MODULE OUTLINE

1. GENERAL INFORMATION

SCHOOL	School of Science and Technology			
PROGRAM COURSE	Environmental Catalysis for Pollution Abatement and Clean Energy Production			
LEVEL OF STUDY	Post-graduate			
MODULE CODE	KPPB82	**YEAR OF STUDY**	2nd	
MODULE TITLE	Postgraduate Diploma Thesis (PDT)			
INDEPENDENT TEACHING ACTIVITIES *in case credits are awarded for separate components/parts of the course, e.g. in lectures, laboratory exercises, etc. If credits are awarded for the entire course, give the weekly teaching hours and the total credits*			**HOURS**	**CREDITS**
Hours per week: 35 hours x 32 weeks			1120	40 ECTS
MODULE TYPE Compulsory, Optional, Optional mandatory	Compulsory			
PREREQUISITE MODULES:	-			
LANGUAGE OF INSTRUCTION AND EXAMS	GREEK or English			
THE MODULE IS OFFERED TO ERASMUS STUDENTS	No (due to annual duration of the module)			
MODULE WEBSITE (URL)	https://www.eap.gr/en/environmental-catalysis-for-pollution-and-clean-energy-production/topics/#k82 Each module has its own space in the Learning Management System of EAP, with controlled access (use of code) for students and teaching staff. https://study.eap.gr/course/view.php?id=388			

2. LEARNING OUTCOMES

Learning Outcomes
● *The course learning outcomes, specific knowledge, skills and competences of an appropriate (certain) level, which students will acquire upon successful completion of the course, are described in detail. It is necessary to consult:*
Upon successful completion of the PDT, the student will: • have studied in depth a specific topic of the scientific areas that PDT treats • have used his relevant knowledge from his studies and developed his compositional ability • have learned to look for appropriate scientific information through the relevant scientific literature • be able to design a research plan and develop an appropriate methodology for approaching and investigating a topic under study and organize a plan for its implementation • have acquired skill in writing a scientific text • have acquired skill in the organization and oral presentation of a scientific topic

• be able to clearly present his conclusions, as well as the knowledge and reasoning on which they are based, successfully making a comprehensive presentation via ICT, before the three-member examining committee and the public
• be able to describe and document the basic knowledge related to the topic of the thesis
• be able to summarize the existing scientific knowledge and expertise in the subject of the thesis
• be able to combine knowledge to propose solutions to relevant problems or applications
• be able to select appropriate technical/technological approaches and adapt them to the problem to be solved using original thinking
• be able to evaluate the approach/solution he proposes, placing it in a context of comparison with equivalents in the Greek and international literature and commenting on its relative advantages and disadvantages, documenting his opinions and choices

General Competences

Taking into consideration the general competences that students/graduates must acquire (as those are described in the Diploma Supplement and are mentioned below), at which of the following does the course attendance aim?

Search for, analysis and synthesis of data and information by the use of appropriate technologies,
Adapting to new situations
Decision-making
Individual/Independent work
Group/Team work
Working in an international environment
Working in an interdisciplinary environment
Introduction of innovative research
Project planning and management
Respect for diversity and multiculturalism
Environmental awareness
Social, professional and ethical responsibility and sensitivity to gender issues
Critical thinking
Development of free, creative and inductive thinking
……
(Other…….citizenship, spiritual freedom, social awareness, altruism etc.) …….

After completing this module, students must have acquired the following general skills:
- Search for, analysis and synthesis of data and information by the use of appropriate technologies
- Decision-making
- Individual/Independent work
- Project planning and management
- Critical thinking
- Working in an interdisciplinary environment
- Introduction of innovative research
- Development of free, creative and inductive thinking

3. MODULE CONTENT

Aim

The aim of the PDT is to complete the students' knowledge and develop their skills in the processing of independent topics in the Science of Catalysis and its applications in Environmental Protection and Clean Energy Production. The work is carried out based on the student's special interest in a subject, always in consultation with the supervisor and on the condition that the subject is related to the academic subjects of the PDT.

Content

The Diploma Thesis constitutes an individual, self-contained, in-depth scientific and systematic approach to the analysis of a topic and the synthesis of a solution or proposal. It

draws on existing literature and/or original research. The Diploma Thesis has a research, study, development or applied research character and is prepared by each student individually. With the guidance of the supervisor, students are given the opportunity to gain significant experiences from the comprehensive study and in-depth investigation of a distinct subject of specialization and are challenged to develop critical and combinatorial thinking, organization and analysis skills, applying the systematic and scientific approach. Through his research, the student must demonstrate the ability to identify problems and challenges in the specific field, evaluate results and propose alternative solutions or strategies.

Procedure

The student submits a proposed thesis topic title, accompanied by the purpose, methodology and expected results. The program proposal must be approved by the supervising professor before the student begins the work. The student is then in constant contact with the supervisor throughout the preparation of the thesis, with continuous guidance and feedback. At the end, the student submits a comprehensive scientific report, which he defends with an oral presentation (supporting a master's thesis) in public and before a three-member examination committee.

4. TEACHING METHODS - ASSESSMENT

MODES OF DELIVERY *Face-to-face, in-class lecturing, distance teaching and distance learning etc.*	Distance face-to-face communication between the student and the supervisor (teleconferences) in theoretical-bibliographic thesis. Live communication and guidance of the student from the supervisor in the laboratory thesis.
USE OF INFORMATION AND COMMUNICATION TECHNOLOGY *Use of ICT in teaching, Laboratory Education, Communication with students*	- Remote meeting tools (cisco webex) for the teleconferences - Presentation software (powerpoint type) for intermediate presentations to the supervisor and for final support - Software specialized in the subjects under training - Use of office automation tools, web browsers as well as e-readers for digital books - Use of internet and electronic resources of the EAP remote library to find articles and bibliography - Support of the learning process through the EAP online platform http://study.eap.gr (course information, educational material postings, announcements, messages, exam results, user groups, discussion forums, etc.). - Electronic mail (e-mail)
MODULE DESIGN *Description of teaching techniques, practices and methods: Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography,*	

Activity	***Annual Workload***
Writing the thesis	340
Presentation preparation	60

<table>
<tr>
<td>tutorials, Internship, Art Workshop, Interactive teaching, Educational visits, projects, Essay writing, Artistic creativity, etc

The study hours for each learning activity as well as the hours of selfdirected study are given following the principles of the ECTS.</td>
<td>
<table>
<tr><td>Guided study</td><td>20</td></tr>
<tr><td>Individual study</td><td>690</td></tr>
<tr><td>Initial proposal submission and final thesis defense</td><td>10</td></tr>
<tr><td>Total module workload (hours)</td><td>1120</td></tr>
</table>
</td>
</tr>
<tr>
<td>STUDENT PERFORMANCE EVALUATION/ASSESSMENT METHODS
Detailed description of the evaluation procedures.

Language of evaluation, assessment methods, formative or summative (conclusive), multiple choice tests, short- answer questions, open-ended questions, problem solving, written work, essay/report, oral exam, presentation, laboratory work, other……etc.

Specifically defined evaluation criteria are stated, as well as if and where they are accessible by the students</td>
<td>The evaluation is carried out by a three-member committee. For the evaluation, each member of the committee takes into account the following: the originality of the topic and its degree of difficulty, the understanding of the topic, the methodology of investigating the topic, the content of the text of the thesis, the degree of achievement of the goal of the thesis, the presentation.

Language of evaluation: Greek or English

All the evaluation criteria are posted in the general regulation of Diploma Thesis of HOU at:
https://www.eap.gr/en/annual-programs/</td>
</tr>
</table>

5. SUGGESTED BIBLIOGRAPHY

- *Suggested bibliography:*

Instructions for searching the relevant bibliography, which depends on the subject of the PDT, are given by the respective supervisor.

-Related scientific journals:

Applied Catalysis B: Environmental
Catalysis Today
Chemical Engineering Journal
Molecular Catalysis
Catalysis Reviews: Science and Engineering
Journal of Catalysis
Applied Catalysis A: General
ACS Catalysis
Catalysis Science and Technology

Catalysts
Catalysis Communications
ChemCatChem
Reaction Kinetics, Mechanisms and Catalysis
Langmuir
The Journal of Physical Chemistry
Industrial Engineering Chemistry Research
Journal of the American Chemical Society
Angewandte Chemie – International Edition
Journal of CO_2 Utilization
Applied Surface Science
Nature catalysis
Journal of Colloid and Interface Science
Environmental Science & Technology
Surface Science Reports
Advances in Colloid Interface Science
Journal of Environmental Management
Materials
Journal of Chemical Technology and Biotechnology
Applied Water Science
Adsorption Science & Technology
Chemosphere
Science of the Total Environment
Journal of Hazardous MaterialsJournal of Photochemistry and Photobiology C: Photochemistry Reviews
International Journal of Hydrogen Energy
Biotechnology for Biofuels
Bioresource Technology
Energy & Fuels
Renewable and Sustainable Energy Reviews
Renewable Energy
Fuel Processing Technology