

COURSE OUTLINE: PRINTED CIRCUIT BOARD FABRICATION LABORATORY

1. GENERAL

SCHOOL	Engineering		
DEPARTMENT	Electrical and Computer Engineering		
LEVEL OF STUDY	Undergraduate		
COURSE UNIT CODE	7.017	SEMESTER	7 th
COURSE TITLE	Printed Circuit Board Fabrication Laboratory		
COURSEWORK BREAKDOWN		TEACHING WEEKLY HOURS	ECTS Credits
Theory (Lectures)		-	-
Tutorial/Exercises		-	-
Laboratory		2	2
TOTAL		2	2
COURSE UNIT TYPE	Specialized knowledge/Skills development		
PREREQUISITES	-		
LANGUAGE OF INSTRUCTION/EXAMS	Greek		
COURSE DELIVERED TO ERASMUS STUDENTS	No		
WEB PAGE (URL)	https://eclass.hmu.gr/courses/ECE192/		

2. LEARNING OUTCOMES

Learning Outcomes
<p>The course aims to equip the student with the necessary knowledge and practical skills for the study, design, construction, verification of proper operation, and documentation of electrical and electronic Printed Circuit Boards (PCB). The course is purely laboratory-based and involves the implementation of a comprehensive project for the development of a printed circuit, through which familiarity with all the above stages is achieved.</p> <p>By attending and successfully completing the course, the student will have acquired knowledge and skills in the following areas:</p> <ul style="list-style-type: none"> ▪ Identification of symbols in electronic and electrical diagrams and finding the specifications and detailed elements of components in books or online. ▪ Ability to use circuit design and PCB design software on the computer. ▪ Analysis, design, implementation of a PCB construction, and formulation of its material specifications. ▪ Development of an integrated PCB in groups with a ready-made design of a small circuit, at a professional level. ▪ Ability to test, evaluate and troubleshoot a PCB construction. ▪ Documentation of work and presentation to a group.
General Skills
<p>The study and successful completion of the course contribute to the development of general skills related to:</p> <ul style="list-style-type: none"> ▪ Research, analysis, and synthesis of data and information, utilizing necessary technologies. ▪ Promotion of free, creative, and inductive thinking. ▪ Bridging theoretical knowledge with practical skills. ▪ Adaptability to new situations. ▪ Decision-making.

3. SYLLABUS

<ul style="list-style-type: none"> ▪ Fundamentals of passive and active component technology ▪ Analysis of parts requirements, part suitability, methods for locating electronic parts in Databooks and online ▪ Device safety elements ▪ Methodology for the design and fabrication of printed circuit boards ▪ Technical skills for electrical / electronic constructions ▪ Use of basic bench tools ▪ Circuit and PCB design software ▪ Presentation of a project and formulation of specifications. ▪ Documentation of a project. Formulation of construction handling sheet, maintenance sheet, and repair sheet.

4. TEACHING METHODS - ASSESSMENT

MODE OF DELIVERY	In-Class Face-to-Face											
USE OF INFORMATION AND COMMUNICATION TECHNOLOGY	<ul style="list-style-type: none"> ▪ Use of ICTs in lecturing ▪ Use of ICTs in laboratory sessions ▪ Use of ICTs for the communication with students via the e-class platform 											
TEACHING ORGANIZATION	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #d9ead3;">Method description/Activity</th> <th style="background-color: #d9ead3;">Semester Workload</th> </tr> </thead> <tbody> <tr> <td>Laboratory sessions</td> <td style="text-align: center;">26</td> </tr> <tr> <td>Project preparation</td> <td style="text-align: center;">22</td> </tr> <tr> <td>Non-guided personal study</td> <td style="text-align: center;">12</td> </tr> <tr> <td style="text-align: center;">Total Hours</td> <td style="text-align: center;">60</td> </tr> </tbody> </table>		Method description/Activity	Semester Workload	Laboratory sessions	26	Project preparation	22	Non-guided personal study	12	Total Hours	60
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ASSESSMENT METHODS	<p>All announcements for the course regulations and complementary reading material are posted on the course web page. The course grade incorporates the following evaluation procedures:</p> <ol style="list-style-type: none"> 1. Final project report (70 %) 2. Project presentation - oral examination (30 %) 											

5. RECOMMENDED BIBLIOGRAPHY

<p><u>-Recommended Bibliography:</u></p> <ul style="list-style-type: none"> ▪ "Printed Circuits Handbook", Clyde F. Coombs JR., McGraw Hill, ISBN 0-07-0127454-9 ▪ "Technologia Ilektronikon exartimaton", A. Karayiannis, Tziola, 2002. <i>(in Greek)</i> ▪ "Technologia Ilektronikon exartimaton - schediasi tipomenon kiklomatou", S. Kirtopoulos, Tziola, 2008. <i>(in Greek)</i>
