MODULE OUTLINE EPK60

1. GENERAL INFORMATION

SCHOOL	OF APPLIED ARTS AND SUSTAINABLE DESIGN		
PROGRAM COURSE	SUSTAINABLE INTERIOR DESIGN OF BUILDINGS (EPK)		
LEVEL OF STUDY	POSTGRADUATE		
MODULE CODE	EPK60	**SEMESTER OF STUDY**	3rd
MODULE TITLE	**Measurements, analysis and interpretation in Building Acoustics**		

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**	**CREDIS**
Weekly teaching hours 21-23 hours x 13 weeks	**280-300**	**10 ECTS**

COURSE TYPE Compulsory, Optional, Optional mandatory	Elective
PREREQUISITE MODULES:	None
LANGUAGE OF INSTRUCTION AND EXAMS	Greek
THE MODULE IS OFFERED TO ERASMUS STUDENTS	No (due to annual duration of the module)
MODULE WEBSITE (URL)	https://www.eap.gr/en/viosimos-shediasmos/topics/#EPK60 Each module has its own space in the Learning Management System of EAP (https://courses.eap.gr/login/index.php), with controlled access (use of code) for students and teaching staff.

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 Thematic Laboratory Unit, students will be able to:

- Carry out an acoustic study of a building
- Analyze reverberation times in accordance with the Sabine / Eyring formulas for enclosed spaces (absorption coefficient, equivalent sound absorbing surface)
- Analyze sound insulation criteria for airborne and impact noises (Dnt,w and LnT,w)
- Select building materials based on their acoustic properties (Alpha Sabine, Rw weighted sound reduction index)
- Design the acoustic layout of an enclosed space.
- Design the construction details for the incorporation of acoustic materials in their projects.
- Produce documented scientific studies to present research results
- Measure in real time reverberation times and acoustics criteria according to ISO
- Measure in real time insulation criteria for airborne and impact noises (Dnt,w and LnT,w)
- Measure in real time noise from installations
- Produce documented scientific studies to present the results of acoustics criteria measurement research.

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
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
……
Introduction of innovative research
(Other…….citizenship, spiritual freedom, social awareness, altruism etc.) …….

- Search for, analysis and synthesis of data and information by the use of appropriate technologies
- Project planning and management
- Environmental awareness
- Adapting to new situations
- Decision-making
- Individual/Independent work
- Critical thinking
- Group/Team work
- Working in an interdisciplinary environment

3. MODULE CONTENT

Participants in this Thematic Laboratory Unit will learn to use professional measurement tools to prepare a comprehensive building acoustic study (whether under construction or existing).

The theoretical part of the unit provides students with the tools to implement the most recent European regulations on acoustics and interior acoustic comfort for residential and office spaces, education buildings, commercial spaces, cultural spaces etc. It is divided into 2 sections:

- Room acoustics. The TLU will discuss the concepts of a room's reverberation durations, the absorption coefficients of material – alpha Sabine, the equivalent sound absorption surface, etc.
- Acoustics and building applications. This section will analyze topics of sound insulation between the different spaces of a building. Lessons will focus on the concepts of Noise reduction index of material and in the calculation of airborne and impact sound insulation, as well as on the corresponding construction details
- Students will become acquainted with acoustic measurements, practicing them on the following:
- Room acoustics, noise reduction in a room, intelligibility criteria
- Airborne and impact sound insulation,
- Protection against noise from installations,
- Acoustic certification of building materials
- Workplace noise measurement.
- Use of software and applications
- Furthermore, lessons will also focus on the European and Greek regulations for acoustics measurements.

4. TEACHING METHODS--ASSESSMENT

<table>
<tr><td>MODES OF DELIVERY
Face-to-face, in-class lecturing, distance teaching and distance learning etc.</td><td>Distance education with five Group Counseling Meetings (OSS) during the academic year on weekends.</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATION TECHNOLOGY
Use of ICT in teaching, Laboratory Education, Communication with students</td><td>We use :
Remote meetings tools (cisco webex),
Presentation software (e.g. power point),
Equipment, sound meters, speakers, microphones, calibrated noise source, measurement software, uses and applications

Additionally, the students use office automation tools, web browsers and e-reader for digital books.</td></tr>
<tr><td>MODULE DESIGN
Description of teaching techniques, practices and methods: Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, 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><th>Activity</th><th>Annual Workload</th></tr>
<tr><td>3 OSS (x 4 hours)</td><td>12</td></tr>
<tr><td>2 tutorial exercises (2 x 30 hours)</td><td>60</td></tr>
<tr><td>Final Examination (Written examination or Final written assignment)</td><td>58</td></tr>
<tr><td>Individual study (12-13 hours x 13 weeks)</td><td>150-170</td></tr>
<tr><td>Total module workload (hours)</td><td>280-300</td></tr>
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<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>Completion of educational activities during the academic semester which constitute a 40 percent of each student's grade. Final Examination (Written examination or Final written assignment), which constitute a 60 percent of the students' final course grade. For further information go to the <u>EAP Study Guide</u>.</td></tr>
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5. SUGGESTED BIBLIOGRAPHY

Διονυσιος Ευθυμιατος, Ακουστική και κτιριακές εφαρμογές - θεωρία και πράξημ Εκδοσεις Παπασωτηρίου, 2007, Παπασωτηρίου : Αθήνα, 2007, 510 σελ., ISBN 978-960-7530-94-3

Νίκος Τσινίκας, Ακουστικός σχεδιασμός χώρων, 3η εκδοση, University Studio Press, Θεσσαλονική, 2018, 246 σ., ISBN 978-960-12-2402-2

Remy Nicolas, σημειώσεις μαθημάτος, Περιβαλλοντικός θόρυβος και αστικές μορφές, στο μαθημα 'Εξοικονόμηση ενέργειας σε υφιστάμενα κελύφη', μεταπτυχιακό "Επαναχρήσεις κτιρίων και συνόλων», Τμήμα Αρχιτεκτόνων Μηχανικών της Πολυτεχνικής Σχολής Πανεπιστημίου Θεσσαλίας.

ΥΠΕΚΑ, ΝΕΟΣ ΕΛΛΗΝΙΚΟΣ ΚΑΝΟΝΙΣΜΟΣ ΚΤΙΡΙΑΚΗΣ ΗΧΟΠΡΟΣΤΑΣΙΑΣ, ΑΘΗΝΑ 2010