COURSE DESCRIPTION CARD - SYLLABUS

Course name
Building Physics - Acoustics [S1Arch1E>FBA]

Course

Field of study
Architecture

Year/Semester
2/3

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
English

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
0

Laboratory classes
0

Other
0

Tutorials
0

Projects/seminars
0

Number of credit points

1,00

Coordinators

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Lecturers

Prerequisites

1 Knowledge: - basic knowledge of physics at high school level - basic knowledge of architectural and urban design - basic knowledge of the history of architecture 2. Skills: - the student is able to creatively use the available English-language literature 3. Social competences: - the student is aware of the need to educate in fields related to architecture - the student can creatively cooperate in a group

Course objective

The aim of the lecture is to introduce students to the subject of architectural acoustics and to prepare them for architectural design taking into account the basic issues of acoustics. Students learn the methods of analyzing the acoustic field in a room, acoustic parameters of the interior and parameters for assessing the acoustic quality of rooms. Then they learn to design interiors with so called non- qualified acoustics in such a way as to avoid acoustic defects. The lectures also cover the issues of insulation of facilities.

Course-related learning outcomes

Knowledge:
B.W4. mathematics, space geometry, statics, material strength, shaping, construction and dimensioning of structures, to the extent necessary to formulate and solve tasks in the field of architectural and urban

design;
B.W9. principles of occupational health and safety.

Skills:
B.U3. use properly selected computer simulations, analyzes and information technologies, supporting architectural and urban design;
B.U4. develop solutions for individual building systems and elements in terms of technology, construction and materials;
B.U5. make a preliminary economic analysis of planned engineering activities;
B.U6. properly apply standards and legal regulations in the field of architectural and urban design.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

The basis for the credit is a final test, which ends a series of lectures on the subject of Building Physics - Acoustics. The test is in the form of a single-choice test, which checks the knowledge of basic acoustic parameters and understanding of design tasks in architectural acoustics.
Formative assessment: test grade
Assessment scale: 2,0; 3.0; 3.5; 4.0; 4.5; 5.0
Summative assessment: the grade obtained during the written test.
Assessment scale: 2,0; 3.0; 3.5; 4.0; 4.5; 5.0

Programme content

Issues of architectural acoustics of so-called non-qualified rooms. Acoustic defects, correction methods. Basic acoustic parameters. Acoustic insulation.

Course topics

- Acoustic myths. The beginnings of architectural acoustics. The physical nature of sound.
- Methods of analyzing the acoustic field in a room: wave method, geometric method, statistical method.
- Basic acoustic parameters of rooms. Parameters for assessing the acoustic quality of rooms.
- Rooms with non-qualified acoustics - scope of the design study. Acoustic defects, architectural corrections.
- Designing rooms with qualified acoustics - basic issues.
- Protection of the building against external disturbances (noise, vibrations). Acoustic parameters of building partitions. Requirements for noise protection in rooms.

Teaching methods

. Lecture with multimedia presentation.
2. Demonstration of acoustic research.
3. Presentation of acoustic materials.
4. eLearning Moodle (a system supporting the teaching process and distance learning).

Bibliography

Basic
1. Egan D., Architectural acoustics, J. Ross Publishing, 2007
2. Ermann, M., Architectural Acoustics Illustrated. Wiley 2015
3. PN-B-02151-4 - Building Acoustics - Protection against Noise in Buildings (Polish standard)
Additional
1. Beranek L. Concert Halls and Opera Houses: Music, Acoustics and Architecture. Springer 2004, Second Edition Newhouse Victoria. Site and Sound, Monacelli Press 2012

Breakdown of average student's workload

	Hours	ECTS
Total workload	25	1,00
Classes requiring direct contact with the teacher	15	0,50
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	10	0,50