skills at written and oral level so as to be able to respond to situations of everyday social exchanges (holidays, shopping, signs, restaurants, fashion). Knowledge and skills in speaking, writing, listening and understanding through communication material are enhanced. They will also be able to exchange information with French-speaking people at a social and professional level, in case of visiting a French-speaking country or studying there. The program is based on student-centered teaching methods, and on students' autonomous learning. The use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process so that students can fully develop language and other skills. At the end of the semester, students will have met the requirements of A1 level, and partially the requirements of A2 Level of the Common European Framework of Reference for Languages.

Prerequisite: FR 111

FR 113 - French Language III

French 113 is a four-hour per week, 6-ECTS credit elective course that concentrates on the learning of French at an intermediate level. The third level further strengthens communication skills, in order for the students to gain more fluency in writing and speaking and more competence in oral and written comprehension. They will be able to communicate successfully on subjects like sports, travel, health, employment, purchases, media, and leisure activities. They will also be capable of understanding announcements and messages and exchanging information with

French-speaking people at a social and professional level, in case of visiting a French-speaking country or studying there. The program is based on student-centered teaching methods, and on students' autonomous learning. The use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process so that students can fully develop language and other skills. At the end of the semester students are expected to have covered almost entirely the requirements of A2 Level of the Common European Framework of Reference for Languages.

Prerequisite: FR 112

FR 114 - French Language IV

French 114 is a four-hour per week, 6-ECTS credit elective course that concentrates on the learning of French at a pre-advanced level. The objective of this level is that students become more independent in all language skills (speaking, writing, listening and understanding) to communicate confidently on issues such as the description of experiences and events, future plans, desires, dreams and goals. It is expected that students will be able to explain their views on culture, inventions, education, outings, work, etc. They will thus be capable of coping with most situations that they might face while travelling in French-speaking countries. They are expected to understand simple authentic texts in order to talk or write about them. In addition, they will be able to exchange information with French-speaking people at a social and professional level, in case of visiting a French-speaking country or studying there. The program is based on student-centered teaching methods, and on students' autonomous learning. The use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process so that students can develop full linguistic and other skills. At the end of the semester, students will have met the requirements of A2 level and partially the requirements of B1 Level of the Common European Framework of Reference for Languages.

Prerequisite: FR 113

FRH112 French for Hotel and Tourism Management I

French for Hotel and Tourism Management I is a four-hour per week, 6-ECTS credit, elective degree level course that concentrates on the development of all language skills based on professional expertise. Students will practise functional language skills in French targeted at their professional environment through thematic units such as: presentations/ greetings, welcoming guests at a hotel / keeping customer details during reservations, providing guidance and assistance to French-speaking customers (weather, directions, roads, transport), reservations / cancellations / refunding. At this level students will be able to present their profession, the main features of a hotel and a tourist business, professions in the field of hotel and tourism, etc. The course also enhances the students' knowledge and skills in using communication material aiming at oral and written comprehension and expression. Furthermore, students will be able to exchange information with speakers of French, when they reside in French-speaking countries or study at a French-speaking university. Upon

completion of the course students are expected to have fully covered the requirements of level A1, and partially the requirements of level A2 of the Common European Framework of Reference for Languages.

Prerequisites: FR 111 French Language I.

FRH113 French for Hotel and Tourism Management II

French for Hotel and Tourism Management II is a four-hour per week, 6-ECTS credit, elective degree level course that concentrates on the development of all language skills based on professional expertise. Students will practise functional language skills in French targeted at their professional environment through thematic units such as: hotel services/ meals/ food / drinks / orders / serving / room service in the hotel, understanding and provision of tourist services taking into account the expectations of the guests/ complain handling (letter of apology, etc.), selling of tourist services and support after selling, CV and Cover letter. This level further enhances communication skills, in order for students to acquire more fluency and understanding of the written and spoken word. Furthermore, students will be able to exchange information with speakers of French, when they reside in French-speaking countries or study at a French-speaking university. Upon completion of the course students are expected to have covered almost entirely the requirements of level A2 of the Common European Framework of Reference for Languages.

Prerequisites: FRH112 French for Hotel and Tourism Management II

FRP114 French for Hotel and Tourism Management IV

French for Hotel and Tourism Management IV is a four-hour per week, 6-ECTS credit, elective degree level course that concentrates on the development of all language skills based on professional expertise. Students will practise functional language skills in French targeted at their professional environment through thematic units such as: oral communication (through phone or in person) or written communication (letters, e-mail) with tourist partners, understanding and processing of informative documents or documents which promote tourist products (brochures, printed and electronic material), organising events, conferences, seminars / offers at the hotel or tourist town/ village, tours in Cyprus: information and suggestions for Cyprus and the city where the hotel is situated (history, culture, attractions, monuments, places of leisure). The objective of this level is that students become more independent in the use of language and to communicate with confidence orally and in writing as far as the above topics are concerned. Additionally, students will be able to exchange information with speakers of French, when they reside in French-speaking countries or study at a French-speaking university. Upon completion of the course students are expected to have fully covered the requirements of level A2 and partially the requirements of level B1 of the Common European Framework of Reference for Languages.

Prerequisites: FRH113

FRH115 French for Hotel and Tourism Management V

French for Hotel and Tourism Management V is a four-hour per week, 6-ECTS credit, elective degree level course that concentrates on the development of all language skills based on professional expertise. Students will practise functional language skills in French targeted at their professional environment through thematic units such as: 1) the tourist and hotel industry in France and French speaking countries: popular destinations, the treasures of France related to tourism (art, gastronomy, vineyards and wineries, culture, local products), climate, geography, transport 2) the French tradition in the market of luxury tourism and the 'good life' in Paris, Cannes, Monaco, Saint-Tropez and Provence: the centres of well-being and relaxation with spa services and the French version of zen, the French sophisticated luxurious restaurants, the palaces (special kind of luxurious hotels typical of French tradition and culture), the culture of savoir vivre (the values of superiority and good taste 3) other thematic units that will be necessary related to the particular field of study. Upon completion of the course students are expected to have fully covered the requirements of Level B1 of the Common European Framework of Reference for Languages.

Prerequisites: FRH 114

SPA111 – Spanish Language I

Four-hour course, 6-ECTS credit, free elective. The course is designed to meet the needs of university students from various fields and focuses on the development of speaking, writing, reading and listening skills. The course provides the basic communicative skills to students, enabling them to respond to basic daily needs both orally and in writing. At this level, the communication situations shall be determined mainly by the students' experiences. Upon completion of this course, students will be able to understand and use basic everyday expressions that meet immediate basic needs in social and academic environment. Students will also be able to understand and use Spanish for specific purposes relevant to their field of studies. They will be able to share information with Spanish speakers in case they live in Spanish-speaking countries or when studying in a Spanish university. The program concentrates on a student-based teaching method and on students´ autonomous learning. The use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process in order to fully develop the language and other skills. At the end of the semester students are expected to partially meet the requirements of the A1 level of the Common European Framework.

SPA 112 – Spanish Language II

An elective, 6-ECTS credit, four-hour course per week. At this level, communication skills are improved and the students are expected to gain more confidence in their oral expressions when offering or asking for information related to daily life. They will be able to describe in simple terms, aspects of their immediate environment and needs (shopping, family, occupation). They will be able to share information with Spanish speakers

in case they live in Spanish-speaking countries or when studying in a Spanish university. The program concentrates on a student-based teaching method and on students´ autonomous learning. The use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process in order to fully develop the language and other skills. At the end of the semester students are expected to fulfill the requirements of the A1 level and partially meet the requirements of the A2 level of the Common European Framework of Reference for Languages.

Prerequisite: ESP 111

SPA113 – Spanish Language III

An elective, 6-ECTS credit, four hour course per week. This level further enriches students' communication skills, enabling them to understand simple texts and express themselves briefly orally or in writing. In addition, this level investigates various aspects of the history of contemporary Spain via audiovisual material. At the end of the course students will be able to describe in simple terms, aspects of their past as well as issues related to their immediate needs. They will be able to share information with Spanish speakers in case they live in Spanish-speaking countries or when studying in a Spanish university. The program concentrates on a student-based teaching method and on students´ autonomous learning. The use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process in order to fully develop the language and other skills. At the end of the semester students are expected to have almost covered all the requirements of the A2 level of the Common European Framework of Reference for languages.

Prerequisite: SPA 112

SPA 114 – Spanish Language IV

An elective, 6-ECTS credit, four-hour course per week. Students will be able to understand the main points of conversation usually encountered in contexts such as their work, study or entertainment. They will be able to deal with most situations likely to arise whilst travelling in an area where the spoken language is Spanish. Students will also be able to produce simple texts on topics which are familiar to them or of their personal interest. They will be able to describe briefly, experiences and events, dreams and ambitions; give explanations for opinions and plans. They will be able to share information with Spanish speakers in case they live in Spanish-speaking countries or when studying in a Spanish university. The program concentrates on a student-based teaching method and on students´ autonomous learning. The use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process in order to fully develop the language and other skills. At the end of the semester students are expected to have fully covered the requirements of the A2 level and partially of B1 level of the Common European Framework of Reference for languages.

Prerequisite: SPA113

ITA111 - Italian Language I

Four-hour course, 6-ECTS credit, free elective. The course is designed to meet the needs of university students from various

fields and focuses on the development of speaking, writing, reading and listening skills. The course provides the basic communicative skills to students, enabling them to respond to basic daily needs both orally and in writing. At this level, the communication situation shall be determined mainly by the students' experiences. Upon completion of this course, students will be able to understand and use basic everyday expressions that meet immediate basic needs in social and academic environment. Students will also be able to share information with Italian speakers in case they live in Italian-speaking countries or when studying in an Italian university. The course is based on learner-centred teaching methods and promotes autonomous learning. The use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process, enabling students to develop all their language skills. At the end of the semester students are expected to have covered a large part of the A1 Level requirements from of the Common European Framework of Reference for Languages

ITA112 - Italian Language II

Four-hour course, 6-ECTS credit, elective. The main objective of Italian Language II is to provide additional material in order to allow students to navigate and communicate through more complex everyday situations communication, sharing information on familiar topics and activities. Language skills are enhanced, developing further written communication and expression. Students can also exchange information with Italian speakers in Cyprus or in Italy. The course is based on learner-centered teaching methods and autonomous learning for students. The use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process, enabling students to develop all their language skills. At end of the semester students are expected to have fully covered the requirements of the A1 level and partially the requirements of level A2 of the Common European Framework Reference for Languages.

Prerequisite: ITA 111

ITA 113 - Italian Language III

Four-hour course, 6-ECTS credit, elective. In this course students develop an advance vocabulary, phonological control and sociolinguistic perception to be able to express themselves with a degree of clarity, fluency and spontaneity. Students can write messages, notes and simple personal letters. They may also exchange information with Italian speakers in Cyprus or in case of stay in Italian-speaking countries or schooling in Italian-speaking University. The program is based on learner-centered teaching methods and autonomous learning. The use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process, enabling students to develop all their language skills. At the end of the semester students are expected to have covered entirely the requirements of level A2 and partially the requirements of level B1 of the Common European Framework Reference for Languages.

Prerequisite: ITA 112

ITA 114 - Italian Language IV

Four-hour course, 6-ECTS credit, elective. The primary goal of the course is that students become more independent in the use of language and to communicate confidently orally and in writing on topics related with the description of experiences and events, future plans, desires, dreams and goals. Students can write simple and structured texts. Students can also exchange information with Italian speakers in Cyprus or in Italy. The program is based on learner-centered teaching methods and autonomous learning for students. The use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process, enabling students to develop all their language skills. At the end of the semester students are expected to have fully covered the requirements of the A2 level and partially the requirements of level B1 of the Common European Framework of Reference (CEFR) for Languages.

Prerequisite: ITA 113

RUS111 - Russian Language I

Four-hour course, 6-ECTS credit, free elective. The course is designed to meet the needs of university students from various fields and focuses on the development of speaking, writing, reading and listening skills. The course provides the basic communicative skills to students, enabling them to respond to basic daily needs both orally and in writing. At this level, the communication situations shall be determined mainly by the students' experiences. Upon completion of this course, students will be able to understand and use basic everyday expressions that meet immediate basic needs in social and academic environment. Students will be able to understand and use Russian for specific purposes relevant to their field of studies. They will also be able to exchange information with speakers of Russian, when they reside in Russian-speaking countries or study at a Russian-speaking university. The course is based on student-centred teaching methods and on autonomous learning. The use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process so that students can fully develop language competence and other skills. Upon completion of the course students are expected to have covered several of the requirements of level A1 of the Common European Framework of Reference for Languages.

RUS112 - Russian Language II

RUS112 is a four-hour per week, 6-ECTS credit, elective degree level course. At this level students will acquire the basic language communication skills orally and in writing required to respond to everyday social exchanges (holidays, shopping, signs, restaurants, fashion). The course also enhances the students' knowledge and skills in using communication material aiming at oral and written comprehension and expression. Students will also be able to exchange information with speakers of Russian, when they reside in Russian-speaking countries or study at a Russian-speaking university. The course is based on student-centred teaching methods and on autonomous learning. The use of

new technologies (Computer Assisted Language Learning) is an integral part of the learning process so that students can fully develop language competence and other skills. Upon completion of the course students are expected to have fully covered the requirements of level A1 and partially the requirements of level A2 of the Common European Framework of Reference for Languages.

Prerequisite: RUS 111

RUS113 - Russian Language III

RUS 113 is a four-hour per week, 6-ECTS credit, elective degree level course. This level further enhances communication skills, in order for students to acquire more fluency and understanding of the written and spoken language. Students will be able to communicate successfully on topics such as sports, travelling, health, labor, markets, media, and leisure activities. Furthermore, they will be able to understand announcements and messages. Students will also be able to exchange information with speakers of Russian, when they reside in Russian-speaking countries or study at a Russian-speaking university. The course is based on student-centred teaching methods and on autonomous learning. The use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process so that students can fully develop language competence and other skills. Upon completion of the course students are expected to have covered almost entirely the requirements of level A2 of the Common European Framework of Reference for Languages.

Prerequisite: RUS 112

RUS 114 - Russian Language IV

RUS 114 is a four-hour per week, 6-ECTS credit, elective degree level course. The objective of this level is that students become more independent in the use of language and communicate with confidence orally and in writing on topics such as the description of experiences and events, future plans, desires, dreams and targets. It is expected that students will be able to explain their view of the culture, inventions, education, going out, labor, etc. They will thus be able to cope with most situations they may encounter when travelling to Russian-speaking countries. Students will also be able to understand simple authentic texts which they will be able to present in writing and orally. Furthermore, they will also be able to exchange information with speakers of Russian, when they reside in Russian-speaking countries or study at a Russian-speaking university. The course is based on student-centred teaching methods and on autonomous learning. The use of new technologies (Computer Assisted Language Learning) is an integral part of the learning process so that students can fully develop language competence and other skills. Upon completion of the course students are expected to have fully covered the requirements of level A2 and partially the requirements of level B1 of the Common European Framework of Reference for Languages.