COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF ENGINEERING		
ACADEMIC UNIT	DEPARTMENT OF ELECTRONICS ENGINEERING		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	2601004	**SEMESTER**	1
COURSE TITLE	Electric Circuits 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 (ECTS)**
Lectures	4	6
Laboratory	0	
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 Course
PREREQUISITE COURSES:	None
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	YES (in English)
COURSE WEBSITE (URL)	http://electronics.teipir.gr/personalpages/vasiliadis/HLEKTRIKA_KYKLWMATA_I/HL_KYKLWMATA_I.html

(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 possess advanced knowledge, skills and competences in the subject of Electric Circuits that enable them to:

- Sketch or draw DC electric circuits,
- Analyse circuits and compute values for currents and voltages,
- Use computational methods suitable for the solution of electric circuits problems,
- Interpret and check the soundness of computation results,
- Analyse application problems that involve electric circuits and assess the realisability of the solutions,
- Collaborate with others and work in a team for the integrated address (analysis and synthesis) of complex DC electric circuits problems, the assessment of alternative solutions and the decision making required.

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…*
	…….

- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Working independently
- Team work

(3) COURSE CONTENT

Lectures

1. Introduction to the DC electric circuits.
2. Electric components, voltage and current sources.
3. Basic laws of the electric circuits.
4. Circuits' analysis: Mesh-current method I.
5. Circuits' analysis: Mesh-current method II.
6. Circuits' analysis: Fundamental loops method.
7. Circuits' analysis: Node-voltage method.
8. Superposition theorem and applications.
9. Thevenin and Norton theorems and applications.
10. Load matching and maximum power transfer theorem.
11. Millman theorem and applications.
12. Transient response of 1^{st} order linear circuits, time constant.
13. Integrated problems solving.

(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 electronic presentation with multimedia content in class, • Student support through the course webpage and the departmental e-learning platform, • Electronic communication of instructors and students, through the course webpage and by e-mail.
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,*	Lectures, assignments, study.

Activity	***Semester workload (hours)***
Lectures	52

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*	Personal Study for lectures: 52 Homework Assignments: 52 Study and preparation for exam: 24 ***Course Total***: ***180***
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.*	Student evaluation is performed in the language of instruction. Final written exam on all taught material (80%) Homework Assignments turned in during the semester (20%)

(5) ATTACHED BIBLIOGRAPHY

Essential reading

1. Hayt William H., Kemmerly Jack E., Durbin Steven, Engineering Circuits Analysis.
2. Alexander C., Sadiku M., Fundamentals of Electric Circuits.

Recommended Books

1. Drossopoulos, A., DC Electric Circuits, (in Greek)
2. Hatzarakis, G., Electric Circuits, Tziolas Publications (in Greek).
3. Desoer C. A., Basic circuit theory, McGraw Hill.
4. Nilson, J.W. and S. A. Riedel, Electric Circuits, Addison-Wesley.