## TECHNOLOGICAL EDUCATIONAL INSTITUTION (T.E.I) OF CHALKIS

## INFORMATION GUIDE/ COURSE CATALOGUE

**DEPARTMENT OF** 

# AIRCRAFT TECHNOLOGY

ACADEMIC YEAR 2006-2007

With the support of the European Commission in the Framework of Socrates/ Erasmus Programme

### The TEI of Chalkis welcomes its international students

### **Dear Student**,

This handbook is intended for exchange students who have been admitted to study at TEI of Chalkis. We would like to welcome you as one of them and give you some information which hopefully will be useful to you while planning your stay and studies in Greece.

The staff at the International Relations Office (IRO) will always be available to help you with academic matters concerning your stay in Greece. If you have any question or need to talk to someone do not hesitate to contact us.

We wish you good luck with your studies and a pleasant stay in Greece!

The staff at the International Relations Office

## **A. General Information**



### 1. General description of the Institution

The Technological Educational Institute of Chalkis is one of twelve independent and selfgoverned T.E.Is that constitute the national system of higher technological education in Greece and the only academic institution in the broader area of Evia island.

Located on the beautiful island of Evia at the area of Psahna, the T.E.I provides technological education at University level for the students of Greece and foreign incoming students. The T.E.I of Evia has expanded and developed since it was first established in 1983.

### 2. Organization

The TEI of Chalkis has\_two major Faculties, the <u>Faculty of Management and Economics</u>, and the <u>Faculty of Applied Sciences</u>.

In the Faculty of Management and Economics there are three departments:

- Business and Management Studies
- Accounting Studies and
- Management of Logistics

The Faculty of Applied Sciences embraces five departments:

• Mechanical Engineering

LINKS

- o <u>Electrical Engineering</u>
- <u>Automation and</u>
- o <u>Aeronautics</u>
- o General Department of Applied Sciences

### 3. Academic Calendar

During Christmas and Easter holidays no classes are held for one week in each holiday.

LINKS

**Official Holidays** 

28th OctoberNational Holiday17th NovemberSchool Holiday30th JanuarySchool Holiday25th MarchNational and Religious Holiday1st MayOfficial Holiday

### 4. Academic Particulars

### Academic Status of TEI of Chalkis

The T.E.I of Chalkis was founded in its present status of higher education by L. 14014/83 as all of the system's similar Institutions which have their origin at the early KATEE and KATE schools (Centers of Higher Technological Education) with the latter being more vocational, and of two years duration regarding their programs.

Today T.E.Is are part of the country's higher education system with a specific and distinctive academic identity as compared to Universities. TEIs provide high school graduates with scientific and academic training of immediate application to different professions and contribution to the national economy, whereas many T.E.I graduates are also absorbed at higher levels of the academia worldwide after graduating a specific TEI. The T.E.I studies are free of charge for students and supervised by the Greek Ministry of Education. Approximately 100.000 students currently belong to the T.E.I network nationwide and around 20.000 new students are enrolled annually through the national examination system that allows about one fourth of all secondary education graduates to get a place in any one of the country's Universities and T.E.Is.

The constitution of T.E.Is as part of the broader tertiary education system in Greece is continuously evolving; from its individual and unique place and programme of studies each T.E.I aims to become part of the European Community academic research network by developing coalition and cooperation networks with a number of national and international authorities and organizations that can provide and share a great range of educational and industrial research resources.

### Accreditation

Within the European Community, the T.E.I belongs to what Directive 89/48 of the European Council defines as tertiary level of education together with the Universities. Their degrees, and those of the Greek Universities, are the only tertiary education degrees offered by schools operating within Greece that are recognized by Greek and EU authorities. T.E.I graduates are accepted for post-graduate studies in accredited Universities worldwide.

### Studentship

Approximately 10.000 full-time students are currently enrolled at the T.E.I of Halkida attending academic courses, or carrying out their practical training.

### Staff

The Institution's academic staff includes approximately 150 full-time and 320 part-time lecturers supported by 150 administrative staff members.

### A-Z staff directory

(with links redirecting to their autobiographical note and e-mail address) ABCDEFGHIJKLMNOPQRSTUVWXYZ

### 5. ERASMUS Regulations

#### Academic requirements for mobile students from Greece •

Erasmus students must have successfully completed the 1<sup>st</sup> year of their studies. The students should send their application forms to the ECTS Coordinator and be in contact with him for making all necessary arrangements.

When the ECTS students are accepted by the Department of the Host Institute, they have to make their registration at the Department Secretary's office. They also have to present

- their passport, §
- a transcript of their records
- four passport-sized photographs
- § § § learning agreement 43KB Microsoft Word (.doc)
- § application form.doc 47KB Microsoft Word (.doc)
- Specific documents required by the hosting institution (related to: registration, accommodation, etc). Those are regularly updated and can be retrieved from the institution's website.
- Transcripts of records to be sent to the host institution §

### • Admission and Registration for mobile students from other countries

### 1. Before mobile students leave their country

For students from EU countries the only document required to enter Greece is a passport or an identity card valid for the full duration of their stay in Greece.

Students who are not EU citizens are strongly advised to contact the Greek Embassy Bureau in their home country, to get detailed information and guidelines on the formal procedures and regulations about entering Greece.

It is essential for ERASMUS students to be able to hand in a formal acceptance letter signed by the TEI of Chalkis (provided by the International Relations Office). This must be signed by the Greek Embassy of their own country, stating clearly the reason for their visit and the duration of their stay, as the may need to show it to the Greek Immigration authorities.

#### 2. Upon arrival in Greece

Upon arrival in Greece all non-EU students are required to have a residence permit for their stay in this country. For a student's residence permit to be issued the following documents are required:

- Valid passport
- Four (4) ID photos
- A Formal Letter in a "Whom it May Concern..." form from the student's Home University stating the reason for which they are visiting the TEI of Chalkis, the academic area and duration of their studies, as well as the source of their funding.
- A Registration Form completed by the student and signed by the TEI of Chalkis.

#### *Linguistic requirements for mobile students*

The language of instruction at the TEI of Chalkis is Greek. Therefore a good knowledge of Greek is essential for regular students. ECTS students do not need to have a Greek language certificate, but they must have a command of the Greek language.

For a certain number of regular courses there will be special arrangements for Erasmus students who wish to attend those courses. Thus after consultation with the teaching staff, the student will be able to attend a particular course in English and be given a separate examination at the end of the term.

### Grading System

10 - 8, 5	EXCELLENT	Α
8, 5 - 7	VERY GOOD	В
6, 9 - 6	GOOD	С

6, 9 - 5 SATISFACTORY D

4, 9 - 0 FAIL F

#### ECTS Students' benefits

Three meals per day, breakfast, lunch and dinner, in the TEI restaurant cost about 45 Euros per month. Bus Pass for a 25% discount Free access to the Sports Union Excursions and trips for educational purposes at a low cost Membership to the TEI library Free books and teaching material Cultural seminars, excursions and Greek lessons.

#### How to contact ECTs Departmental Coordinator in the TEI of Chalkis

Dr Aphrodite Ktena, Assistant Professor at the Department of Electrical Engineering, is the academic coordinator of the Erasmus programme in TEI of Chalkis. You can meet her at her office Room Γ105 on (Monday/Wednesday/Thursday, 14:00pm-16:00pm) or contact her via: Telephone no: +30 22280-99606 or E-mail: <u>aktena@teihal.gr</u>.

#### Also

**Ms Marianna Bompa** is the administrative coordinator of the programme working in the International Relations Office (I.R.O.) of TEI of Halkis:

Office Hours: Tuesday, Wednesday and Friday, 12:00pm-14:00pm.

For further information you can visit the TEI website at: http://www.teihal.gr

### **B. Department of AIRCRACT TECHNOLOGY**

### **1. General Information**

The Department of Aircraft Technology aims in promoting and transferring scientific and technological knowledge in the area of Aircraft Technology through teaching and applied research in order to provide the students with the necessary scientific and technological knowledge, capacity and skills essential for an Aircraft Engineer. To accomplish this, the scientific and teaching staff of the department uses modern teaching methods and technology, monitors the scientific and technological progress in order to develop new courses and improve the

existing ones, develops ties with higher education institutions at a national and international level and works closely with companies and research institutes.

The curriculum covers a wide range of courses and topics, such as the Airframe and Powerplant Systems, the Electrical systems and the Avionics and Instruments of Aircraft. Special emphasis is placed in the laboratory training and hands on experience of our students. Upon completion of their studies, our students can be employed in positions involving the maintenance, inspection, checking, testing, repair, modification, assembly and manufacturing of major Airframe and Aircraft Propulsion Systems, maintenance, inspection, checking, testing, repair, modification, assembly and control of main Electrical, Electronic, Information, Control and Communications components and systems of Aircraft, the design, development, production and modification of products, procedures and services related to the above mentioned areas and applied research and development.

### 2. Degree

The degree conferred upon completion of the curriculum studies is equivalent to a Bachelor of Science (level 5A according to the UNESCO's ISCED classification system).

### 3. Duration and Structure of Studies

The duration of studies is eight semesters. In the first seven semesters, obligatory and elective courses in lecture form are offered in the above areas supported by laboratory and Applied Exercises sessions. The students are required to attend the lectures and the laboratory sessions, work on individual or team projects and present their results in oral and written form. In the final semesters, the students are required to complete their senior project while in the last semester they must do their practical training with a company.

The senior project, mandatory for the completion of one's studies, is based on a topic selected by the student from a list of topics offered by the teaching staff. It gives the student the opportunity to focus on a topic of their interest, to apply the knowledge and skills acquired during their studies, to participate in medium and large scale experiments, to become familiar with bibliographical research techniques, and apply their technical writing skills.

The practical training with a company, supervised by a member of the teaching staff, is also mandatory for the completion of studies. It gives the students the opportunity to broaden their knowledge acquiring hands on experience in real conditions, to familiarize themselves with labour laws and workplace safety procedures and to obtain information necessary for the completion of their senior project.

The Course Syllabus involves Obligatory (O), Obligatory Electives (OE) and Electives (E) that can be Theoretical (T), Laboratory (L) or Mixed (M) courses. According to their content they are classified in General Core (GC), Special Core (SC), Specialization (S) and Human Factors and

Legislation Course (HFLC) courses.

The syllabus is structured based on the workload required by an average student ranging from 50 to 60 hours per week depending on the semester level. The hours of class attendance range from 25 to 27 per week depending on the semester. Each semester carries 30 ECTS units while the number of ECTS units of a course depends on the workload required by an average student.

The General and Special Core as well as the Specialization courses fall under one of the two Sectors of the Department:

- a) The Sector of Airframe and Powerplants Systems and
- b) The Sector of Electrical, Avionics and Instrument of Aircraft

### Language

### All modules are taught in Greek except from the English language module.

A recently designed and initiated course by the centre of Modern languages focuses on the tuition of the Greek language and Greek history and addresses the academic and linguistic needs of foreign students studying at TEI. It consists of 4 academic hours per week for the Greek Language, and 2 for the cultural seminars which include excursions in archaeological sites around Halkida.

### 4. Course Syllabus

The following tables summarize the structure of the course syllabus:

	1 <sup>st</sup> Semester: FIRST HALF-YEAR PERIOD											
Course Code No.	Course Description	O/SO	Category	Theor y (H/W)	Applied Exercis es (H/W)	Lab (H/W)	Total (H/W )	Work Load	ECT S Cred its			
TA 0101	MATHEMATICS I	0	GCC	3	1	0	4	10	6			
TA 0102	PHYSICS	0	GCC	3	1	2	6	12	7			
TA 0103	INTRODUCTION TO MATERIALS	Ο	GCC	2	2	2	6	10	6			
TA 0104	COMPUTER FOR ENGINEERS	0	GCC	2	0	2	4	8	5			
TA 0105	ENGINEERING DRAWING	0	GCC	0	0	4	4	4	3			
TA 0106	ENGINEERING ECONOMICS	0	HFLC	2	0	0	2	6	3			
	TOTAL			12	4	10	26	50	30			

	2 <sup>nd</sup> Semester: SECOND HALF-YEAR PERIOD											
Course Code No.	Course Description	O/SO	Category	Theor y (H/W)	Applied Exercis es (H/W)	Lab (H/W)	Total (H/W )	Work Load	ECTS Credit s			
TA 0201	MATHEMATICS II	0	GCC	3	1	0	4	10	6			
TA 0202	FLUID MECHANICS	0	GCC	3	1	2	6	12	7			
TA 0203	ENGINEERING MEASUREMENTS	0	GCC	2	0	2	4	8	5			
TA 0204	ELECTROTECHNICS	0	GCC	2	2	2	6	10	6			
TA 0205	COMPUTER AIDED DESIGN	0	GCC	0	0	4	4	4	3			
TA 0206	MANAGEMENT OF MAINTENANCE FACILITIES	0	HFLC	2	0	0	2	6	3			
	TOTAL			12	4	10	26	50	30			

### Important Note:

**O**=Obligatory course, **SO**=Sector Obligatory course

GCC= General Core Course, SCC= Special Core Course, SC=Special Course

	3 <sup>rd</sup> Semester: THIRD HALF-YEAR PERIOD											
Course Code No.	Course Description	O/SO	Category	Theor y (H/W)	Applied Exercis es (H/W)	Lab (H/W)	Total (H/W )	Work Load	ECTS Credit s			
TA 0301	APPLIED MATHEMATICS	0	GCC	2	2	0	4	8	5			
TA 0302	MECHANICS	0	GCC	2	2	2	6	10	6			
TA 0303	ELECTRICAL MACHINES	0	SCC	2	0	2	4	8	5			
TA 0304	INTRODUCTION TO TELECOMMUNICATIONS	0	SCC	2	2	0	4	8	5			

TA 0305	AIR LAW AND REGULATIONS	0	HFLC	2	0	0	2	6	3		
Sector of AIRCRAFT STRUCTURES & POWER SYSTEMS											
TA 0306	INTRODUCTION TO ELECTRONICS	SO	SCC	2	2	2	6	10	6		
	Sector of AVIONICS										
TA 0307	ANALOG ELECTRONICS	SO	SCC	2	2	2	6	10	6		
	TOTAL			12	8	6	26	50	30		

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	4 <sup>th</sup> Semester: FOURTH HALF-YEAR PERIOD										
Course Code No.	Course Description	0/S0	Category	Theor y (H/W)	Applied Exercis es (H/W)	Lab (H/W)	Total (H/W )	Work Load	ECTS Credits		
TA 0401	INTRODUCTION TO AUTOMATIC CONTROL	0	SCC	2	2	2	6	10	6		
TA 0402	INTRODUCTION TO AERODYNAMICS	0	SCC	2	0	0	2	6	3		
TA 0403	TECHNICAL ENGLISH	0	SC	2	0	0	2	6	3		
Sector of AIRCRAFT STRUCTURES & POWER SYSTEMS											
TA 0404	AIRCRAFT STRUCTURES	SO	SCC	2	2	2	6	10	6		
TA 0405	THERMODYNAMICS	SO	SCC	2	1	2	5	9	6		
TA 0406	STRENGTH OF MATERIALS	SO	SCC	2	1	2	5	9	6		
	Sec	ctor of <i>l</i>	AVIONICS								
TA 0407	DIGITAL ELECTRONICS	SO	SCC	2	2	2	6	10	6		
TA 0408	TELECOMMUNICATION SYSTEMS	SO	SCC	2	1	2	5	9	6		
TA 0409	ELECTROMAGNETIC WAVES, PROPAGATION AND ANTENNAS	SO	SCC	2	1	2	5	9	6		
	TOTAL			12	6	8	26	50	30		

O=Obligatory course, SO=Sector Obligatory course

GCC= General Core Course, SCC= Special Core Course, SC=Special Course

5 <sup>th</sup> Semester: FIFTH HALF-YEAR PERIOD											
Course Code No.	Course Description	O/SO	Category	Theor y (H/W)	Applied Exercis es (H/W)	Lab (H/W)	Total (H/W )	Work Load	ECTS Credits		

TA 0501	FLIGHT MECHANICS	0	SCC	2	2	0	4	8	5			
	Sector of AIRCRAFT STRUCTURES & POWER SYSTEMS											
TA 0502	AIRCRAFT SYSTEMS	SO	SCC	3	1	2	6	12	7			
TA 0503	MACHINE ELEMENTS	SO	SCC	2	2	2	6	10	6			
TA 0504	WELDING MECHANICS	SO	SC	3	1	2	6	12	7			
TA 0505	PROPULSION MECHANICS	SO	SCC	2	0	2	4	8	5			
	Se	ctor of A	AVIONICS									
TA 0506	DIGITAL AUTOMATIC CONTROL	SO	SCC	3	1	2	6	12	7			
TA 0507	POWER ELECTRONICS	SO	SCC	2	2	2	6	10	6			
TA 0508	TELECOMMUNICATION ELECTRONICS	SO	SC	3	1	2	6	12	7			
TA 0509	SENSOR TECHNOLOGIES	SO	SCC	2	0	2	4	8	5			
	TOTAL			12	6	8	26	50	30			

**O**=Obligatory course, **SO**=Sector Obligatory course

GCC= General Core Course, SCC= Special Core Course, SC=Special Course

	6 <sup>th</sup> Semester: SIXTH HALF-YEAR PERIOD										
Course Code No.	Course Description	O/SO	Category	Theor y (H/W)	Applied Exercis es (H/W)	Lab (H/W)	Total (H/W )	Work Load	ECTS Credit s		
Sector of AIRCRAFT STRUCTURES & POWER SYSTEMS											
TA 0601	AIRCRAFT INSTRUMENTS AND NAVIGATION SYSTEMS	SO	SC	2	0	2	4	8	5		
TA 0602	PISTON (RECIPROCAL) ENGINES	SO	SC	2	0	2	4	8	5		
TA 0603	HELICOPTER AERODYNAMICS	SO	SC	2	0	2	4	8	5		
TA 0604	FUELS AND LUBRICANTS	SO	SC	2	0	2	4	8	5		
TA 0605	MANUFACTURING PROCESSES OF AIRCRAFT MATERIALS	SO	SC	2	0	2	4	8	5		
TA 0606	COMPOSITE MATERIALS	SO	SC	2	2	0	4	8	5		
Sector of AVIONICS											

TA 0607	AIRCRAFT ELECTRICAL SYSTEMS	SO	SC	2	0	2	4	8	5
TA 0608	MICROWAVES	SO	SC	2	0	2	4	8	5
TA 0609	AIRCRAFT INSTRUMENTS	SO	SC	2	0	2	4	8	5
TA 0610	MICROPROCESSORS	SO	SC	2	0	2	4	8	5
TA 0611	AIRCRAFT COMMUNICATION AND NAVIGATION SYSTEMS	SO	SC	2	0	2	4	8	5
TA 0612	FLIGHT STABILITY AND AUTOMATIC FLIGHT CONTROL	SO	SC	2	2	0	4	8	5
	TOTAL			12	2	10	24	48	30

O=Obligatory course, SO=Sector Obligatory course

GCC= General Core Course, SCC= Special Core Course, SC=Special Course

	7 <sup>th</sup> Semester: SEVENTH HALF-YEAR PERIOD									
Course Code No.	Course Description	O/SO	Category	Theor y (H/W)	Applied Exercis es (H/W)	Lab (H/W)	Total (H/W )	Work Load	ECTS Credit s	
TA 0701	PROFESSIONAL ETHICS	0	HFLC	2	0	0	2	6	3	
Sector of AIRCRAFT STRUCTURES & POWER SYSTEMS										
TA 0702	TURBINE ENGINES	SO	SC	3	1	2	6	12	7	
TA 0703	PRINCIPLES OF AIRCRAFT DESIGN	SO	SC	2	1	2	5	9	6	
TA 0704	AERODYNAMICS OF AIRCRAFT ENGINES	SO	SC	3	0	3	6	12	7	
TA 0705	SPECIAL TOPICS OF FLIGHT MECHANICS	SO	SC	3	0	2	5	11	7	
	Sect	tor of A	VIONICS		•					
TA 0706	RADARS	SO	SC	3	1	2	6	12	7	
TA 0707	AUTOMATIC FLIGHT CONTROL SYSTEMS	SO	SC	2	1	2	5	9	6	
TA 0708	FIBER OPTIC COMMUNICATIONS	SO	SC	3	0	3	6	12	7	
TA 0709	AVIONICS DATABUSES	SO	SC	3	0	2	5	11	7	
	TOTAL			13	2	9	24	50	30	

	8 <sup>™</sup> Semester: EIGHTH HALF-YEAR PERIOD										
Course Code No.	Course Description	O/SO	Category	Theor y (H/W)	Applied Exercis es (H/W)	Lab (H/W)	Total (H/W )	Work Load	ECTS Credit s		
TA 0801	PRACTICE	0	-	0	0	0	0	20	10		

TA 0802	GRADUATION PROJECT	0	-	0	0	4	4	30	20
	TOTAL			0	0	0	0	50	30

O=Obligatory course, SO=Sector Obligatory course

GCC= General Core Course, SCC= Special Core Course, SC=Special Course

HFLC= Human Factors and Legislation Course, H/W = Hours per Week

### Language

All courses are taught in Greek.

### Final exams - evaluation procedures

In the theoretical courses, the evaluation takes place at the end of the semester when the students take their final exams.

In the laboratory courses, the student is evaluated at the end of the semester when the final examination (oral or written) takes place as well as at the end of each laboratory session. The laboratory session grade is based on his/her performance towards the completion of the laboratory exercises and on the lab report he/she has to turn in the following week containing the processing of the lab results. The final grade is a weighed average of the laboratory session grades and the final examination grade.

At the end of each semester there are two final exam periods that last two weeks each. All theoretical courses must be examined during the exam period. The laboratory final examination must be completed before the exam period starts.

The final degree is given by the following equation:

$$B = \underline{\delta_1 \beta_1 + \delta_2 \beta_2 + \dots + \delta_v \beta_v}$$
$$\overline{\delta_1 + \delta_2 + \dots + \delta_v}$$

where  $\beta_1$ ,  $\beta_2$ ...  $\beta_v$  are the grade of each course that the student attended and  $\delta_1$ ,  $\delta_2$ ...  $\delta_v$  are the ECTS credits of the respective course.

### ECTS coordinator

Dr Aphrodite Ktena, Assistant Professor, Laboratory of Electrical Installations and Electrotechnical Applications, tel.: +30-22280-99606, fax: +30-22280-99603, e-mail: aktena@teihal.gr

### 5. Course Description

### First Semester

Course Description	MA Ralph, Palmer, Agnew, Ana	THEMATICS	SI netry and Cal	Iculus with vectors		
Recommended Reading	(Calculus), McGraw-Hill, 1962. Applied Linear Algebra, Ber	(Calculus), McGraw-Hill, 1962. Applied Linear Algebra, Ben Nobles Prentice Hall, 1969.				
Category	General Core Course (GC	C)	Obliga	atory course (O)		
Hours per Week	3 Theory	1 Applied Exercises 0 Lab				
ECTS Credits	6					
Work load	10					
	On successful completion of the course, students will be able to:					
Learning Outcomes	<ul> <li>Analyze the fundamental principles of linear algebra, of differential and integral calculus and complex numbers</li> <li>Apply the mathematics principals in order to solve practical problems, that are appears during the maintenance procedure and manufacture of aircraft parts.</li> </ul>					
Syllabus	Determinant. Functions. Sequences. Function limits. Local continuities. Functions monotony Inverse function. Circular or trigonometric functions. Differentiation techniques. Differentials of complex functions. Inverse trigonometric functions. Exponential functions. Logarithmic functions. Functions monotony criteria. Definite integral. Indefinite integral. Generalized integral. Integration techniques. Complex numbers.					

Course Description	PHYSICS				
Typical Semester		1 <sup>st</sup>			
Category	General Core Course (GC	C)	<b>O</b> bligat	tory course (O)	
Hours per Week	3 Theory	1 Applied E	xercises	<b>2</b> Lab	
ECTS Credits		7			
Work load	12				
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Analyze the fundamental laws of physics.</li> <li>Apply the principles of the fundamental laws of physics in order to solve practical problems, which appear during the maintenance procedure and manufacture of aircraft parts.</li> </ul>				
Syllabus	System Units - Materials. Fundamental principles of kinematics. Fundamental principles of dynamics. Hydrodynamics. Fundamental principles of heat. Thermodynamics variations of gas. Fundamental principles of waves and acoustics. Fundamental principles of optics. Fundamental principles of electricity. AC and DC power. Fundamental principles of magnetism. Coils.				
Recommended Reading	J Halliday-Resnick -Krane: "Physics", John Wiley and Sons, Inc 1992 Berkeley University :"Berkeley Physics course " McGraw Hill 1985				

Course Description	INTRODUCTION TO MATERIALS					
Typical Semester		1 <sup>st</sup>				
Category	General Core Course (GCC	)	Obligat	tory course (O)		
Hours per Week	2 Theory	2 Applied	Exercises	<b>2</b> Lab		
ECTS Credits		6				
Work load	10					
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Analyze the fundamental principles of material science</li> <li>Apply the principles of material science in order to solve practical problems, which appear during the maintenance procedure and manufacture of aircraft parts.</li> </ul>					
Syllabus	Structure of materials. Chemistry kinematics and thermal chemistry. Mechanical behavior of materials. Alloys and Stable phase diagrams. Iron-Carbon diagram (Fe-FeC <sub>3</sub> ). Metal hardening methods. Thermal process of steels. Metal corrosion. Metallic non-ferrous materials. Composite materials. Polymer and ceramic materials.					
Recommended Reading	Materials Science & Engineering, W. D. Callister, 2003. Fundamentals of Materials Science & Engineering, W. D. Callister, 2001					

Course Description	COMPUTER FOR ENGINEERS				
Typical Semester		1 <sup>st</sup>			
Category	General Core Course (GC	C)	<b>O</b> bligat	ory course (O)	
Hours per Week	2 Theory	0 Applied	Exercises	<b>2</b> Lab	
ECTS Credits	5				
Work load	8				
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Analyze the fundamental principles of the computer operation and management.</li> <li>Apply the principles of the computer operation and management in order to solve practical problems, which appear during the maintenance procedure and manufacture of aircraft parts.</li> </ul>				
Syllabus	Introduction to computer science. Numerical systems. Integer representation in the computer. Analog data. Digital data. Architecture of the computer unit. Boole's algebra. Basic structure of the computer unit. Microprocessor. PC's Input and output units. Auxiliary memory units. Introduction to software. Introduction to programming. Computer networks. Internet. The aircraft computer unit.				
Recommended Reading	Manual Microsoft Word, Microsoft Press. Manual Microsoft Excel, Microsoft Press.				

Course Description	ENGINEERING DRAWING					
Typical Semester	1 <sup>st</sup>					
Category	General Core Course (GCC) Obligatory course (O)					
Hours per Week	0 Theory 0 Applied Exercises 4 L					
ECTS Credits	3					
Work load	4					
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Read engineering drawings of aircraft parts.</li> <li>Apply the principles of engineering drawing in order to design simple parts and assemblies of aircraft mechanisms.</li> </ul>					
Syllabus	Fundamental principles of mechanical drawing. International standards. Drawing projection planes. Dimensions. Sections. Threads. Gears. Wedges. Bearings. Assembled mechanisms.					
Recommended Reading	Mechanical Engineering Design, by Charles R. Mischke, Joseph Edward Shigley, Publisher: McGraw-Hill Higher Education Machine Elements In Mechanical Design, Robert L. Mott,Prentice Hall					

Course Description	ENGINEERING ECONOMICS					
Typical Semester		1 <sup>st</sup>				
Category	Human Factors and Legislation Course (HFLC)         Obligatory course (O)					
Hours per Week	2 Theory 0 Applied Exercises			<b>0</b> Lab		
ECTS Credits	6					
Work load	3					
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Determine the fundamental principles of financing administration.</li> <li>Describe the procedure which should be followed in order to construct an engineering economic report.</li> </ul>					
Syllabus	The aircraft maintenance unit. The anonym society (structure, agents, functions). The share. Construction and authorship of research – feasibility analysis report of engineering economic study. Marketing aiming the information collection. Nature and work as production factors in aircraft maintenance unit. Indicators and measurement methods of work productivity in aircraft maintenance unit. Capital as production factor. Demand – elasticity demand in the aircraft industry. Offer in the aircraft industry. Market characteristics, forms and role in the aircraft industry. Financing indicators and their usefulness in the aircraft maintenance unit.					
Recommended Reading						

### Second Semester

Course Description	MATHEMATICS II					
Typical Semester	2 <sup>nd</sup>					
Category	General Core Course (GCC) Obligatory course (O					
Hours per Week	3 Theory	Exercises	<b>0</b> Lab			
ECTS Credits	6					
Work load	10					
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Analyze the fundamental principles of differential equations, differential and integral calculus of more than one variable.</li> <li>Apply the solutions principals of equations, differential and integral calculus of more than one variable in order to solve practical problems, which appear during the maintenance procedure of and manufacture of aircraft parts.</li> </ul>					

Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Analyze the fundamental principles of differential equations, differential and integral calculus of more than one variable.</li> <li>Apply the solutions principals of equations, differential and integral calculus of more than one variable in order to solve practical problems, which appear during the maintenance procedure of and manufacture of aircraft parts.</li> </ul>
Syllabus	Introduction to differential equations. First order differential equations. Superior order differential equations. Laplace equation. Differential function of more than one variable. Double integrals. Multiple integrals. Fundamental principles of vector analysis. Grad –Diy – Rot. Line integrals. Partial differential equations.
Recommended Reading	Advanced Engineering Mathematics, Erwin Kreyszig, John Wiley & Sons, 8th Edition, October 1998. Stroud, Engineering Mathematics, The MacMillan Press, 1999.

Course Description	FLUID MECHANICS				
Typical Semester	2 <sup>nd</sup>				
Category	General Core Course (GCC) Obligatory course (O)				
Hours per Week	3 Theory	1 Applied Exercises 2 Lab			
ECTS Credits	12				
Work load	7				
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Analyze the fundamental principles of fluid flow</li> <li>Apply the kinematics and dynamics laws of fluid flow in order to solve practical problems, which appear during the maintenance procedure and manufacture of aircraft parts</li> </ul>				

Syllabus	Introduction to fluid mechanics. Characteristics and properties of fluids. Hydrostatic. Aerostatic. Descried the Fluid flow description. Fluid flow – Lagrange equations – Euler equations - Flow line – Fundamental fluid flow equations. Incompressible flow. Ideal and real flow. Boundary layer. Similarity. Computational fluid mechanics.
Recommended Reading	Streeter V.L.: Fluid Mechanics, Mc Grow-Hill Chung T.J.: Computational Fluid Dynamics, Cambridge University Press

Course Description	ENGINEERING MEASUREMENTS				
Typical Semester	2 <sup>nd</sup>				
Category	General Core Course (GCC) Obligatory course (O)			Obligatory course (O)	
Hours per Week	2 Theory	0 Applied Exerc	rcises 2 Lab		
ECTS Credits	5				
Work load	8				
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Use the main measurement instruments of electrical and mechanical parameters.</li> <li>Describe the basic structure of electrical and mechanical measurement instruments, as well as their respective advantages and drawbacks regarding their exploitation in various measurement conditions.</li> <li>Explain the reasons that characterise the measurement results as a random variable.</li> <li>Use techniques and tools for the assessment of measurement results.</li> </ul>				

Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Use the main measurement instruments of electrical and mechanical parameters.</li> <li>Describe the basic structure of electrical and mechanical measurement instruments, as well as their respective advantages and drawbacks regarding their exploitation in various measurement conditions.</li> <li>Explain the reasons that characterise the measurement results as a random variable.</li> <li>Use techniques and tools for the assessment of measurement results</li> </ul>
	Magazina ant basics. Drinsing of cleating magazina instruments
Syllabus	Principles of mechanical measurement instruments. Principles of mechanical measurement instruments. Instrument elements. Types of analog instruments, rotating element instruments. The application of Kirchoff laws into measurements. Wheastone Bridge. Impedance measurement. Capacitance measurement. Inductance measurement. Measurement equation - probabilities.
	J. Mandel, The statistical analysis of experimental data, Εκδόσεις
Recommended	Dover Publications Inc., ISBN: 0486646661
Reading	G.P. Box, W.G. Hunter, J.S. Hunter, Statistics for Experimenters,
	Εκδόσεις Wiley Interscience

Course Description	ELECTROTECHNICS				
Typical Semester	2 <sup>nd</sup>				
Category	General Core Cou	rse <b>(GCC)</b>	Obligatory course (O)		
Hours per Week	2 Theory	2 Theory 2 Applied E		<b>2</b> Lab	
ECTS Credits	6				
Work load	10				
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>To use the Ohm and Kirchoff laws and the theorems pertaining the circuits in the analysis of electrical and magnetic circuits</li> <li>Analyse circuits for the calculation of various circuit parameters selecting the most appropriate method.</li> <li>To use simple linear circuits in order to solve problems pertaining to complex circuits</li> <li>To solve problems related to electrical and magnetic fields</li> </ul>				
Syllabus	Basics of electricity. Electric Field. Magnetic Field. Capacitance and Inductance. Kirchhoff Laws – Voltage divider and current divider – Connection of voltage and current sources –Transformation of voltage and current sources. Linear resistive circuits. Theories pertaining electrical circuits. Alternating current – Complex representation of alternating current. Coulomb Law. Iron's magnetic properties. Magnetic circuits				
Recommended Reading	Desoer C. – Kuh E., Basic Circuit Theory, McGraw Hill Allan H. Robbins, Wilhelm Miller, Judd Robbins, Alan R. Miller, Circuit Analysis: Theory & Practice, Εκδόσεις Delmar Learning, 1999.				

Course Description	COMPUTER AIDED DESIGN				
Typical Semester	2 <sup>nd</sup>				
Category	General Core Course (GCC) Obligatory course (C			tory course (O)	
Hours per Week	0 Theory	0 Applied Exercise		4 Lab	
ECTS Credits	3				
Work load	4				
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Design aircraft parts in 3D solid models using the computer</li> <li>Design aircraft assemblies in 3D solid models using the computer</li> </ul>				
Syllabus	Introduction to CAD theory. Introduction to the design software environment. Design parts with addition and deduction. Design parts with holes, symmetries and copy sketches. Design rotary parts with finishing edges. Design cells. Design sheet metals. Assemblies. Create mechanical drawings from 3D solid models.				
Recommended Reading	Mastering Autocad 2004 and Autocad LT 2004, Omura George, Sybex, 2003 Graphics Concepts with SolidWorks, Richard M. Lueptow, Michael Minbiole Prentice Hall, 2004				

Course Description	MANAGEMENT OF MAINTENANCE FACILITIES				
Typical Semester	2 <sup>nd</sup>				
Category	Human Factors and Legislation Course (HFLC)       Obligatory cours         (O)				
Hours per Week	2 Theory	0 Applied Exercises	<b>0</b> Lab		
ECTS Credits	6				
Work load	3				
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Describe the managerial methods of maintenance facilities</li> </ul>				
Syllabus	Statistics and probabilities elements. Techniques and organization methods of maintenance procedure. Diagnostic technique in maintenance. Planning and programming of maintenance. Duration and maintenance cost. The computer unit in the maintenance procedure. Supplies – Stock independent demand. Statistical process control. Quality control with acceptance sampling. Quality assurance systems.				

Recommended Reading	Joel Levitt, The Handbook of Maintenance Management, Industrial Press Inc. William J. Stevenson, Production / Operations Management, McGraw-Hill.
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Title	AIRCRAFT TECHNOLOGY – ENGLISH I				
Semester	2 <sup>ND</sup>				
Department	Foreign Languages				
Category	S Obligatory				
Туре	Theoretical				
Hours/week	2 Lecture	Applied Exercises	Laboratory		
Workload/Week	6				
ECTS points	3				
Prerequisites					
Objective:					

To familiarize the students with the electrical, electronic and computer engineering terminology in the foreigh language of their choice and train their written and oral skills.

#### Learning Outcomes:

Specialised terminology on: Aeronautical Materials, Maintenance, Aerodynamics, Hydraulic systems, Flight Control system Reading and listening comprehension of technical and scientific texts. Grammar exercises

#### Recommended Reading:

1. Notes/Scientific Articles/ Specialized Texts

2. Pagoulatou – Vlachou, V., Functional *Grammar*, Express Publishing, 2004.

Third Semester

Course Description Course Description	APPLIED MATHEMATICS				
Typical Semester Typical Semester	3rd 3rd				
Category Category	General Core Course (GC General Core Course (GC	8}	8 bligato	Bbligatory course (8)	
Hours per Week Hours per Week	2 Theory 2 Theory	2 Applied 2 Applied	Exercises Exercises	<b>2</b> Lab <b>0</b> Lab	
ECTS Credits		65			
Work load Work load		10 8			
Learning Outeomes	On successful completion of the course, students will be able to: On successful completion of the course, students will be able to: • Analyse the basic means, principles and methods of mechanics, basic • Letterning be technicuses of solving equations and systems of equations based on applied mathematics. • Apply the principles and methods of mechanics in solving simple • Apply the principles and methods of mechanics in solving simple • Apply the principles of equation solutions using applied mathematics in practical static problems, and also to make models of the formation of which foccur during the manifernance procedure during the maintenance grocedure, and manufacture of aircraft parts.				
Syllabus Syllabus	Classic (Newtonian) mechanics. Ve infroduction to applied mathematics body rece body diagram. Equilibriu Solution of non-lifear equations, N Siloe and Static Friction; All body integration, Functions interpretation pynamics of material body equations, Numerical Solution of sy conservation, conservative orces. Programming momentum of the mas	ectorian calc sheriors cold umerical diff onvevor kir work, enerc erinciple of scenter of a	ulus. Solid s lear algebra prenuation. I solution of r solution of r solution of r y principle affinial equa momentum a materials p	tatic. Solid proviems Vumericables. Numericabies. Numericabies. Jumericabies. Jumericabies. Jumericabies. Solitabi	
Recommended	Impulse Landre Regolds Stanset (1, 164 partices) of usoried baddy, net Jesino (100 ATLAB" Diversition of the solution of the s				
Reading	George Lindfield and John Penny "Numerical Methods Using				
Recommended	McGraw - Hill, New York.				
Reading	Engineering Mechanics, St 1997	tatics and Dy	namics by I	. H. Shames,	

Course Description	ELECTRICAL MACHINES			
Typical Semester	3 <sup>rd</sup>			
Category	Special Core Course (SC	Obligatory course (O)		
Hours per Week	2 Theory	0 Applied		<b>2</b> Lab
ECTS Credits		5		
Work load	8			
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Determine the basic types of electrical machines which are used in aircrafts</li> <li>Describe the technical characteristics of the aircraft electrical machines and determine their working specification as well as their maintenance regulations.</li> </ul>			
Syllabus	Description, theory and analysis of steady-state performance are presented for the four types of electrical machines: Transformers, Induction motors, Synchronous machines, DC machines and generators. Equivalent circuits and vector diagrams are derived and used as the primary tools for analysis.			
Recommended Reading	<ol> <li>Fitzgerald A. E., C. Kingsley, Jr., and S. D. Umans. «Electric Machinery», 5th ed. New York: McGraw-Hill, 1990.</li> <li>McPherson, George. «An Introduction to Electrical Machines and Transformers». New York: Wiley, 1981.</li> </ol>			
Course Description	INTRODUCTION TO TELECOMMUNICATIONS			
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Typical Semester	3 <sup>rd</sup>			
Category	Special Core Course (SC	C)	Obligato	ry course <b>(O)</b>
Hours per Week	2 Theory 2 Applied Exercises 0 Lab			
ECTS Credits	5			
Work load	8			
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Describe the basic elements of a telecommunication system</li> <li>Determine the performance of a telecommunication system as a funtion of signal to noise ratio</li> <li>Express a signal in frequency domain</li> <li>Perform basic calculations concerning CW modulated signals and assess the results</li> <li>Describe the operation of various CW modulators and demodulators and give basic comparative features</li> </ul>			

Syllabus	Signals and systems. Amplitude Modulation. Angle Modulation (FM and PM). Noise in CW modulation. Conceptual system design.
Recommended Reading	A. Bruce Carlson, "Communication Systems", McGraw Hill Robert Cagliardi, "Introduction to Communication Engineering", John Wiley & Sons, 1978

Typical Semester		3 <sup>rd</sup>		
Category	Human Factors and Legislation Course (HFLC)         Obligatory Course (O)			
Hours per Week	2 Theory 0 Applied Exercises		0 Lab	
ECTS Credits	3			
Work load	6			
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Determine the basic laws with which the aeronautic industry works and the ground personnel.</li> <li>Describe specialties and capabilities, degrees and permissions of Public Aviation Service which refers to service personnel of aircrafts.</li> <li>Describe the European and international organizations of contracts and regulations.</li> </ul>			

Syllabus	Analysis of laws relative to the Public Aviation Service. Regulative context. Regulation EASA Part-66, Part-145. Service Responsibility. Usage of Service. Program of Aircrafts Service. Aircrafts Certification. Records. Valid National and International requests. Modifications and repairs. Analysis of the laws relative to Hygiene and Safety of Employees. Thoroughly description of the parameters that affects unfavorably the employees hygiene and the safety of the ground personnel.				
Recommended Reading	Krause, Shari Stamford, Aircraft Safety, McGraw-Hill Education - Europe,2003 Balfour, J. M., Gardiner, Richard K., Goh, Jeffrey, Margo, Rod D., Air Law, LexisNexis UK, 1991				

Course Description	INTRODUCTION TO ELECTRONICS			
Typical Semester	3 <sup>rd</sup>			
Category	Special Core Course (SCC)         Sector Obligatory course (SO)			
Hours per Week	2 Theory	Theory 2 Applied Exercises		2 Lab
ECTS Credits	6			
Work load	10			
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Analyse basic electronic circuits</li> <li>Describe the features of basic electronic circuits circuit</li> </ul>			
Syllabus	Semiconductor ph operational amplif logic and digital ci	Semiconductor physics. Diodes. BJTs. FETs. Introduction to operational amplifiers. Power electronics. Introduction to combinational logic and digital circuits. Seguential circuits. Microcontrollers.		

Course Description	ANALOG ELECTRONICS				
Typical Semester	3 <sup>rd</sup>				
Category	Special Core Course (SCC) Sector Obligatory course (S			ry course (SO)	
Hours per Week	2 Theory	2 Applied Exercises		<b>2</b> Lab	
ECTS Credits		6			
Work load	10				
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Analyse and design analog electronic circuits</li> <li>Describe the features of basic electronic circuit configurations</li> <li>Read and exploit the datasheet information in the analysis and design of analog electronic circuits</li> </ul>				
Syllabus	Semiconductor physics. Diodes. BJTs. FETs. Transistor amplifiers. Amplifiers in frequency domain. Feedback. Operational amplifiers. Active filters. Oscilators. Multivibrators. Power transistors and power amplifiers.			amplifiers. nplifiers. Active wer amplifiers.	
Recommended Reading	Practical Analog Electronics for Technicians, Kimber, W.A., Butterworth-Heinemann Ltd Basic Circuit Theory, C. Desoer, E. Kuh, Mac Graw Hill.				
1	Optoelectronics. Sensors.	-			
Suggested Readings         P. Horowitz, W. Hill, The Art of Electronics, Ca           University Press         T. Hayes, P. Horowitz, Student Manual for the Electronics. Cambridge University Press					

Title	AIRCRA	AIRCRAFT TECHNOLOGY – ENGLISH II				
Semester		3 <sup>RD</sup>				
Department		Foreign Languages				
Category	S Obligatory					
Туре	Theoretical					
Hours/week	2 Lecture	Applied Exercises Labo		Laboratory		
Workload/Week		6				
ECTS points	3					
	ENGLISH I					
Prerequisites	To enroll in this course, students need to have successfully completed 1 semester of studies in the English Language Level I in TEI; alternatively they should own a universally					

	recognised certificate of English language competence (e.g. Lower or Advanced or Proficiency Certificate issued by Cambridge/Michigan University or or an equivalent certificate issued by the Greek Ministry of Education, YPEPTH).
Learning Outcomes:	
At the end of this course students wi and words very commonly used in the theoretical and technical concepts re professional environment.	ill have become familiar with expressions from technical texts neir specialized area of studies; also they will be able to use elated to the learner's personality, job and his/her immediate
Course Description:	
Specialized terminology on: Hydraulic systems, Flight Contro Compression, Air conditioning, R Reading and listening comprehen Grammar exercises	ol system, Landing system, Fire safety and fuel intake, Rescue instruments, etc. nsion of technical and scientific texts.
Recommended Reading:	
1. Tutor's Notes/Scientific Articles/ S	Specialized Texts
2. Pagoulatou – Vlachou, V., Functio	onal Grammar, Express Publishing, 2004.

## Fourth Semester

Course Description	INTRODUCTION TO AUTOMATIC CONTROL				
Typical Semester	4 <sup>th</sup>				

Category	Special Core Course (SCC)		Oblig	atory course (O)
Hours per Week	2 Theory	2 Applied Exercises		<b>2</b> Lab
ECTS Credits	6			
Work load	10			
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Describe the basic formation of the control systems with feedback.</li> <li>Design in simple way linear control systems with feedback.</li> </ul>			
Syllabus	Definition of dynamic system. Laplace transformation and transmission function. Fourier transformation and transmission function. Bode diagrams. Response in time field, contraction, overlaps. Recognition methods of dynamic systems. The mean of situation, the field of situations. Feedback. Stability. Characteristic polynomial of close system. Stabilities. Classic form of regulators. Counterbalance.			
Recommended Reading	1. Ogata, Modern Control Engineering, Prentice Hall International Editions			

Course Description	INTRODUCTION TO AERODYNAMICS			
Typical Semester	4 <sup>th</sup>			
Category	Special Core Course (SCC) Obligatory course (O)			ory course (O)
Hours per Week	2 Theory 0 Applied Exercises 0 Lat			<b>0</b> Lab
ECTS Credits	3			
Work load	6			
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Describe the creation of uplift flow and its change compare to geometry, height and velocity.</li> <li>Calculate the force of resistance and the conservation of aircraft in air.</li> <li>Describe the change of forces and their distribution during the flight</li> </ul>			
Syllabus	Introduction to Aerodynamics. Primitive principles of ideal flow. Primitive dynamic flows. Aerodynamics forces and torques. Wing of infinite length in incompressible flow. Wing of finite length in incompressible flow. Wind tunnels.			
Recommended Reading	N. F. Krasnov, "Aerodynamics", vol-1 και vol-2, MIR, 1985 J. D. Anderson Jr., "Foundamentals of Aerodynamics", McGraw Hill, 1991			

Course Description	TECHNICAL ENGLISH			
Typical Semester	4 <sup>th</sup>			
Category	Special Course (SC) Ob			ry course (O)
Hours per Week	2 Theory 0 Applied		Exercises	<b>0</b> Lab
ECTS Credits		3		
Work load	6			
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Translate English technical terms which are used in manuals for aircraft service.</li> <li>Use English technical terms to describe functions of the aircraft conservation and service.</li> </ul>			
Syllabus	Technology of Aircraft Materials. Materials of Aircrafts construction. Cleaning and colors of aircrafts. Ground Means of Support Aircrafts. Aerodynamics of Aircrafts. Aircrafts structures. Aircrafts hydraulic system. Flight control system of Aircrafts. Landing system. Fire protection and fuel feeding. Compression, air conditioning, deicing of aircraft. Oxygen system and rescuing systems.			
Recommended Reading	AC 65-9A : Airframe und Power plant Mechanics, General Handbook, 3 / 3/ 99, U.S. Department of Transportation, FAA AC 65-15A : Airframe und Powerplant, Mechanics, Airframe Handbook 3/3/99 U.S. Department of Transportation, FAA.			

Course Description	AIRCRAFT STRUCTURES			
Typical Semester		4 <sup>th</sup>		
Category	Special Core Course (SC	C)	Sector Obl	igatory course (SO)
Hours per Week	2 Theory	2 Applied	Exercises	<b>2</b> Lab
ECTS Credits		6		
Work load	10			
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Describe the manufactures which are used in construction of aircraft structures (wings, spindle, tail etc.)</li> <li>Describe the form of the imposed loads and their action in the aircraft structures.</li> <li>Describe the characteristics of the materials which are used in the aircraft construction</li> </ul>			
Syllabus	Basic distinction of the constructions which used in the composition of an aircraft. Introductive means from the elasticity theory. Static unidentified beams and nettings, methods of forces and displacements calculation for over static beams and nettings. Bending of thin beams aspen and close sections. Torsion of thin beams aspen and close sections. Frames of aircrafts. Shells. Shell wing. Composite materials. Structural stability. Special topics in design, certification and service of the aircraft structure.			

Syllabus	Basic distinction of the constructions which used in the composition of an aircraft. Introductive means from the elasticity theory. Static unidentified beams and nettings, methods of forces and displacements calculation for over static beams and nettings. Bending of thin beams aspen and close sections. Torsion of thin beams aspen and close sections. Frames of aircrafts. Shells. Shell wing. Composite materials. Structural stability. Special topics in design, certification and service of the aircraft structure.
Recommended Reading	J. Cutler "Understanding Aircraft Structures" 3rd Ed., Blackwell Science Ltd., 1999. B. K. Donaldson "Analysis of Aircraft Structures", McGraw-Hill, 1993

Course Description	THERMODYNAMICS			
Typical Semester	4 <sup>th</sup>			
Category	Special Core Course (SCC) Sector Obligatory cou			igatory course (SO)
Hours per Week	2 Theory 1 Applied Exercise			<b>2</b> Lab
ECTS Credits	6			
Work load	9			

Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Analyze the phenomena in which all the energy transformation are based.</li> <li>Describe the principles of internal energy, enthalpy, work, heat, entropy and analyze the basic principles and axioms of thermodynamics.</li> <li>Calculate the thermodynamic properties and the energetic quantities.</li> </ul>
Syllabus	Fundamentals of engineering thermodynamics: thermodynamic system, control volume concept, units of measurement, energy, work, heat, property of pure substances. The first law of thermodynamics: forms of energy, conservation of energy, thermodynamic properties, conservation of mass and the first law applied to a control volume, the steady-state steady-flow process, the uniform-state uniform-flow process. The second law of thermodynamics: the Carnot cycle, the thermodynamic property entropy, the T-s and h-s diagram, reversible and irreversible processes, efficiency. Application to engineering systems, power and refrigeration cycles: Otto cycle, diesel cycle, refrigeration cycles, turbines, compressors, pumps.
Recommended Reading	R. E. Sonntag, C. Borgnakke, G. J. Van Wylen "Fundamentals of Thermodynamics", John Wiley & Sons, 1997. J. Rayner, R. Joel "Basic Engineering Thermodynamics", Addison- Wesley Pub Co., 1998.

Course Description	STRENGTH OF MATERIALS			
Typical Semester	4 <sup>th</sup>			
Category	Special Core Course (SCC) Sector Obligatory course (			gatory course (SO)
Hours per Week	2 Theory 1 Applied Exercises		<b>2</b> Lab	
ECTS Credits		6		

Work load	9		
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Analyze the basic laws of strength of materials.</li> <li>Apply the principles of basic laws of strength of materials for the solving of practical problems which appears during the maintenance and construction of aircraft parts.</li> </ul>		
Syllabus	Tension, Compression and Shear. Introduction to Strength of Materials. Normal stress and strain. Mechanical Properties of Materials. Elasticity, Plasticity, Creep. Linear Elasticity, Hooke's law and Poisson's ratio. Shear Stress and Strain. Mechanical Tests: Tension, Compression, Shear. Torsion. Torsional Deformations of a Circular Bar. Circular Bars of Linearly Elastic Materials. Stresses and Strain in Pure Shear. Relationship between Moduli of Elasticity E and G. Transmission of Power by Circular Shafts. Torsion Test. Stresses in beams. Pure Bending and Nonuniform Bending. Curvature of a Beam. Strains in Beams (Longitudinal, Normal, Shear). Beams with Axial Loads. Analysis of Stress and Strain. Plane Stress. Principal Stresses and Maximum Shear Stresses. Mohr's Circle for Plane Stress. Hooke's Law for Plane Stress. Triaxial Stress. Plane Strain. Bending: Slope and Deflection. Differential Equations of the Deflection Curve. Slope and Deflection by the double-Integration Method. Discontinuous loading: Macaulay's Method. Method of Superposition. Flexural (Bending) Tests. Buckling of Columns. Buckling and Stability. Columns with Pinned Ends. Columns with Other Support Conditions. Buckling Tests. Special Topics: Materials behavior and Mechanical Tests. Fracture Mechanics (toughness measurement). Repeated Loading and Fatigue. Creep and Viscoelasticity. Impact Loading. Hardness.		
Recommended Reading	Mechanics of Materials, Russell C. Hibbeler, Prentice Hall, 6th edition, 2005 Mechanics of Materials by James M. Gere, Nelson Thornes Ltd, 5th edition, 2002		

Course Description	DIGITAL ELECTRONICS			
Typical Semester	4 <sup>th</sup>			
Category	Special Core Cou	Special Core Course (SCC) Sector Obligatory course (SC		
Hours per Week	2 Theory	2 Applied E	Exercises	<b>2</b> Lab
ECTS Credits	6			
Work load	10			
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Analyse and design of both combinational and sequential digital circuits</li> <li>Read and exploit data sheet information in the analysis and design of digital circuits.</li> </ul>			
Syllabus	Number systems. Gates. Basic combinational circuits. Reduction methods. Complex combinational circuits. Sequential circuits. Finite states sequential machines. Memories. Memory circuits.			
Recommended Reading	1. The Design Of Cmos Radiofrequency Intergrated Circuits , Thomas H. Lee, Cambridge Univ. Pr. 2. Avionics Collinson, R.P.G Kreiger 3. Operation And Modeling Of The Mos Transistor, Yannis P. Tsividis, Mcgraw-Hill			

Course Description	TELECOMMUNICATION SYSTEMS				
Typical Semester	4 <sup>th</sup>				
Category	Special Core Cou	rse <b>(SCC)</b>	Sect	or Obligatory course (SO)	
Hours per Week	2 Theory	1 Applied Exe	rcises	<b>2</b> Lab	
ECTS Credits		6			
Work load	9				
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Describe the structure of binary communication systems</li> <li>Calculate the basic performance parameters pertaining to binary communication system depending to the type of modulation</li> </ul>				
Syllabus	Probabilities and stochastic process. Analog to digital conversion – Delta modulation. Binary signaling. Baseband signal transmission. Modelisation of communication channel. Digital modulation techniques. M ary modulation of phase, amplitude and frequency. Error probabilities. Channel encoding and codes. Techniques of spread spectrum.				

Recommended Reading	<ol> <li>Marvin K. Simon, Jim. K. Omura, Robert A. Scholtz, Barry K. Levitt, "Spread Spectrum Communications Handbook", McGraw-Hill, 1994</li> <li>Don J. Torrieri, "Principles of Secure Communication Systems", Artech House, 1985.</li> </ol>

Course Description	ELEXCTROMAGNETIC WAVES - PROPAGATION - ANTENNAS				
Typical Semester		4 <sup>th</sup>			
Category	Special Core Cou	Special Core Course (SCC)         Sector Obligatory course (SO)			
Hours per Week	2 Theory	1 Applied Exercises 2 Lab		<b>2</b> Lab	
ECTS Credits		6			
Work load	9				
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Calculate basic parameters pertaining to antennas and electromagnetic field propagation</li> <li>Assess the radiation patterns of various antennas and antenna arrays</li> <li>Describe the features pertaining to the aircraft antennas</li> </ul>				
Syllabus	Maxwell equations. Poynting equation. Hertz antenna. Antenna parameters. Radiation patterns. Antenna arrays. Practical antennas. Aircraft antennas. Propagation.				
Recommended Reading	D. Cheng, Field and Wave Electromagnetics, Εκδόσεις Prentice Hall, ISBN 0201128195 Henri Jasik, "Antenna Engineering Handbook", McGraw Hill, 1961				

Title		AIRCRAFT TECHNOLOGY - ENGLISH LANGUAGE TERMINOLOGY				
Semester		4	th			
Department	Depart	Department of Foreign Languages				
Category	Optional	Optional <b>Compulsory</b>				
Туре		Theoretical				
Hours/week	2 Lecture Hours					
Workload/Week		10				
ECTS points		4				
Prerequisites		ENGLISH I & II				
	To enroll in the	nis course	students	need	to	have

successfully completed 2 semesters of studies in the
English Language Level I and Level II in TEI;
alternatively they should own a universally recognised
certificate of English language competence (e.g.
Lower or Advanced or Proficiency Certificate issued by
Cambridge/Michigan University or or an equivalent
certificate issued by the Greek Ministry of Education,
YPEPTH).

#### Learning Outcomes:

• This module is aimed for the students who are at the B2-C1 level of language competence on the CEF board and need to enhance their knowledge of the specialised foreign language used in their academic discipline to the extent that they will become able to literary or not, sophisticated and lengthy excerpts from specialized articles and lengthy technical guidelines related to their job specialty. Also on successful completion of this module learners should be able to understand the oral speech with no difficulty either in conditions of direct interaction or via mass communication media even when the fellow conversers talk fast, provided that there is adequate time for them to get familiar with a particular manner of speaking. Finally, they should also be able to identify the differences between different writing formats and produce written work of different formats (e.g. essays, articles, memos, reports, guidelines, etc.).

#### Course Description:

The module includes reading comprehension and analysis of technical texts relevant to the area of Aeronautics, covering relevant topics such as Aeronautical Materials, Maintenance, Aerodynamics, Hydraulic systems, Flight Control system, Landing system, Fire safety and fuel intake, Compression, Air conditioning, Rescue instruments, etc.

Also students have to practice advanced linguistic features in English which are encountered in the relevant technical bibliography. At this level students are required to be able to read, understand and analyse rather complex technical texts from academic textbooks and journals relevant to their work environment.

#### **Teaching Methods**

- Lecture
- Seminar
- Project work

#### Assessment Methods

Assessment takes place on a continuous basis and involves oral and written tests, presentations, assignments and project work. Most frequently used assessment methods are:

- End-of-term written exam paper •
- •
- In-term Assignment Poster presentation •

## **Recommended Reading:**

- 1. Notes/Scientific Articles/ Specialized Texts
- 2. Pagoulatou Vlachou, V., Functional *Grammar*, Express Publishing, 2004.

### Fifth Semester

Course Description	FLIGHT MECHANICS
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Typical Semester	5 <sup>th</sup>			
Category	Special Core Course (SC	C)	<b>O</b> bligato	ry course <b>(O)</b>
Hours per Week	2 Theory	2 Applied	Exercises	<b>0</b> Lab
ECTS Credits		5		
Work load		8		
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Discern the different phases of flight and the characteristic action of the aircraft</li> <li>Determine the forces, torques, velocities and accelerations, in an aircraft during the evasions</li> <li>Study the diagrams of aircraft performance</li> </ul>			
Syllabus	Introduction to Flight Mechanics. Basic marks of aerodynamics. Propulsion of aircraft. Linear Horizontal Flight (L.H.F.) of aircraft. Upward and downward flight of aircraft. Take off. Performance. Range – Special aircraft's range. Evasion and acrobatic of aircraft. Twisty flight, movement equations. Spin. Check of aircraft. Preview design of aircraft which is based on the performance analysis.			
Recommended Reading	Von Mises R. "Theory of Flight", Dover Publications Inc, 1959. J.D. Anderson "Introduction to Flight", 3rd Ed, McGraw-Hill, New York, 1989.			

Typical Semester	5 <sup>th</sup>			
Category	Special Core Course (SC	C)	Sector Oblig	gatory course (SO)
Hours per Week	3 Theory	1 Applied	l Exercises	<b>2</b> Lab
ECTS Credits		7		
Work load	12			
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Report the aircraft systems, to describe their role and to determine their position in the airplane</li> <li>Determine possible malfunction with the help of manufacturing drawings of the aircraft systems</li> </ul>			
Syllabus	Aircraft electrical systems. Hydraulic systems. Pneumatic systems. Gears. Air conditioning system of cabin. System of fuel feeding. Control system of ice and rain. Fire protection system. Flight control system. Passengers comfort system.			
Recommended Reading	Airframe and Powerplant Mechanics, Federal Aviation Authority, EA- AC65-15A Hydraulics and Pneumatics: A Technician's and Engineer's Guide. Andrew Parr 1999			

Course Description	MACHINE ELEMENTS				
Typical Semester	5 <sup>th</sup>				
Category	Special Core Course (SCC)         Sector Obligatory course (SO)				
Hours per Week	2 Theory 2 Applied Exercises 2 Lab				
ECTS Credits	6				
Work load	10				
Learning Outcomes	<ul> <li>On successful completion of the</li> <li>Recognize the machine elemen</li> <li>Calculate the distress of machin mechanisms</li> <li>Choose the appropriate machin aircraft mechanisms</li> </ul>	e course, sto ts that are in he elements e elements f	udents will the aircontract the aircontract that compositions for the prototy of	<b>be able to:</b> raft systems e the aircraft ype design of the	
Syllabus	Basic knowledge of strength of materials. Rivets and riveting – Tolerances and joining. Bolts and screws. Axles and shafts. Rolling and sliding bearings. Joints and breaks. Wire ropes. Belts – chains – springs. Gears. Pipes.				
Recommended Reading	Mechanical Engineering Design, Ch. R. Mischke, J. Edward Shigley, McGraw-Hill, 7th edition, 2004. Fundamentals of Machine Elements, B. J. Hamrock, B. Jacobson, S. R. Scmid, Mcgraw-Hill, 1999				

Course Description	WELDING MECHANICS			
Typical Semester		5 <sup>th</sup>		
Category	Special Course (SC)		Sector Obl	igatory course (SO)
Hours per Week	3 Theory	1 Applied	Exercises	<b>2</b> Lab
ECTS Credits		7		
Work load		12		
Learning Outcomes	<ul> <li>On successful completion of the</li> <li>Describe the welding methods describe the characteristics of eace</li> <li>Determine the factors that affect physiochemical characteristic of the technique that will be used.</li> </ul>	e course, st which are us th method. the welding m welding m	udents will k ed in aircraft g in depends aterials and t	<b>be able to:</b> technology and to on the he parameter of the
	<ul> <li>Choose the best type of weld a</li> </ul>	nd calculate	its mechanic	strength.

Syllabus	Metallurgical phenomena during welding. Oxy-fuel. Shielded Metal Arc Welding. Tungsten Inert Gas. Electro-beam welding. Resistance welding. Aluminum alloys welding. Magnisium alloys welding. Nikel alloys welding. Design and calculation of the welding. Destructive and non destructive methods of welding inspection.
Recommended Reading	"Airframe and Powerplant Mechanics – power plant Handbook", Federal Aviation Administration Althouse, Turnquist, Bowditch, "Modern Welding", American Welding Society

Course Description	PROPULSION MECHANICS				
Typical Semester		5 <sup>th</sup>			
Category	Special Core Course (SC	C)	Sector Obl	ligatory course (SO)	
Hours per Week	2 Theory	0 Applied	Exercises	<b>2</b> Lab	
ECTS Credits	5				
Work load	8				
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Determine the factors that affect the aircraft engine propulsion.</li> <li>Define the propeller construction characteristics and explain the maintenance procedure</li> </ul>				
Syllabus	Engine propulsion. Fundamentals of air-propulsion. Propulsion equations. Factors that affect the engine propulsion. Propellers basic concepts. Fundamentals of propeller movement. Air-propeller construction. Propeller step control. Propeller synchronization. Anti-ice propeller protection. Propeller maintenance				
Recommended Reading	A. C. Kermode, "Mechanics of Flight", Longman 1991 "Airframe and Powerplant Mechanics, Powerplant Handbook", Federal Aviation Administration				

Course Description	DIGITAL AUTOMATIC CONTROL			
Typical Semester		5 <sup>th</sup>		
Category	Special Core Cou	irse <b>(SCC)</b>	Sect	or Obligatory course (SO)
Hours per Week	3 Theory 1 Applied Exercises 2 Lab			<b>2</b> Lab
ECTS Credits		7		
Work load	12			
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Describe the basic characteristics of a digital controller.</li> <li>Design a linear digital controller.</li> </ul>			
Syllabus	Introduction & History of Automation. Design for Automation and Processes: Determining appropriate levels of manufacturing automation based on economics and productivity.Elements of automation: EDM, PLC's, Sensors and Simulation, conveyors, part feeders, AGV's, AS/RS. Human Side of Automation. Cells and Robots. PID controllers. Digital stability			
Recommended Reading	B. Kuo, Digital Control Systems, Εκδότης: Oxford University Press G. F. Franklin, J.D. Powell, M. Workman, Digital Control of Dynamic Systems, Addison – Wesley			

Course Description	POWER ELECTRONICS			
Typical Semester		5 <sup>th</sup>		
Category	Special Core Course	(SCC)	Sector O	bligatory course (SO)
Hours per Week	2 Theory	2 Applied E	xercises	<b>2</b> Lab
ECTS Credits		6		
Work load		10		
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Describe the operation of power electronic components and their circuits.</li> <li>Calculate the basic parameters pertaining to power electronic circuits.</li> <li>Select the most appropriate circuit configuration depending to specific applications.</li> </ul>			
Syllabus	Power semiconductors. Optoe diode circuits. AC and DC circu Electronic power systems. AC Alternating current controllers. diodes, power transistors, pow applications.	ectronic compo uits. Startes and -DC rectifiers. Ir Power electroni er MOSFETs. IC	nents. Thryst stoppers wit iverters. AC- cs componer BBTs. Power	ors. Switching h thrystors. DC converters. nts. Power electronics
Recommended Reading				

Course Description	TELECOMMUNICATION ELECTRONICS			
Typical Semester		5'	th	
Category	Special Cours	e <b>(SC)</b>	Se	ector Obligatory course (SO)
Hours per Week	3 Theory	1 Applied Exe	rcises	<b>2</b> Lab
ECTS Credits	7			
Work load	12			
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Describe the features of transmitters and receivers</li> <li>Design basic RF circuits which are blocks of a communication system</li> </ul>			
Syllabus	Basic RF circuits. Tuned amplifiers. Double tuned amplifiers. Impedance matching. Active two port circuits. Noise and distortion. Power RF amplifiers. Oscillators, Mixers, PLLs and frequency cynthetizisers.			
Recommended Reading	Kenneth K. Cla and Design", Addison-\ V. V. Shakhgilo	arke, Donald T. H Wesley Publishin dyan, "Radio Trai	less, "C g Comp nsmitter	ommunication Circuits Analysis bany, 1978 s", MIR, 1981

Course Description	SENSOR TECHNOLOGY				
Typical Semester	5 <sup>th</sup>				
Category	Special Core Course (SC	C)	Sector Obl	ligatory course (SO)	
Hours per Week	2 Theory 0 Applied Exercises 2 Lab				
ECTS Credits	5				
Work load	8				
Learning Outcomes	<ul> <li>On successful completion of the</li> <li>Describe various sensor types a</li> <li>Describe signal processing tech</li> <li>Indicate the appropriate sensors</li> <li>Indicate the appropriate sensors</li> </ul>	e course, st and their tec niques relat s for airborne s for industri	udents will the hologies and to sensors applications al application	<b>be able to:</b> S S. NS	
Syllabus	Sensor parameters. Values to be detected an to be measured. Mechanical sensors. Field sensors. Thermodynamic sensors. Chemical sensors. Sensor applications. Sensor calibrations. Testing facilities. Smart sensors. Sensors as components of automation systems.				
Recommended Reading	JON S WILSON, Sensor Technology Handbook, Elsevier, 2005 JOHN G. WEBSTER, The Measurement, Instrumentation and Sensors Handbook, 1998				

# Sixth Semester

Course Description	AIRCRAFT INSTRUMENTS AND NAVIGATION SYSTEMS				
Typical Semester		6 <sup>th</sup>			
Category	Special Course (SC)	)	Sector Ob	ligatory course (SO)	
Hours per Week	2 Theory 0 Applied Exercises 2 Lab				
ECTS Credits		5			
Work load	8				
Aims	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Describe the operation of aircraft flight and navigation instruments</li> <li>Describe the operation of basic radionavigation receivers and the principles of inertial systems</li> <li>Describe the operation of engine instruments</li> </ul>				
Syllabus	Instrument components and mechanisms. Principles of servomechanisms. Air data and Pitot – Static system. Flight instruments.Magnetic compass. Gyro instruments. Radionavigation systems. Flux gate. Principle of inertial and satellite based navigation. Flight Director Indicator. Engine and auxilary instruments. Electronic Flight Instrument Systems.				
Suggested Readings	Brian Kendal, "Manual of Avionics", Blackwell Science, 1999. Keith W. Bose, "Aviation Electronics", Jeppesen, 1983.				

Course Description	PISTON (RECIPROCAL) ENGINES					
Typical Semester	6 <sup>th</sup>					
Category	Special Course (SC) Sector Obligatory cour					
Hours per Week	2 Theory 0 Applied		Exercises	<b>2</b> Lab		
ECTS Credits	5					
Work load	8					
Aims	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Describe the thermodynamic cycles in reciprocal engines and analyse their thermodynamic characteristics.</li> <li>Recognize the special characteristics of the reciprocal aircraft engines, their components and systems</li> <li>Analyse and follow the maintenance reciprocal air-engine procedure as described in many features many of the maintenance reciprocal aircraft engines.</li> </ul>					
Syllabus	Aircraft engines historical progress and basics in thermodynamic. Gas phase transformation. Reciprocal engine thermodynamic. Petrol and diesel engines. Lubrication, cooling and fuel providing system. Engine attachment on the aircraft construction. Engine starting and fire extinguisher system. Working limits and maintenance of reciprocal engines. Reciprocal engine mechanical failure inspection. Maintenance, adjustments and fixing of reciprocal aircraft engines. Helicopters reciprocal engines. Aircraft reciprocal engine performance.					

Suggested Readings	"Airframe and Powerplant Mechanics", FAA EA-AC65-12A "Training Manual Powerplant Section Book 1", EA-ITP-P1, Aviation Maintenance Publishers Inc.
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Course Description	HELICOPTER AERODYNAMICS				
Typical Semester	6 <sup>th</sup>				
Category	Special Course (SC)         Sector Obligatory course (SO)				
Hours per Week	2 Theory	0 Applied	<b>2</b> Lab		
ECTS Credits	5				
Work load	8				
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>report the aerodynamic phenomena during the helicopter flight</li> <li>calculate the helicopter flight conditions during the horizontally and vertical flight</li> </ul>				

Syllabus	Induction to the helicopter . Basic configuration of helicopters. Vertical flight of helicopter . Momentum theory hovering and vertical movement of helicopter. Horizontal flight of helicopter. Flapping motion. Balance of forces and torque, balance of force in the helicopter. Factors that affect the records of helicopter. Stability and control of helicopter flight. Support loss of the helicopter impeller. Helicopters design standards.
Recommended Reading	J. Seddon & S. Newman "Basic Helicopter Aerodynamics"2nd Ed., Blackwell Science 2002 . G. Done & D. Balmford "Helicopter Dynamics" 2nd Ed., Butterworth - Heinmann 2001.

Course Description	FUELS AND LUBRICANTS					
Typical Semester	6 <sup>th</sup>					
Category	Special Course (SC)         Sector Obligatory course (SO)					
Hours per Week	2 Theory	0 Applied Exercises		<b>2</b> Lab		
ECTS Credits	5					
Work load	8					
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Report the characteristics of fuels and lubricants that are used in the aircrafts</li> <li>Define troubleshooting in fuel or lubrication system in an aircraft.</li> </ul>					

Syllabus	Energy and conventional fuels. Crude oil. Gasoline Derv. Jet fuels. Fuels of gas turbines. Effect of height of flight in the combustion. Process and additives of mineral oils. Properties of mineral oils. Lubricant greases. Grease production.
Recommended Reading	

Course Description	MANUFACTURING PROCESSES OF AIRCRAFT MATERIALS				
Typical Semester	6 <sup>th</sup>				
Category	Special Course (SC)		Sector O	bligatory course (SO)	
Hours per Week	2 Theory	0 Applied	Exercises	<b>2</b> Lab	
ECTS Credits	5				
Work load		8			
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Determine the conventional and non conventional methods which are used to manufacture the parts that compose the aircraft.</li> <li>Determine the factors that affect the manufacturing process.</li> <li>Choose the best type of manufacturing process concerning the material characteristics and the economical restrictions that are imposed</li> </ul>				
Syllabus	Basic principles of metallurgy. Casting. Conventional machining with material removal. Planning, turning, and drilling. Milling and grinding. Welding - Electro-beam welding. Thermal and metallurgy phenomena during welding. Prosecuting and control methods of welding. Introduction to plastic deformation forming. Configuration of lamina. Configuration of compact material. Non conventional forming.				
Recommended Reading	Serope Kalpakjian, Steven R. Schmid, "Manufacturing Processes for Engineering Materials", Prentice Hall, 4th edition, 2002. E.P. De Garmo, J.T. Black, "Materials and processes in manufacturing", 1996.				

Course Description	COMPOSITE MATERIALS				
Typical Semester	6 <sup>th</sup>				
Category	Special Course (SC)		Sector O	bligatory course (SO)	
Hours per Week	2 Theory	2 Theory 2 Applied		<b>0</b> Lab	
ECTS Credits		5			
Work load		8			
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Define the properties and characteristics of composite materials that can be used in manufacturing or repairing aircraft parts.</li> <li>Calculate the mechanic characteristics of a fibre reinforced composite material.</li> <li>Estimate the load fracture of composite materials concerning their natural and mechanical properties</li> </ul>				
Syllabus	Introduction of the composite materials. Reinforcing using fibers and matrices. Polymeric matrix composite materials (PMC). Metal matrix composite materials MMC. Introduction of polymeric materials. Structure and corruption of polymers. Processing and connecting techniques of polymers. Faults of polymers composite material processing.				
Recommended Reading	An Introduction to Composites Materials, D. Hull, T. W. Clyne, Cambridge University Press (C.U.P.), 1996 Composites Materials Vol. 1: Properties, Non-destructive Testing and Repair, M. Mel. Schwartz, Prentice Hall, 1997				

Course Description	AIRCRAFT ELECTRICAL SYSTEMS					
Typical Semester	6 <sup>th</sup>					
Category	Special Course (SC) Sector Obligatory course			igatory course (SO)		
Hours per Week	2 Theory	Exercises	<b>2</b> Lab			
ECTS Credits	5					
Work load	8					
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Describe the operation of systems composing the aircraft electrical network</li> <li>Analyse the configuration and the interaction of various aircraft electrical circuits</li> <li>Read and track the blueprints of aircraft electrical systems</li> </ul>					
Syllabus	DC sources. Voltage stabilization. AC sources. Power convertion equipment Auxillary power units. Electrical power distribution. Network control systems. Network protection systems. Measurement instruments and warning lights. Voltmeters, ampermeters and frequencymeters. Electrical motors. Lights. Fire protection, anti-ice protection systems. Landing gear systems.					
Recommended Reading	E. H. J. Pallett, "Aircraft Electrical Systems", Longman, 1987 "Installation Practices, Aircraft Electric and Electronic Wiring", Technical Manual, T.O. 1-1A-14					

Course Description	MICROWAVES				
Typical Semester	6 <sup>th</sup>				
Category	Special Course (	SC)	Sector Obligatory course (SO)		
Hours per Week	2 Theory 0 Applied		Exercises	<b>2</b> Lab	
ECTS Credits	5				
Work load	8				
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Analyse and design microwave circuits based on transmission lines or waveguides</li> <li>Design microwave measurement system based on microwave circuit theorems</li> </ul>				
Syllabus	Principles of transmission lines. Smith chart. Impedance matching. Waveguides. Microwave circuits and components. Microwave tubes. Microwave semiconductor components.				
Recommended Reading	R.E. Collin, Foundations for Microwave Engineering, Εκδόσεις McGraw-Hill D. M. Pozar, Microwave Engineering,, Εκδόσεις John Wiley & Sons				

Course Description	AIRCRAFT INSTRUMENTS				
Typical Semester	6 <sup>th</sup>				
Category	Special Course	Special Course (SC)         Sector Obligatory course (SO)			
Hours per Week	2 Theory	0 Applied	ed Exercises 2 Lab		
ECTS Credits	5				
Work load	8				
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Describe the instruments composing the flight deck</li> <li>Conceptually design and equip a flight deck accordingly.</li> </ul>				
Syllabus	Aircraft instrument basics and elements. Principles of servomechanisms. Pitot – Static system. Flight instruments. Air Data Computer. Magnetic compass. Gyro instruments. Radionavigation instruments. Flux valve. Flight Director Indicator. Engine instruments. Auxilary instruments, EFIS, ECAM, EICAS, FMCS.				
Recommended Reading	Brian Kendal, "Manual of Avionics", Blackwell Science, 1999. Keith W. Bose, "Aviation Electronics", Jeppesen, 1983.				

Course Description	MICROPROCESSORS				
Typical Semester	6 <sup>th</sup>				
Category	Special Course (SC)		Sector Obligatory course (SO)		
Hours per Week	2 Theory	0 Applied	Exercises	<b>2</b> Lab	
ECTS Credits	5				
Work load	8				
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Describe the microprocessor architecture</li> <li>Design in H/W and S/W simple microprocessor based applications</li> </ul>				
Syllabus	Number systems – Hexadecimal system. Structure of 68000. Microprocessor instructions. Memory and memory access. Mass storage. Connection of peripherial units on to microprocessor. Assembly programming. Programming with C. Drivers. Microprocessor based system design case study.				
Recommended Reading	Peter Marwedel, Embedded System Design, Kluwer Academic Publishers, ISBN 1-4020-7690-8 The ADA 95 Language Reference Manual				
Course Description	AIRCRAFT COMMUNICATION AND NAVIGATION SYSTEMS				
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Typical Semester	6 <sup>th</sup>				
Category	Special Course (SC) Sector Obligatory (SO)			bligatory course (SO)	
Hours per Week	2 Theory	0 Applied Exercises 2			
ECTS Credits	5				
Work load	8				
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Describe the operation of aircraft communication and navigation systems and of their respective building blocks.</li> <li>Calculate basic parameters pertaining to the performance of aircraft communication and navigation systems.</li> </ul>				
Syllabus	Intercom. Cockpit Voice Recorder. ELT. HF, VHF and UHF communication systems. Principles of navigation. Geodetic systems. Euler angles. Sagniac effect. Laser and fiber gyros. Dither mechanisms. Inertial Navigation Systems. Inertial sensors, Basic circuits. System errors, Initialization. ADF receiver. Sense και directional antennas. VOR beacon and VOR receiver. DME and TACAN. ILS, MLS systems. Hyperbolic navigation systems. OMEGA, LORAN and VLF navigation systems. GPS. Galilaio, Glonass and GNSS				
Recommended Reading	Brian Kendal, "Manual of Avio Keith W. Bose, "Aviation Elect	nics", Blackwe ronics", Jeppe	ell Science, esen, 1983.	1999.	

Course Description	FLIGHT STABILITY AND AUTOMATIC FLIGHT CONTROL				
Typical Semester	6 <sup>th</sup>				
Category	Special Course (SC)         Sector Obligatory course (SO)			Obligatory course (SO)	
Hours per Week	2 Theory	0 Applied Exercises		<b>2</b> Lab	
ECTS Credits	5				
Work load	8				
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Describe the aircraft automatic flight control</li> <li>Solve guidance and stability related problems of air vehicles</li> </ul>				
Syllabus	Atmospheric flight mechanics Static stability and control. Aircraft equations of motion. Longitudinal and lateral dynamics. Aircraft response to control and atmospheric inputs. Longitudinal and lateral automatic control. Automatic control, applications on conventional and modern control theories				
Recommended Reading	Etkin, Bernard, and Lloyd Duff Reid. Dynamics of Flight: Stability and Control. 3rd ed. New York: Wiley, 1995. Nelson, Robert C. Flight Stability and Automatic Control. 2nd ed. Boston, MA: McGraw Hill, 1997.				

# Seventh Semester

Course Description	PROFE	SSIONAL ETHICS	
Typical Semester		7 <sup>th</sup>	
Category	Human Factors and Legislation	n Course (HFLC)	Obligatory course (O)
Hours per Week	2 Theory	0 Applied Exercise	es <b>0</b> Lab
ECTS Credits		3	
Work load		6	
Learning Outcomes	<ul> <li>On successful completion of the</li> <li>Describe the role of human factories</li> <li>environment</li> </ul>	e course, students w tor in ethics in the airc	vill be able to: craft maintenance
Syllabus	Human factors. Human limits. So work load. Working environment. basic significances, regulation. T	cial Psychology. Fac Duties. Human fault he personality of the	tors that influence the s. Ethics - Deontology : graduate is a decision

	critical factor. Scientific ethics. Papers.
Recommended Reading	Oakley J, Virtue Ethics and Professional Roles. Cambridge University Press, 2001 Bouchoux D.E, Protecting Your Company's Intellectual Property: A Practical Guide to Trademarks. AMACOM, 2001.

Course Description	TURBINE ENGINES				
Typical Semester		7 <sup>th</sup>			
Category	Special Course (SC)         Sector Obligatory course (SO)				
Hours per Week	3 Theory	1 Applied	Exercises	<b>2</b> Lab	
ECTS Credits		7			
Work load		12			
Learning Outcomes	<ul> <li>On successful completion of the</li> <li>Describe the basic characteristi recognize the main parts</li> <li>Estimate the turbine engine pov</li> <li>Describe and follow the mainter</li> </ul>	e course, st cs of an airc ver nance proce	<b>udents will l</b> raft turbine e dure	<b>be able to:</b> Ingine and	

Syllabus	Fundamental concepts. Introduction to the basic processes. Performance analysis. Types/arrangements of engine components. Compression processes. Combustion processes. Turbine Expansion process. Exhaust heat exchange process. Performance and characteristics. Instrumentation Non-dimensional groups. Engine testing. Performance of a single shaft un Performance of a two-shaft unit. Characteristics of components. Theory of stationary gas turbine power plants. Design of gas turbines, Hardware & components Matching. Gas Turbines for Aircraft Propulsion.			
Recommended Reading	E. Charles, E. Otis, "Aircraft Gas Turbine Powerplant" Irwin Treager, "Aircraft Gas Turbine Engine Technology", Glencoe Aviation Technology			

Course Description	PRINCIPLES OF AIRCRAFT DESIGN					
Typical Semester	7 <sup>th</sup>					
Category	Special Course (SC)		Sector Ob	ligatory course (SO)		
Hours per Week	2 Theory	1 Applied	Exercises	<b>2</b> Lab		
ECTS Credits		6				
Work load		9				
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Describe the main aspects of aircraft parts design.</li> <li>Estimate the aircraft aerodynamic flight characteristics and the thermodynamic performance of the engines.</li> <li>Select the aircraft parts or aircraft systems following the basic concepts of aircraft design.</li> </ul>					
Syllabus	Aircraft forces. Aircraft construction materials. Aircraft classification. Aircraft fuselage. Aircraft wings. Horizontal and vertical tail wings design. Engine fuselage and surroundings. Control flight planes design. Landing gear system desing. Aircraft weight and balancing.					
Recommended Reading	Daniel P. Raymer, "Aircrat Education series, 1999 Jan Roskam, "Airpplane D Engineering Corporation, 1986	ft Design: A ( Design" Part I	Conceptual A	Approach", AIAA am Aviation and		

Course Description	AERODYNAMICS OF AIRCRAFT ENGINES					
Typical Semester	7 <sup>th</sup>					
Category	Special Course (SC)		Sector C	bligatory course (SO)		
Hours per Week	3 Theory	0 Applied	Exercises	3 Lab		
ECTS Credits		7				
Work load	12					
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Analyze the aerodynamic performance characteristics of the turbine engine main parts.</li> <li>Describe the fundamentals on turbine engine design strategies.</li> </ul>					
Syllabus	Turbine engines classification. Aerobic and anaerobic engines. Turbine engine thermodynamic. Sub system turbine engine performance. Engines air inlets. Turbine engines aerodynamic. Sub system turbine engine performance. Aerodynamic design of co working compressor and turbine in an aircraft turbine engine. Diffusers and combustion chambers. Propulsive and mixture nozzles. Turbine engine transient running.					
Recommended Reading	G.C. Oates "Aerothermodynamics of Aircraft Engine Components" AIAA Education Series, New York, 1985. N. Cumpsty "Jet Propulsion, A simple guide to the aerodynamic and thermodynamic design and performance of jet engines", Cambridge University Press, 1997.					

Course Description	SPECIAL TOPICS OF FLIGHT MECHANICS				
Typical Semester		7 <sup>th</sup>			
Category	Special Course (SC)         Sector Obligatory course (SO)				
Hours per Week	3 Theory	0 Applied	<b>2</b> Lab		
ECTS Credits	7				
Work load	11				
Learning Outcomes	<ul> <li>On successful completion of th</li> <li>Analyze the aircraft flight in su</li> <li>Describe the dangerous pheno</li> <li>Analyze the aerodynamic pher several aircraft parts.</li> </ul>	e course, st personic velo pmena that oc nomena relate	udents will be cities. ccur in supersc ed with the inte	e able to: onic flight. praction between	

Syllabus	Correlation with low-velocity flight. Shock waves. Reaching control to the critical Mach number. Supersonic aerodynamic. Supersonic flight wings sectors. Finite wings in supersonic flow. Aircraft construction for supersonic flight. Introduction to boundary layer theory.
Recommended Reading	I.H. Abbot & von A.E. Doenhoff "Theory of Wing Sections", Dover Publications Inc, New York, 1958. B.W. McCormick "Aerodynamics, Aeronautics and Flight Mechanics" Wiley, 1994.

Course Description	RADAR SYSTEMS			
Typical Semester	7 <sup>th</sup>			
Category	Special Course (SC) Sector Obligatory course (SO			Obligatory course (SO)
Hours per Week	3 Theory 1 Applied Exercises 2 L			<b>2</b> Lab
ECTS Credits	7			
Work load	12			
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Describe the operation of various radar systems and their building blocks</li> <li>Describe the radar signal processing techniques</li> <li>Analyse a radar system</li> <li>Desform a concentual design of a radar system</li> </ul>			
Syllabus	Radar basic principles. Radar Aoperation parameters. Radar equation. Radar targets. Reception and processing of echos. Tracking radar. Secondary radar. Transmitter circuits. Radar antennas. Signal processing. Weather radar. Traffic Alerting and Colision Avoidance System.			
Recommended Reading	G. Stimson, Introduction to airborne radar, Εκδόσεις Scitech Publishing Inc. P. Peebles, Radar Principles, Εκδόσεις John Wiley & Sons			

Course Description	AIRCRAFT AUTOMATIC FLIGHT CONTROL SYSTEMS				
Typical Semester	7 <sup>th</sup>				
Category	Special Course (SC)         Sector Obligatory course (SO)			bligatory course (SO)	
Hours per Week	2 Theory	1 Applied Exercises 2 Lab			
ECTS Credits	6				
Work load	9				
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Describe the operation of autopilots and flight directors</li> <li>Design controllers for solving problems pertaining to the automatic flight in simplified conditions</li> </ul>				
Syllabus	Aircraft dynamics and stability. Atmospheric disturbances. Flying quality. Modelisation of aircraft sensors and actustors. AFCS block diagram. Stability augmentation systems. Attitude, altitude and heading control systems. Helicopter flight control systems. Flight by wire systems.				
Recommended Reading	D. Mc Lean, Auto E. H. J. Pallett, Science, 1998.	matic Flig Shaun C	ht Control Syste Coyle "Automatic	ms, Εκδόσεις Prentice Hall > Flight Control", Blackwell	

Course Description	FIBER OPTICS TELECOMMUNICATION SYSTEMS						
Typical Semester	7 <sup>th</sup>						
Category	Special Course (SC)         Sector Obligatory course (SO)						
Hours per Week	3 Theory 0 Applied Exercises 3 Lab						
ECTS Credits	7						
Work load	12						
Learning Outcomes	<ul> <li>On successful completion of the course, students will be able to:</li> <li>Describe the building blocks of a fiber optic communication system</li> <li>Design a fiber optic communication system and to determine its performance parameters</li> </ul>						
Syllabus	Principle of optics. Structure of optical fiber. Signal propagation in a fiber. Transmitter components. Receiver components. Fiber optic LAN equipment and components. Component connections on to fiber. Conceptual design of fiber LAN. Aircraft fiber optic networks – Flight by Light. ARINC 629 and MilBus 1773 architecture. Principles of integrated optics.						
Recommended Reading	WILLIAM, B., Introduction to optical fiber communication systems, 1998. KEISER G., Optical Fiber Communications, 3 <sup>rd</sup> ed., 2000						

# C. General information for the Erasmus Students in TEI of Chalkis

1. Location of TEI of Chalkis



# • EVIA: A Natural and Historical Treasure

The TEI of Chalkis is situated in the island of Evia. The prefecture of Evia, apart from the historical big-island, includes in its ministerial district the island of Skiros and a small part of the mainland, *Sterea Ellada*, which expands over the west border-lines of the municipality of Halkida to the other side of the Gulf of Evoikos.

The prefecture of Evia is divided in 27 boroughs, (2 communities and 25 municipalities), from which, 24 are located in Evia, 2 in Sterea Ellada and the 27th one is the beautiful island of Skiros.

The island of Evia covers an area of 3.660 km2. It is 175 km long while its width ranges from 6 to 50 km. The length of the coastline of Evia stretches up to 678 km.

The island of Skiros covers an area of 209 km2, and its coastline is 130 km. A great number of islets, like Petalioi near Marmari, Lichadonisia to the north, the little rocky islands at the open sea of Skiros as well as others, located in the Aegean side, belong to Evia. Those add the colour of polymorphism to the geographical identity of the prefecture of Evia.

#### The city of Chalkis (Halkida)

The area which is surrounding the capital of Evia, is comprised of the municipalities of **Chalkis** (usually called **Halkida**), **N. Artaki, Lilantion**, **Avlida and Anthidona**. The two last ones are not located on the island of Evia, but on the other side of Euripus, that of Sterea Ellada.

The region of central Evia is characterized by the brilliant historical presence of two of the most important cities of ancient Greece. Halkida and Eretria, long before the city of ancient Athens was constructed, had manifested their world inspired influence on the Greek culture. Next to these important ancient cities, "**Petriesa**" **Avlida**, **Anthidona** and other smaller cities, came to the peak of their cultural civilization. Other ancient civilizations that have been revealed in the sites of **N**. **Artaki** and **Vasiliko** and are going even deeper back in historical times are also very important.

The already celebrated cultural and social identity of the region of central Evia, was transformed since the arrival of the Greek refugees of Asia Minor, in 1925. **N. Artaki** and **N. Lampsakos** are the names of the homonymous cities in Marmaras, in Asia from where the new residents of Evia came from.

The capital of Evia, astonishingly beautiful, indeed, instantly wins over anyone who crosses the old bridge of Euripus at the entrance of Halkida, a city, with a history and culture which is lost in the depths of ages. By the many colonies of Chalkis, (Halkidiki, South Italy, Ionian coastland etc), civilization was passed on to the world through written speech. The well-known *Halkidiko* or *Kimaiko* alphabet (ancestor of the Latin alphabet) was humans' first attempt to immortalize their experiences and history.

# Traveling around Evia

For the visitor of modern Chalkis, apart from the natural beauties of the city, it is worth taking some time in tasting the history of Evia, by admiring the monuments.

You can retrieve information, as well as maps and travel guides at the website of the Greek National Tourist Organisation (G.N.T.O.) at: <u>http://www.greektourism.gr/</u>

**Public Transport coach-service (KTEL)** links you to all cities and villages around Evia. Website address: <u>http://www.ktel.org/</u>

# Places to visit

- Nea Artaki
- Ancient Eretria
- The ancient theatre of Seta

# 2. How to reach the Institution

There is a direct connection of the Institute with downtown Halkida, Athens and Piraeus.

#### By Public Transport

There is a regular coach service from Chalkis to Athens.

#### Day Departure

Daily from 06:00 to 21:00 every half hour

The Green coaches are the easiest and least expensive way to travel to the TEI from inside or outside the city of Chalkis (e.g. from Athens to Chalkis or other destinations in Greece). They are based at Chalkis Coach Station and have regular itineraries daily. They are labelled with a sign reading <<TEI >>. To reach the TEI from Athens you will need to catch a coach with the sign <<TEI - HALKIDA>> or (<<TEI-XA/KIΔA>>).

For detailed information on timetables, visit the OASA WEBSITE at: <u>www.oasa.gr</u>

# By train

There are regular train itineraries from Athens to Chalkis and vice versa approximately every 1 hour. In Athens the train station is on Attiki's Square. The train station in Chalkis is approximately 30 km away from the TEI campus. The easiest way to get there is by taxi.

You can get special services and information for people with special needs is at the telephone number: +30 210 5298838. For general information visit the Hellenic Railway Organisation (OSE) website at: <u>http://www.osenet.gr/</u>

# By bus

City buses from the city centre to TEI run every 15 minutes. They are labelled with a sign reading <<TEI >>. To get on a city bus you will need to buy a ticket from a mini market or small kiosk.

Your student pass ID will provide you with a 25% discount everywhere including traveling by boats.

#### By taxi

Taxis from the city center to the TEI will cost approximately 15 Euros. There is an extra fee on taxi rides for luggage, at Christmas and Easter holidays and at night time after midnight.

#### Hiring a car or motorcycle

To hire a car or motorbike in Greece you are required to have a full driving licence. Car hire is safer, and more practical than that of a motorbike. The longer the period you rent a car or motorbike, the cheaper the rental price. Riding a motorbike in Greek roads can be quite dangerous mostly because the roads are very slippery and hazardous when the weather is wet or snowy so helmets are strongly recommended although they are not legally.

The IRO of TEI strongly advises students to avoid hiring a motorbike during their stay in Greece for their own safety. However, if they finally do, they should always wear a helmet while riding or their seatbelt while driving.

By car

Map of the road network in the area



# **3. Assistance Departments**

The TEI and Erasmus students are supported during their studies by the following departments:

# International Relations Office (IRO)

The International Relations Office (I.R.O.) of TEI of Chalkis provides information on European and other International Programmes and deals with incoming and outgoing students. Upon arrival at the T.E.I. all international students are advised to contact the International Relations Office in the TEI where they can find helpful information and service with regard to their accommodation, financial or study issues.

**Ms Marianna Bompa** the administarive secretary of the International Relations Office (I.R.O.) of TEI of Halkis will be able to help you.

Office Hours: Tuesday, Wednesday and Friday, 12:00pm-14:00pm.

# The department of Physical Education

The department of Physical Education in TEI manpowered with 6 gymnasts specialised in a variety of athletic activities encourages students to participate in team sports like football, basketball, tennis, volleyball, swimming, water polo track sports, mountain skiing and mountain climbing on Dirfis mountain, which is situated approximately 20 km away from the TEI campus. Moreover, there will be availability in other leisure activities like aerobics or Greek folk dances.

Finally, for all you *keep fit* enthusiasts there is a fully equipped gym situated near the TEI, at the entrance of the town of Psahna where the ERASMUS students of TEI can have access during specific hours of the day. The gym normally closes at 9 pm.

# **IMPORTANT NOTICE:**

Prior to their enrolment at the gym students are required to visit the TEI medical office or the medical Centre at the town of Psahna for a routine check up. For further information contact the deartment's head, Mr Antony Prionas at

#### Office Phone No: +30 2228 099562

# The Library

The new library hosts a broad collection of more than 4.000 academic textbooks journals on different academic disciplines aiming to cover as many needs as possible of all the members in the academic community of TEI. Most bibliographical sources are in Greek and English languages.

TEI textbooks and module notes are distributed to all students free of charge. Students can get their notes for a particular module from the Photocopying Room, located at the back of the library, provided that they have been registered in their tutor's relevant attendance list which is usually forwarded to the Photocopying Assistant prior to the distribution of the module notes.

Book loans for the library members last for up to **15 days** after relevant consultation with the loan desk assistant.

The Library can also be used as a study area with ample space to relax and concentrate on your study for a few hours.

#### Computer Services

At the library entrance a computer room is available for use by all students doing research or writing up their coursework.

The TEI Library provides authorized access for all students to the websites of the following organizations:

#### • The Greek Research and Technology Network (GRNET): <u>http://www.grnet.gr</u>

GRNETsupports the research and development of Information and Communication Technologies (ICT) within Greece and internationally, through the provision of its high-capacity **networking** and **grid computing** infrastructure, the strengthening of **e-Learning & e-Business** practices, as well as the participation in **international research and education** efforts.

#### • E-business Forum, <u>http://www.ebusinessforum.gr</u>

E-business Forum is a standing State consultation mechanism with the business and academic community, social and professional agencies, aiming at producing views and proposals to strengthen business competitiveness in the new digital market and support electronic entrepreneurship.

OCLC First Search, <u>http://firstsearch.oclc.org/</u>

FirstSearch is an online service that gives library professionals and end users access to a rich collection of reference databases. With FirstSearch, materials in your library's collection are highlighted in results from searches in dozens of leading databases.

# • The National Documentation Centre (EKT), http://www.ekt.gr/

The National Documentation Centre (EKT) is the backbone organisation of the national infrastructure for scientific documentation, online information and support services on research, science and technology. **Web of Science**, <u>http://wos.ekt.gr/</u>

#### • Heal-Link, http://www.heal-link.gr/

Heal-Link is an electronic library of electronic journals and books and giving access to bibliographic databases.

# International Educational Programmes

The T.E.I of Chalkis participates actively in European inter-University and University-Industry exchange and training programs such as ERASMUS and LEONARDO. Through these E.U. sponsored programmes, students and academics have the opportunity to exchange educational, cultural and social experiences. The <u>International Relations Office</u> of the T.E.I of Halkida is the coordinator of this activity on a full-time basis.

# 4.Facilities and services for students with disabilities

The premises of TEI of Chalkis are fully accessible to students with kinetic disabilities.

# 5. Money

The currency of Greece is the Euro since January 1st 2002.

Chalkis has a national network of cash machines (ATMs) Automatic Teller Machines, which allows up to 700 Euro per day. You will find ATMs located at banks, and large supermarkets. The nearest ATMs available to students would be the ATM in the area of the TEI.

There are several banks in Chalkis and their branches are located in the centre of the city. In the town of Psahna there are branches of the National Bank and the Agricultural bank of Greece. There is usually a commission charge for each transaction that you carry out. It may be better to withdraw enough money for the week instead of each day, to save yourself money.

Erasmus students can open a current account in a Greek bank if the wish. To do this they will need to bring identification and relevant documents. The advantage of this is that they can pay in money and it will take less time to clear. Other than this their home bank account will suffice.

# 6. Estimate of Living Expenses for (ECTS) students in Greece

An average estimation of the living expenses for an ERASMUS student in the TEI of Halkida would give us the amount of approximately 600 Euros per month.

This can be itemised as follows:

Accommodation	200 Euros
Home economics (self-catered)	150 Euros
Traveling	100 Euros
Eating	150 Euros

# 7. Health Services and Insurance

Every ERASMUS student is advised to be insured in their home country before they travel to Greece. For this they need to fill in the **E128 Form** at the Health Insurance Service sector of their country.

ERASMUS students who are citizens of the European Union are also entitled for free medical care and social security in Greece. To have free access to this service upon arrival in Greece they need to submit the E128 form of I.K.A. ((Public Institution of Social Insurance in Greece). For further information you can visit the relevant website at: <u>http://www.ika.gr/en/home.cfm</u>

**IKA Open Line:** 5200555-64 (10 lines) and 184 **Public Information Bureau in Athens**: +30 210 5234.211-5230.709

For emergencies ERASMUS students can have medical treatment at the

Medical Office in the TEI where a trained nurse can offer help for minor medical incidents,

Medical Centre of Psahna, which is only 1 km away from the TEI campus. Halkida Hospital in the city of Halkida.

# 8. Accommodation for Erasmus students

The TEI of Chalkis offers accommodation on campus to a limited number of Erasmus students. Students can also find accommodation outside TEI in some of the local hotels that have a cooperation with the TEI and offer discounted prices. The average price for students would be around 40 Euros per day for a single-bed room with breakfast and one meal included. From the TEI campus towards Halkis, the beach stretches to around 5 km and runs parallel to the motorway leading into the town of Nea Artaki, where there are plenty of flats and studios to let. It is an ideal location situated only 3-4 kilometres west of Psahna near the TEI. Most of them are one or two-bedroom flats, with a kitchen, bathroom, and a balcony.

Other nearby areas where ERASMUS students could find a place to rent is the town of Psahna and the village of Politika, situated outside Psahna and Halkis.

Another available option, although more expensive and less convenient one is Athens which is about 100 km away from Psahna. In any case, it is recommended that students should stay as close to the campus as possible for their own convenience.

Anticipated rent prices are around 200 Euros per month for a one-bedroom flat.

As soon as accommodation arrangements have been completed the student is advised to keep the flat owner's contact details in case of emergency.

#### **IMPORTANT NOTICE:**

It is advisable that International Relations Office (IRO) of TEI is also informed about the student's new contact details.

# 9. Communication on Campus

#### Telephone services

There are several telephone booths within the TEI premises. To use those telephones ERASMUS students will need to buy a phone card from the kiosk inside TEI. The cards cost around 3-6 Euros.

#### Internet

Students can use the computer facilities in the TEI for e-mail contact.

#### Mail

All post going from the TEI campus is airmailed. For a normal size envelope to reach for example the UK will take 4-5 working days. Stamps can be bought from the kiosk inside TEI. There is a post box located in campus.

# **10. Other Useful Information**

On this page ECTS students can find some helpful information aimed to make their stay in Greece and especially at the campus of the TEI of Chalkis more pleasant and comfortable.

#### Phone Calls/Internet

- Phone Calls are cheaper on Saturdays and Sundays and after 10 in the evenings.
- Use MTNSMS.COM to send and receive text messages. This way you are able to keep in contact with friends and family for free.
- There are three Internet Cafes in the town of Psahna.

#### Taxis

Taxis will charge 1,5 Euro more if you phone, as opposed to flagging one down in the street.

#### Shops/Restaurants

- On Bank holidays, and Easter time many shops will be shut. Buses and taxis are also reduced.
- Shops shut for an afternoon break between 2pm and 6pm approx. Most shops are closed on Sunday - tourist shops are an exception. In villages shops are open longer hours and often all day without a break.
- Cafes and restaurants are open for much longer hours during the week and on Sundays. On Sunday you can find many items available at street kiosks (ask for what you need, they often have it hidden amongst the myriad items they sell).
- If you live in an apartment or flat without a cooker then you may have your food cooked at nearby bakery. They will charge you a small amount of money to cook the food for you.

#### Laundrette

The cheapest Laundrette in the area is a 1km walk down from the T.E.I towards the town of Psahna.

#### Pharmacies

There are 8 **Pharmacies/Chemist's shops** in Psahna open daily– every pharmacy has a notice on the shop window showing which are open out of normal hours (& where) - this works on a rota system.

Library

The public library of Psahna is open on week days and is a nice place for someone to spend there some time in quiet.

#### Currency exchanges

For currency exchanges banks are open from 8.00 to 14.30pm Monday to Friday.

Currency can also be exchanged at the central post office (from 8.00am to 7.00pm on week days except from the weekends).

Numerous ATM machines take Visa (the most frequently available), Mastercard and other cash or credit cards.

#### At the beach

Be careful when walking in the sea as rocks tend to be scattered with sea urchins and you may hurt yourself.

Do not swim when there is a red flag on the beach. Some beaches have very strong undercurrents.

# **11. Useful Telephone Numbers**

# In Emergency

Tourist Police	171/ 22210 77777
Fire Brigade	199/ 22210 74244
Traveling	1440
Food poisoning centre	210 7793777
Local Police Stations	
Deline Otalian Deckard	22210 22100
<ul> <li>Police Station, Psanna:</li> <li>Police Station, Halkida:</li> </ul>	22280 23333
Chalkis Hospital	222210 21901-10
Medical Centre Nea Artaki	22210 42222

# Municipalities

Messapion	22280 24334-22456
Dirfyon	22210-51220
N. Artaki	22210-42122
Chalkida	22210-22314

# Port Authorities

Halkis

22210-28888

Eretria

22290-62201

Airlines

TRAFFIC LINES

Olympic Airways (Athens)

210 9666666

Customer Information for Rail Services (Chalkis)

Train lines

22210 22386

Customer Information for Coach Services (Athens)

Coaches from (Athens)	210-8322997
Coaches from (Halkida)	22210 22640
Local buses (Halkida)	22210 22031

Archaeological Sites

### MUSEUMS

Archaeological of Chalkida	22210-25131
Folkrore of Chalkida	22210-21817

Friends of Skarimpas	22210-25271
Archaeological of Eretria	22290-62206
Of modern art of Eretria	22290-62206
Of Natural history of Istiaia	22260-52224
Folklore of Agia Anna	22270-61581
Folklore of Limni	22270-31335
Liaskos' Historical and War	22280-91296
Folklore of Kymi	22220-22011
Archaeological of Karystos	22240-22472
Folklore of Karystos	22240-22115
Archaeological of Skyros	22220-91327

# Hotels

# HALKIDA (POSTAL CODE 34100) ( AREA PHONE CODE 22210)

HOTELS/APARTMENT S	ADDRESS	CA T	ROOM S	BED S	OPEN	TELEPHONES/FAX/EMAIL
		===		====	====== =	
JOHN'S(HTL)	9 Angeli Goviou St.	В	57	98	Jan- Dec	22210 24996 FAX 24996
HARA(HTL)	21 L. Karoni St.	С	51	80	Jan- Dec	22210 25541 - 2 / 76305 FAX 76309
KENTRIKON(HTL)	5 Angeli	С	20	35	Jan-	22210 22375 / 27260 FAX 62849

	Goviou St.				Dec	hotel_kentrikon@hotmail.co m
КҮМАТА	1 Liaska St.	Е	8	16	Jan- Dec	22210 21317
LUCY(HTL)	10 L. Voudouri St.	A	92	156	Jan- Dec	22210 23831 FAX 22051
MORFEUS	3 Possidono s St.	D	24	46	Jan- Dec	22210 24703
PALIRIA(HTL)	2 Venizelou Ave.	В	110	200	Jan- Dec	22210 28001 - 6 FAX 81959

\*R.T.L = Rooms To Let APTM. = Apartments HTL = Hotels BGL = Bangulows

# 12. APPENDIX

# The Centre of Modern Languages in TEI of Chalkis

The Centre of Modern Languages in TEI of Chalkis offers specialized courses in three foreign languages including English, French, and German. The department's academic staff members work to define current and future communication needs of the TEI students and help them to build the required capacity to meet those needs in their respective professional and social contexts of living. In particular, the English language courses are designed on the basis of the people centric approach followed in the ESP - English for Specific Purposes teaching/learning methodology. The specialised English language courses for the TEI students have been designed on the guidelines of the "Common European Framework of Reference for Languages" which was constituted in 2001 and amended in the follow up report entitled "EU Action Plan 2004-2006 - Promoting Language Learning and Linguistic Diversity".

According to this framework the main learning aims of the EU policy are:

- Expansion of benefits through life-long foreign language learning to all citizens
- Improvement of foreign language teaching methods and
- <sup>~</sup> Development of a friendlier environment for languages.
- <sup>~</sup> Building language-friendly communities

Following the CEF framework the mission of the Centre of Modern Languages in TEI of Chalkis is

... To contribute to the general education, the personal enrichment and fulfillment, of students in all disciplines and through research, collaborations, consultations, and projects, to improve the students' ability to understand and communicate with peoples from around the world and to manage the unprecedented flow of information resulting from globalization.

The process and methodology of teaching English for specific purposes in TEI of Chalkis involves the following fundamental items:

- 1. A learner- and learning-centred approach a move from teaching to learning
- 2. A communicative and task-based approach with authentic communication tasks and learning tasks
- 3. Emphasis on developing language skills and strategies
- 4. Emphasis on learning to learn, encouraging creativity
- 5. **ESP in higher classes** better preparation for work or study tasks
- 6. More intensive use of the modern language in the classroom developing language awareness
- 7. Variety in working methods
- 8. Use of information technology, multimedia, E-mail etc.
- 9. Encouraging learner autonomy, self-assessment, cross-cultural awareness
- 10. **Project work** (not only traditional tests)

Beyond the semester written exams the students of foreign languages are assessed on their academic writing, speaking, listening and reading skills regularly.

The Erasmus Facilitator in the Centre of Foreign Languages, TEI of Chalkis is Lefki Papacharalambous Office Phone/Fax Number: +30 2228 99562 E-mail: lefkipapacharalampous@teihal.gr Office Hours: Monday and Tuesday, 10am-2pm.

# Common European Framework of Reference for Languages

		LEVEL CEF1								
		A1	A2	B1	B2	C1	C2			
<b>MPREHENSION</b>	Listening	<ul> <li>The learner is able to understand:</li> <li>Basic words and very ordinary expressions related to the learner's personality, family and immediate environment, provided that his/her fellow converser speaks slowly and clearly.</li> </ul>	<ul> <li>The learner is able to understand:</li> <li>Expressions not from a text and words very commonly used and concern the learner's personality, family life, purchases, job or his/her immediate environment.</li> <li>The meaning of a simple, clear and short message.</li> </ul>	<ul> <li>The learner is able to understand:</li> <li>The main points of a conversation provided that the language in use is simple and comprehensible and the discussion topics are familiar (for example: work, school, daily activities, etc).</li> <li>The core topic of radio and TV programmes, if that is of interest to the learner and the fellow speakers talk slowly and clearly.</li> </ul>	<ul> <li>The learner is able to understand:</li> <li>Lectures with complicated argumentation, if the topic is relevantly familiar.</li> <li>The greatest part of TV news programmes and documentaries.</li> <li>Most of the cinema films if the language is colloquial.</li> </ul>	<ul> <li>The learner is able to understand:</li> <li>A long discussion, even if it is not well structured and the ideas are not clearly articulated.</li> <li>TV programmes and cinema films without particular effort.</li> </ul>	<ul> <li>The learner is able to understand:</li> <li>The oral speech with no difficulty either in conditions of direct interaction or via mass communication media even when the fellow conversers talk fast, provided that there is adequate time for the learner to get familiar with a particular manner of speaking.</li> </ul>			
0	Reading	<ul> <li>The learner is able to understand:</li> <li>Very simple words and expressions (e.g. those included in ads, posters and advertising leaflets).</li> </ul>	<ul> <li>The learner is able to understand:</li> <li>A very simple and short text.</li> <li>Summarized texts (as in, classified ads αγγελίες, advertising leaflets, restaurant menus, printed timetables of means of transport etc) and find a specific piece of information in those.</li> <li>A short and simple personal letter.</li> </ul>	<ul> <li>The learner is able to understand:</li> <li>Texts written in informal language or the language which is relevant to his/her job expertise.</li> <li>The description of an incident or the expression of feelings and wishes in a personal letter.</li> </ul>	<ul> <li>The learner is able to understand:</li> <li>Articles and interviews expressing personal perceptions and views and</li> <li>Contemporary literature excerpts in prose.</li> </ul>	<ul> <li>The learner is able to understand:</li> <li>Literary or not, sophisticated and lengthy excerpts and is able to identify the differences in the writing style.</li> <li>Specialized articles and lengthy technical guidelines even if those are related to the learner's job specialty.</li> </ul>	<ul> <li><u>The learner is able to</u> <u>understand and probe</u> <u>deeply without effort in:</u></li> <li>Every type of text (e.g. a manual, a specialized article, or a piece of literary work).</li> </ul>			
WRITTEN SPEECH	Writing	<ul> <li>The learner is able to write:</li> <li>On a post card a short message in simple words (e.g. greetings to someone during their holidays).</li> <li>And complete his/her personal details (name, nationality, address) on a form (e.g. a hotel reservation form).</li> </ul>	<ul> <li><u>The learner is able to</u> <u>write:</u></li> <li>Notes and messages in a simple and abbreviated style.</li> <li>A particularly personal letter (e.g. to express his/her thanks to someone).</li> </ul>	<ul> <li><u>The learner is able to</u> <u>write:</u></li> <li>A simple structured essay on familiar topics or topics of personal interest.</li> <li>Personal letters to narrate experiences and impressions.</li> </ul>	<ul> <li><u>The learner is able to</u> <u>write:</u></li> <li>A clear and detailed essay on a broad variety of topics relevant to his/her interests.</li> <li>A study or a report, transferring a piece of information or presenting an argument, which agrees or disagrees with a particular view.</li> <li>Informal or formal letters which describe in subtle colors personal incidents and experiences.</li> </ul>	<ul> <li><u>The learner is able to</u> <u>write:</u></li> <li>And express him/her self developing their views in a clear and well structured essay.</li> <li>A letter, a thesis, a report in order to develop a complex topic and point out its most important points.</li> <li>Adopting a style attuned to the needs of his/her speech making approach.</li> </ul>	<ul> <li><u>The learner is able to</u> <u>write:</u></li> <li>A clear essay with a line of reasoning and style adjusted to the settings.</li> <li>By composing letters, reports or sophisticated articles with a concise structure enabling the reader to understand and memorize the main points.</li> <li>And present in a summarized and critical manner a professional report or a literary piece of work.</li> </ul>			

<sup>1</sup> CEF (Common European Framework of Reference for Languages)

ORAL SPEECH	Verbal Interaction (discussion, conversation)	<ul> <li>The learner is able to converse:</li> <li>In a simple manner, provided that his/her fellow converser(s) will repeat or rephrase their sentences more slowly and will help the learner to express whatever he/she wants to say.</li> <li>By asking simple questions on familiar or of first priority subjects and giving relevant answers.</li> </ul>	<ul> <li><u>The learner is able to</u> <u>converse:</u></li> <li>In routine situations in which the exchange of simple information on common activities and topics is required.</li> <li>In very short conversations even if he/she is not able to understand at an advanced level in order to attend a conversation.</li> </ul>	<ul> <li><u>The learner is able to</u> <u>converse:</u></li> <li>And cope verbally in most situations that someone is likely to come across when traveling abroad.</li> <li>By taking part, with no previous preparation in a conversation on familiar topics or of personal interest related to daily routines (e.g. family life, personal activities, professional life and traveling, current</li> </ul>	<ul> <li>The learner is able to converse:</li> <li>In a spontaneous and comfortable manner, so that the conversation can run fluently.</li> <li>By taking active part in a discussion under ordinary circumstances presenting and defending his/her views.</li> </ul>	The learner is able to converse:         • In a spontaneous and comfortable manner in an uninterrupted speech without searching for the appropriate words.         • Using the language effortlessly and efficiently in social and professional relationships.         • Expressing his/her ideas and views precisely and connecting his/her interventions with	The learner is able to converse:           • Taking part effortlessly in every conversation and being comfortable with idiomatic and colloquial expressions.           • Expressing fluently and accurately the subtle variations of meanings.           • Being able to cope with a conceptual complexity in a way that will not become obvious to his/her fellow converser.
				professional life and traveling, current issues).		connecting his/her interventions with those of his/her fellow-conversers.	obvious to his/her fellow converser.

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