APPLIED MATHEMATICS I

1. GENERAL

SCHOOL	ENGINEERING		
ACADEMIC UNIT	DEPARTMENT OF CIVIL ENGINEERING		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	40101	**SEMESTER**	1st
COURSE TITLE	APPLIED MATHEMATICS I		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures	4	6
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	General background
PREREQUISITE COURSES:	There are no prerequisite courses.However, students must possess the relevant knowledge of High School Mathematics.
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes (in English)
COURSE WEBSITE (URL)	https://eclass.uop.gr/courses/CIVIL101/

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The course is the basic introductory course in Mathematics.It aims to introduce students to basic concepts of both Linear Algebra and Calculus of one variable.The knowledge covered is necessary for the Mathematics courses that are taught in the next semesters, but also for many specialty courses of Civil Engineering.

Upon successful completion of the course, students will be able to:

- Effectively use Linear Algebra and Calculus of one variable in subsequent courses of the curriculum.
- Do mathematical modeling of various problems of the Civil Engineer, in which concepts of the above sections of Mathematics are used.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology	*Project planning and management*
Adapting to new situations	*Respect for difference and multiculturalism*
Decision-making	*Respect for the natural environment*
Working independently	*Showing social, professional and ethical responsibility and sensitivity to gender issues*
Team work	*Criticism and self-criticism*
Working in an international environment	*Production of free, creative and inductive thinking*
Working in an interdisciplinary environment	*……*
Production of new research ideas	*Others…*
	…….

- Working idependently
- Team work

3. SYLLABUS

1. LinearAlgebra: Matrices, determinants and linear systems. Vectors in$\mathbb{R}^2$ and$\mathbb{R}^3$, inner and cross product. Basic concepts and operations of complex numbers, polar representation. Eigenvalues and eigenvectors, diagonalisation of matrices.
2. Calculus of one variable:Inverse trigonometric and hyperbolic functions. Definition and applications of the derivative. Sequences and arithmetic series, power series and Taylor expansion. Definition and properties of the indefinite integral, basic methods of integration. Definition and applications of the definite integral.Infinite and improper integrals.

4. TEACHING and LEARNING METHODS - EVALUATION

<table>
<tr><td>DELIVERY
Face-to-face, Distance learning, etc.</td><td>Face-to-face</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
Use of ICT in teaching, laboratory education, communication with students</td><td>Support of the learning process through the e-class platform</td></tr>
<tr><td>TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</td><td>
<table>
<tr><th>Activity</th><th>Semester workload</th></tr>
<tr><td>Lectures</td><td>52</td></tr>
<tr><td>Final exams</td><td>3</td></tr>
<tr><td>Personal study</td><td>95</td></tr>
<tr><td></td><td></td></tr>
<tr><td>Course total</td><td>150</td></tr>
</table>
</td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</td><td>Written examination that includes problem solving</td></tr>
</table>

5. ATTACHED BIBLIOGRAPHY

1. Ν. Μυλωνάς, Χ. Σχοινάς, Γ. Παπασχοινόπουλος, «Λογισμός Συναρτήσεων μιας Μεταβλητής και Γραμμική Άλγεβρα». Εκδόσεις Α. Τζιόλα & Υιοί Α.Ε. (2017).
2. Μ. Φιλιππάκης, «Εφαρμοσμένη Ανάλυση και Στοιχεία Γραμμικής Άλγεβρας». Εκδότης: Τσότρας Α. Αθανάσιος (2017).
3. Θ. Ρασσιάς, «Μαθηματικά Ι». Εκδότης: Τσότρας Α. Αθανάσιος (2017).
4. J. Hass, C. Heil, M. D. Weir, «Thomas Απειροστικός Λογισμός». Πανεπιστημιακές Εκδόσεις Κρήτης (2018).

APPLIED PHYSICS

1. GENERAL

SCHOOL	SCHOOL OF ENGINEERING		
ACADEMIC UNIT	DEPARTMENT OF CIVIL ENGINEERING		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	40102	**SEMESTER**	1st
COURSE TITLE	APPLIED PHYSICS		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS (ECTS)**
Lectures	4 hours/week	5
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	General background
PREREQUISITE COURSES:	No prerequisite courses are need but the students should attended in previous semesters' courses in Physics and Mathematics
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	YES (In English)
COURSE WEBSITE (URL)	YES in the Open eClass platform (Asynchronous e Learning platform).

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Upon successful completion of this course, the students should be able to comprehend and calculate:

- Use of fandamental concept of physics in civil enginnering applications
- Apply of physical theories in engineering problems

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology	*Project planning and management*
Adapting to new situations	*Respect for difference and multiculturalism*
Decision-making	*Respect for the natural environment*
Working independently	*Showing social, professional and ethical responsibility and sensitivity to gender issues*
Team work	*Criticism and self-criticism*
Working in an international environment	*Production of free, creative and inductive thinking*
Working in an interdisciplinary environment	*……*
Production of new research ideas	*Others… …….*

- . Working as a team in projects related to construction engineering
- Creation of new ideas in problems of civil engineering
- Ability to lead the scientific group for the study and construction of small and/or small projects
- Working by himself in engineering projects

3. SYLLABUS

- Introduction
- The description of motion-kimematics
- Work and energy concepts, momentum
- Motion and force: Dynamics
- Circular and rotational motion: Gravitation
- Bodies in equilibrium-Static equilibrium-Elasticity
- Momentum in energy
- Fluids
- Applications of kinetic energy
- Heat
- The first and second law of thermodynamics
- Vibrations and waves

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Lectures in the class using the black board and/or computer techniques e.g Power Point with the use of video projector. The Laboratory are taking place at the Strength of Materials Laboratory.
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of the Information and Communication Technologies (ICT) in Teaching.Support of the learning process through the electronic e-class platform.
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS*	

Activity	***Semester workload***
Attendance of Lectures (4 hours x 13 weeks)	52
Participation in optional practice exercises that are given in the classroom and focus on Civil Engineering applications	52
Independent Study	74
Course total	*178*
(25 hours workload per credit)	***(5ECTS x35.6) = 178***

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	The evaluation is done: 70% of the final grade from the final examination, 15% from homework and 15% from midterms)

5. ATTACHED BIBLIOGRAPHY

1. Giancoli D., Physics: Principles with Applications 7th edition, Pearson 2018
2. Resnick R., and Halliday D., Physics, volume I, John Wiley 1972
3. Serway R., Physics for Scientists and Engineers
4. Knight R., Physics, Vol. Ia, Pearson 2004

HISTORY OF CONSTRUCTIONS

1. GENERAL

SCHOOL	ENGINEERING		
ACADEMIC UNIT	CIVIL ENGINEERING		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	40103	**SEMESTER**	1st
COURSE TITLE	HISTORY OF CONSTRUCTIONS		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
	4	5
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	general background
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	YES (ENGLISH)
COURSE WEBSITE (URL)	

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The examined issues of the history of architecture and urban planning with reference to representative samples, their creators, their new forms, their innovations, functional elements, materials and structural methods will lead, through the memory of places and people, to respecting and preserving the architectural tradition. They will also contribute to the better design of modern architecture, to the better treatment of the old-new relationship and to creative proposals for new uses.

Upon successful completion of the course the student will be able to:

- Examine the historical and social context in which the architecture was developed.
- Examine the architecture, forms and types, materials and methods of construction of buildings, the role and work of the architect, engineer and anonymous craftsman.
- Describe and analyze the most important architectural monuments and monumental ensembles.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology	*Project planning and management*
Adapting to new situations	*Respect for difference and multiculturalism*
Decision-making	*Respect for the natural environment*
Working independently	*Showing social, professional and ethical responsibility and sensitivity to gender issues*
Team work	*Criticism and self-criticism*
Working in an international environment	*Production of free, creative and inductive thinking*
Working in an interdisciplinary environment	*……*
Production of new research ideas	*Others…*
	…….

Autonomous work

Group work

3. SYLLABUS

Introduction to the history of architecture. Brief reference to Egyptian Architecture and Architecture in West Asia until the 4th century BC. Architecture in Greece during prehistoric times (Minoan Crete, Mycenaean Greece) Architecture in Greece from the 6th century BC. to the 4th century BC. and in the Hellenistic period. Special purpose buildings in ancient Greek architecture. Roman Architecture. History of art in the architecture of the above periods.

Introduction to Christian Art and Architecture. Christian monuments until 312 AD Architecture from 312 AD until the time of Justinian. Architecture in the years of Justinian. Architecture in Byzantium. Romanesque Architecture, 11th and 12th Century in Western Europe. Gothic Architecture (generalities). Renaissance architecture (generalities), Baroque, Rococo in Italy and the rest of Europe. The return to Classicism (Neoclassicism in Europe). Architecture in Europe during the 19th and 20th centuries. Modern movement of Architecture. History of art in the architecture of the above periods.

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	In classroom
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Yes

TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS

Activity	***Semester workload***
Lectures	25
Practice exercises that focus on the application of methodologies and analysis of studies in smaller groups of students	25
Group work on a study	50
Course total	***100***

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	i. Written final examination ii. Presentation of group work

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Λάββας Γ., Επίτομη Ιστορία της Αρχιτεκτονικής, [ΦΕΚ 397/Τεύχ. Β΄/ 28-3-2005], Εκδόσεις UNIVERSITY STUDIO PRESS, Κωδ. 2000 235 477.

Μπούρας Χ., Μαθήματα Ιστορίας της Αρχιτεκτονικής, τ. πρώτος, Αθήνα 1999, [ΦΕΚ 478/Τεύχ. Β΄/2005], Εκδόσεις Συμμετρία.

Μπούρας Χ., Ιστορία Αρχιτεκτονικής, Δεύτερος τόμος, Αθήνα 1994, [ΦΕΚ 346/Τεύχ. Β΄/17-3-2005], Εκδόσεις Μέλισσα, ISBN 960-204-0238.

Μπούρας Χ., Βυζαντινή και Μεταβυζαντινή Αρχιτεκτονική στην Ελλάδα, Εκδόσεις Μέλισσα, ISBN 960-204-229-Χ.

Norwich John General editor μτφρ. Φ. Κανδύλης, Αρχιτεκτονικοί θησαυροί της Γης, Εκδόσεις Αρσενίδης.

Φυρνώ-Τζόρνταν Φ., Ιστορία της Αρχιτεκτονικής, Αθήνα 1981, εκδόσεις Υποδομή, ISBN: 9789607183286.

Γκιολές Ν., Βυζαντινή Ναοδομία (600-1204), Αθήνα 1987, Εκδόσεις Καρδαμίτσας, ISBN 960-726-263-8.

Γούναρης Γ. Εισαγωγή στην Παλαιοχριστιανική Αρχαιολογία, 2002,
[ΦΕΚ 1315/Τεύχ. Β΄/20-9-2005], Εκδόσεις UNIVERSITY STUDIO PRESS.

Κόρατς Β. - Σούπουτ Μ., Βυζάντιο. Ιστορία και Αρχιτεκτονική. Αθήνα 2004, Εκδόσεις Καρακώτσογλου, ISBN 960-7927-91-5.

Krautheimer R., μτφρ. Φ. Μαλούχου-Τουφάνο, Παλαιοχριστιανική και Βυζαντινή Αρχιτεκτονική, Αθήνα 1991, Εκδόσεις Μορφωτικό Ίδρυμα Εθν.Τραπέζης, ISBN 960-250-012-3.

TECHNICAL DRAWING I – COMPUTER-AIDED DESIGN I

6. GENERAL

SCHOOL	ENGINEERING		
ACADEMIC UNIT	CIVIL ENGINEERING		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	40104	**SEMESTER**	**1st**
COURSE TITLE	TECHNICAL DRAWING I – COMPUTER-AIDED DESIGN I		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
	2 (Theory)	2+2+2=6
	3+2=5 (Laboratory)	
	Total hours 7	
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	Skill development course
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes, in English
COURSE WEBSITE (URL)	

7. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.
Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The course purpose is the correct and accurately design of an object. That is, the exact representation of its dimensions and characteristics according to a clear established and generally accepted design communication code, using design tools and also the design software “autocad”.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology

Adapting to new situations

Decision-making

Working independently

Team work

Working in an international environment

Working in an interdisciplinary environment

Production of new research ideas

Project planning and management

Respect for difference and multiculturalism

Respect for the natural environment

Showing social, professional and ethical responsibility and sensitivity to gender issues

Criticism and self-criticism

Production of free, creative and inductive thinking

……

Others…

…….

Working independently

Project planning and management

8. SYLLABUS

1. Design tools.
2. Types and thickness of lines.
3. Line design.
4. Letter and number design.
5. Design scales.
6. Geometric constructions.
7. Projection of a point, line, level.
8. Vertical projection system.
9. Layout of object's faces.
10. Dimensioning
11. Object section design
12. Axonometric projection of an object.

LABORATORY - COMPUTER-AIDED DESIGN I

Computer aided design I. introduction - Basic computer operating principles. The Autocad interface. Coordinate systems. Entering coordinates and distances. Drawing limits. Drawing units form. Managing drawing files. Drawing Layers. Snap, Grid and Ortho options. Drawing objects options. Properties of drawing objects. Screen management. Basic modify commands. Object handles (Grips). Complex drawing objects. Adding text to drawings. Hatches. Blocks. Dimensions. Measuring lengths and areas. Plotting drawings

9. TEACHING and LEARNING METHODS - EVALUATION

<table>
<tr><td>DELIVERY
Face-to-face, Distance learning, etc.</td><td>Face-to-face</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
Use of ICT in teaching, laboratory education, communication with students</td><td>Use of ICT in teaching</td></tr>
<tr><td>TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</td><td>
<table>
<tr><th>Activity</th><th colspan="2">Semester workload</th></tr>
<tr><td>Lectures</td><td colspan="2">25</td></tr>
<tr><td></td><td>Hand design</td><td>Autocad design</td></tr>
<tr><td>laboratory practice</td><td>60</td><td>40</td></tr>
<tr><td>Indenpendently working</td><td>40</td><td>10</td></tr>
<tr><td></td><td colspan="2"></td></tr>
<tr><td></td><td colspan="2"></td></tr>
<tr><td></td><td colspan="2"></td></tr>
<tr><td></td><td colspan="2"></td></tr>
<tr><td></td><td colspan="2"></td></tr>
<tr><td>Course total</td><td colspan="2">175</td></tr>
</table>
</td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</td><td>THEORY:
Final written exam.
Percentage of participation in the total grade 40%.

LABORATORY: HAND DESIGN:
Final written exam.
Percentage of participation in the total grade 30%.

LABORATORY: COMPUTER-AIDED DESIGN IFinal written exam.

Percentage of participation in the total grade 30%.</td></tr>
</table>

10. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

- Eugene Georgiou "Grammiko sxedio"
- Μαθήματα Τεχνικού Σχεδίου, Τζουβαδάκης Ιωάννης
- ΕΙΣΑΓΩΓΗ ΣΤΟ AUTOCAD 2011, ΓΙΑΝΝΗΣ Θ. ΚΑΠΠΟΣ
- ΕΙΣΑΓΩΓΗ ΣΤΟ AUTOCAD 2012, ΓΙΑΝΝΗΣ Θ. ΚΑΠΠΟΣ
- ΤΕΧΝΙΚΟ ΣΧΕΔΙΟ ΜΕ AUTOCAD, ΣΑΡΑΦΗΣ ΗΛΙΑΣ, ΤΣΕΜΠΕΚΛΗΣ ΣΠΥΡΟΣ, ΚΑΖΑΝΙΔΗΣ ΙΩΑΝΝΗΣ

- Related academic journals:

ENGLISH LANGUAGE - TECHNICAL TERMINOLOGY

1. GENERAL

SCHOOL	SCHOOL OF ENGINEERING		
ACADEMIC UNIT	DEPARTMENT OF CIVIL ENGINEERING		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	40105	**SEMESTER**	1st
COURSE TITLE	ENGLISH LANGUAGE - TECHNICAL TERMINOLOGY		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS (ECTS)**
Lectures	2 hours/week *(LECTURES 2 hours)*	2
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	General knowledge course
PREREQUISITE COURSES:	There are no prerequisite courses, however, the students should have already aquired a desirable at least First Certificate in English level.
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	English
IS THE COURSE OFFERED TO ERASMUS STUDENTS	YES (In English)
COURSE WEBSITE (URL)	YES in the Open eClass platform (Asychronous e Learning platform).

2. LEARNING OUTCOMES

Learning outcomes
The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described. *Consult Appendix A* • *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area* • *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B* • *Guidelines for writing Learning Outcomes*
Upon successful completion of this course, the students should be able to: • To read and understand technical texts in English in the field of Civil Engineering, including technical compositions, reports, the use of relevant bibliography and research papers. • To be able to write a technical text in English, in the field of Civil Engineering, using the relevant technical terminology. • To be able to communicate successfully orally with English speaking colleagues and customers in the field of Civil Engineering.
General Competences
Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology	*Project planning and management*
Adapting to new situations	*Respect for difference and multiculturalism*
Decision-making	*Respect for the natural environment*
Working independently	*Showing social, professional and ethical responsibility and sensitivity to gender issues*
Team work	*Criticism and self-criticism*
Working in an international environment	*Production of free, creative and inductive thinking*
Working in an interdisciplinary environment	……
Production of new research ideas	*Others…* …….

- Working independently.
- Team work.
- Project planning and management
- Working in an international environment.
- Respect for difference and multiculturalism.
- Production of free, creative and inductive thinking.

3. SYLLABUS

The main aim of the subject is the teaching of English for Specific Purposes as well as Teaching English for Academic Purposes (ESP & EAP) relevant to the subject of Civil Engineering. Reading and comprehension of authentic texts, which are selected in accordance with the syllabus of the core courses offered. Skills development with emphasis on oral communication takes place as well as project development and presentations in front of audience, covering topics relevant to the discipline of Civil Engineering. The use of relevant bibliography and research is encouraged. Synthesis of free written form, such as technical text writing, reports, written accounts, descriptions, summary writing, Curriculum Vitae, commercial correspondence, e.t.c. Practice on authentic materials and activities that apt to the cognitive subject of the students and their future work environment.

Study and analysis of authentic texts covering the following topics:

- Physical properties of soils.
- General principles of Soil mechanics
- Footings.
- Reinforced concrete construction.
- Retaining walls .
- Steel.
- Bridges.
- Dams.
- Tunnels.
- Drainage.
- Road construction. Highway cross-section elements. Grading operations.
- Airport planning and design. Athens international airport construction.
- The RION-ANTIRION Bridge.
- Egnatia motorway.

4. TEACHING and LEARNING METHODS - EVALUATION

<table>
<tr><td>DELIVERY
Face-to-face, Distance learning, etc.</td><td>Face-to-face.
Lectures in the class in Power Point with the use of videoprojector.</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
Use of ICT in teaching, laboratory education, communication with students</td><td>Use of the Information and Communication Technologies (ICT) in Teaching.Support of the learning process through the electronic e-class platform.</td></tr>
<tr><td>TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</td><td>
<table>
<tr><th>Activity</th><th>Semester workload</th></tr>
<tr><td>Attendance of Lectures (2 hours x 13 weeks)</td><td>30</td></tr>
<tr><td>Participation in optional practice exercises that are given in the classroom and focus on Civil Engineering applications</td><td>10</td></tr>
<tr><td></td><td></td></tr>
<tr><td>IndependentStudy</td><td>10</td></tr>
<tr><td>Course total</td><td>50</td></tr>
<tr><td>(25 hours workload per credit)</td><td>(2 ECTS x25) = 50</td></tr>
</table>
</td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</td><td>For the theoretical part of the course the evaluation is done:
• With practice exercises. The participation in the final grade is 20%.
• With the final written exam that participates by 80% in the final grade.</td></tr>
</table>

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Effective English for Civil Engineering, Matina Stamison-Atmatzidi, KLIDARITHMOS

TechnikaChronika, Scientific Journal of the TCG

Getting familiar with Technical English. EleniKolethra, Publications NEON TECHNOLOGION

English Terminology in Civil Engineering Infrastructure Works. KyriakiTsoxatziFolina, Publications TEI of Thessaloniki

Business English for future Managers. L. Papaharalambous, I.Pappa. Ion, ELLIN Publications

English-Greek Dictionary of Scientific & Technical terms, Michigan Press

WORLDWIDEWEB

http://www.brantacan.co.uk/bridgeefs.htm

http://en.wikepedia.org/wiki/Forth_Rail_Bridge

http://www.newbaybridge.org/the_bridge?bridgespeak.html

http://en.wikepedia.org/wiki/Cable_Stayed_Bridge

http://en.wikepedia.org/wiki/Civil_Engineering #Structural_ Engineering

http://en.wikepedia.org/wiki/Reinforced _ConcreteConstruction_Engineering

http://en.wikipedia.org/wiki/Tunnels#Construction

www.mbarron.net

www.instruction.greenriver.edu

STATICS

1. GENERAL

SCHOOL	ENGINEERING		
ACADEMIC UNIT	DEPARTMENT OF CIVIL ENGINEERING		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	40106	**SEMESTER**	1st
COURSE TITLE	STATICS		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures	4	6
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	Specialised general knowledge
PREREQUISITE COURSES:	There are no prerequisite courses. Studentsmust have at least basic knowledge of “Mathematics” and “Physics”.
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes (in English)
COURSE WEBSITE (URL)	

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Students after completing the course will have acquired the necessary knowledge to:
• understand the principles of static equilibrium of rigid bodies and how loads are transferred to the rigid body supports.
• to analyze and compose forces acting on a rigid body and to examine the conditions that must be met in order for the body to be in a state of equilibrium under the influence of these forces and to determine the respective forces.
• distinguish when a body is statically determinate and when statically indeterminate and to be able to distinguish the type and function of the various body supports.
• understand the relationship between external loads and internal reactions that develop in a body.
• to deepen the concepts of the free body diagram and internal reactions and to properly apply the basic principles of the free body diagram to determine the areas that suffer the most.
• be able to statically analyze certain bodies and be able to drawbending moment, shear force and axial force diagrams of beams and frames.
• to acquire basic knowledge to understand later the principles of “Strength of Materials” and together with it to develop skills of designinga structure, in order to transfer loads safely both under normal operating conditions of the structure and under conditions of special loading,e.g. earthquake, storms, collisions.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology	*Project planning and management*
Adapting to new situations	*Respect for difference and multiculturalism*
Decision-making	*Respect for the natural environment*
Working independently	*Showing social, professional and ethical responsibility and sensitivity to gender issues*
Team work	*Criticism and self-criticism*
Working in an international environment	*Production of free, creative and inductive thinking*
Working in an interdisciplinary environment	*……*
Production of new research ideas	*Others…*
	…….

Working independently
Project planning

3. SYLLABUS

- The concepts of force and distributed load.
- Principles of composition and analysis of forces, the concept of torque.
- Principles of force equilibrium - central forces, forces at the plane and in space.
- Center of mass.Centroid.Moment of inertia.
- Types of support and degree of static indefiniteness.
- Calculation of reactions in simple bodies.
- Analysis of statically determinate trusses, beams and frames (including Gerber beams).
- Calculation of internal actions and drawingof axial force, shear force and bending momentdiagrams.

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face lectures
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of ICT in some lectures. Support of learning process through e-class electronic platform.
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS*	
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Students will be evaluated in the following ways: •Final exam • Classroom exercises The grade of the final exam will be multiplied by a factor greater than or equal to the unit depending on the student's performance in the exercises. This factor will reach 1.20 for students who excel in the exercises.

Activity	***Semester workload***
Lectures	50
Solving practice exercises in the classroom for the application of methodologies	16
Independent study	84
Course Total (25 hours of workload per ECTS credit)	150

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

- Statics, Beer Ferdinand P., Johnston Russell E., Mazurek F.
- Statics, P. Vouthounis, Vouthouni Andromachi Publications. (in Greek)
- Statistics of the Rigid Body, Th. Georgopoulos, Pavlos Georgopoulos Publications. (in Greek)
- Statics and Strength of Materials, A. Polyzakis, Apostolos Polyzakis Publications. (in Greek)
- Statics and Mechanics of Materials, Hibbeler