

## COURSE OUTLINE

### 1. GENERAL

<b>SCHOOL</b>	ENGINEERING		
<b>DEPARTMENT</b>	PRODUCT AND SYSTEMS DESIGN ENGINEERING		
<b>LEVEL OF STUDIES</b>	Undergraduate		
<b>COURSE CODE</b>	<b>4302</b>	<b>SEMESTER</b>	<b>7<sup>th</sup></b>
<b>COURSE TITLE</b>	<b>Systems Maintenance and Reliability</b>		
<b>INDEPENDENT TEACHING ACTIVITIES</b> <i>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</i>		<b>WEEKLY TEACHING HOURS</b>	<b>CREDITS</b>
Lectures		<b>3</b>	<b>6</b>
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i>			
<b>COURSE TYPE</b> <i>general background, special background, specialised general knowledge, skills development</i>	specialised general knowledge		
<b>PREREQUISITE COURSES:</b>	NONE		
<b>LANGUAGE OF INSTRUCTION and EXAMINATIONS:</b>	GREEK/ENGLISH		
<b>COURSE DELIVERED TO ERASMUS STUDENTS</b>	YES		
<b>MODULE WEB PAGE (URL)</b>	<a href="https://eclass.uowm.gr/">https://eclass.uowm.gr/</a>		

### 2. LEARNING OUTCOMES

<b>Learning outcomes</b>
<p>The aim of the course is to introduce students to modern techniques of reliability and maintenance. The engineer is responsible for the design, construction and operation of systems. Traditionally, the design and implementation of a system concerned with the operation and not the failure of the system. The modern requirements for high security, reliability and quality of technological systems make the relevant reliability studies necessary. Engineers must design, build, and maintain systems with the proper procedures to minimize failure and assess the level of reliability.</p> <p><b>On successful completion of this module the learner will be able to:</b></p> <ol style="list-style-type: none"> <li>1. Knows the basic concepts of maintenance and reliability of a system</li> <li>2. Understands maintenance methods</li> <li>3. Plans the maintenance program</li> <li>4. Analyzes reliability characteristics</li> <li>5. Evaluates the reliability of the system</li> <li>6. Analyzes the risks</li> </ol>
<b>General Skills</b>
<p><b>Upon successful completion of the program students will:</b></p> <ul style="list-style-type: none"> <li>• have the theoretical and practical background on the field of product and systems design engineering and the corresponding profession.</li> <li>• utilize scientific knowledge to understand, analyze and solve problems.</li> <li>• apply a wide range of scientific and technical knowledge concerning the design and development of products and systems.</li> <li>•</li> </ul>

### 3. COURSE CONTENTS

- Concepts of maintenance and reliability,
- Maintenance methods, Corrective, Preventive, Opportunistic and Predictive maintenance,
- Total preventive maintenance (TPM),
- Reliability features,
- Reliability assessment techniques,
- Risk analysis.

### 4. TEACHING METHODS - ASSESSMENT

<b>MODE OF DELIVERY</b>	In class, face to face	
<b>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY</b>	<ul style="list-style-type: none"><li>• Video and slide presentations via projector</li><li>• Support of teaching process via the electronic platform e-class</li><li>• Communication with students.</li></ul>	
<b>TEACHING METHODS</b>	<b>Activity</b>	<b>Semester workload</b>
	Lectures	90
	Non-directed study	60
	Course total	<b>150</b>
<b>ASSESSMENT METHODS</b>	Final written exam which includes: <ul style="list-style-type: none"><li>i. Short-answer questions</li><li>ii. Multiple choice questions</li><li>iii. Problem solving</li></ul>	

### 5. ATTACHED

- Suggested bibliography:

- Ιωάννης Λ. Μπακούρος, Αξιοπιστία και συντήρηση τεχνολογικών συστημάτων (2009) [ISBN 978-960-6706-22-6]
- B.S. Dhillon, Engineering Maintainability: How to Design for Reliability and Easy Maintenance, Elsevier Science & Technology Books
- Dinesh Kumar, John Crocker, J. Knezevic, M. El-Haram, Reliability, Maintenance and Logistic Support. A life cycle approach.