COURSE OUTLINE

(1) GENERAL

SCHOOL	ENGINEERING		
ACADEMIC UNIT	INFORMATICS AND COMPUTER ENGINEERING		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE		**SEMESTER**	**6th**
COURSE TITLE	COMPILERS		
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		2	
Tutoring		1	
Laboratory activities		1	
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		4	5
COURSE TYPE general background, special background, specialised general knowledge, skills development	Scientific Area, Skills Development		
PREREQUISITE COURSES:	Computer programming		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No		
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 purpose of the course is to explain the basic structure of a compiler, the phases of the compiler, the
of compilation and the execution environment of the compiled program.
The aim of the course is to provide students with the opportunity to
to complete and synthesize their knowledge of functional and programming languages.
systems, computer organisation, language and automata theory, structures, and the
data structures and programming.
More specifically, the learning objectives of the course are to enable students, after
After completing the course, be able to:

- describe the role of a compiler and distinguish the role of a compiler and the phases of compilation and its differences and relationships with other related software such as the preprocessor, interpreter, debugger, linker, loader, etc.

- describe the grammar of a programming language using regular expressions and production rules, recognize the meaning of grammar for the development of a compiler, describe the importance of grammar for the development of a compiler finite state machines, to recognize their role as finite state machines, to recognize their role and

design syntactic trees,

- describe the operating steps of a downward and an upward syntactic analyzer and how they can be created with the help of the flex and bison meta-tools,
- describe the role of the symbol table and be able to select appropriate structure and organization to create it
- recognize the concept of intermediate code, how to create it, and the ways of optimizing it
- identify the characteristics of a final code and its execution environment
- create regular expressions and production rules for development analysts
- evaluate the laboratory work of their peers by consistently evaluation criteria

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
	Respect for difference and multiculturalism
	Respect for the natural environment
Adapting to new situations	Showing social, professional and ethical responsibility and sensitivity to gender issues
Decision-making	
Working independently	Criticism and self-criticism
Team work	Production of free, creative and inductive thinking
Working in an international environment	……
Working in an interdisciplinary environment	Others…
	…….
Production of new research ideas	

- Adapting to new situations
- Autonomous work
- Exercising criticism and self-criticism
- Promotion of free, creative and deductive thinking

(3) SYLLABUS

The following are taught in the course:

Introduction to translators, basic structure of a compiler, grammars context-independent, regular expressions, finite automata, verbal analysis, word parser generators (Flex), syntactic analysis, rules production rules, fuzzy grammars, predictive cathodic analysis and recursion, upward analysis, syntactic parser generators (Bison), semantic analysis, type checking, generation and optimization of intermediate code and low-level code generation.
In the laboratory part of the course the student is required to design a new programming language and build parts of a compiler for this language.
In this context, the lab deals with:

1. Create a rudimentary environment for running a compiler.
2. Design and implementation of a word parser and automatic recognition through transition table and the verbal analyzer flex generator
3. Design and implementation of syntactic parser and syntax trees through the bison syntactic analyzer generator

(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>The course, both in theory and in laboratory part, is fully supported by the learning technology system of the Department.
Through this:

For the theoretical part, it is posted in the content of the course, the programming and the course agenda, posted announcements are posted for all or sent notices to the whole group or to groups or to individual students, announcements are made to all or to groups or to individual students discussions on topics of common interest, publish all educational material which is constantly updated, old publications are published examination topics are published, students are informed about internet sites with topical content and planning multiple-choice exercises for self-assessment.

For the laboratory part, in addition to the above, is posted the rules and regulations of the laboratory. The system is used in addition for publishing papers and posting answers, for the publication of excellent papers students, for keeping attendance records, and grading and for the examination of the laboratory. For individual needs of the laboratory students use learning resources freely freely available on the internet via links posted in the system documents.</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>26</td></tr>
<tr><td>Tutoring and Laboratory exercises</td><td>26</td></tr>
<tr><td>Writing of papers</td><td>21</td></tr>
<tr><td>Self-study</td><td>52</td></tr>
<tr><td>Course total
(25 hours load per credit hour unit)</td><td>125</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</td><td>In the theoretical part of the course students are assessed during the final written examination which contributes 50% to the grade of the course.

In the tutorial part, students are assessed by a small number of exercises multiple-choice exercises that contribute 10% to the score of the course.

In the laboratory part, students are assessed</td></tr>
</table>

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.	for the remaining 40% of the marks through the the following tests: 1. by a mid-term progress examination (30%) 2. by the evaluation of the paper(s) (30% of the assessment). (60%) 3. from participation in collaborative activities (10% of the workload) In order for a student to have successfully completed the lab, necessary attendance rate is compulsory (at least 80% of the required attendance) and the average of the grade from the progress test and final examination must be 5,0 or higher with a 10 pass mark.

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

- Related academic journals: