Course guides
210211 - AC AS - Architectural Acoustics. Room Acoustics

Unit in charge: Barcelona School of Architecture
Teaching unit: 753 - TA - Department of Architectural Technology.
Degree: DEGREE IN ARCHITECTURE (Syllabus 2010). (Optional subject).
DEGREE IN ARCHITECTURE STUDIES (Syllabus 2014). (Optional subject).

Academic year: 2020 ECTS Credits: 3.0 Languages: Catalan, Spanish

LECTURER

Coordinating lecturer: AMAYA CABALLERO MARCOS

Others:
Primer quadrimestre:
AMAYA CABALLERO MARCOS - 140

REQUIREMENTS

Having passed Conditioning and Services I and II.

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
EAB8. Translation from Spanish slope
ET11. Translation from Spanish slope
ET2. Translation from Spanish slope
EP14. Translation from Spanish slope
EP2. Translation from Spanish slope

Transversal:
CT1. Translation from Spanish slope
CT2. Translation from Spanish slope
CT4. Translation from Spanish slope
CT5. Translation from Spanish slope
CT6. Translation from Spanish slope

Basic:
CB1. Translation from Spanish slope
CB2. Translation from Spanish slope
CB3. Translation from Spanish slope
CB4. Translation from Spanish slope
CB5. Translation from Spanish slope
TEACHING METHODOLOGY

Presental activities: 33 hours, dedicates to:
Introduction and theoretical sessions,
Master class,
Practicals sessions/ resolution of exercises and real problems/ workshops and seminars
Study cases/ visits to acoustic spaces,
Visits to acoustic laboratory
Exhibition spaces/ commercial houses
Team work

Activities without presence: 42 hours, dedicates to:
Autonom work, development of study case

LEARNING OBJECTIVES OF THE SUBJECT

The student will be able to analyze, design and project the sound space based on its artistic, technical and scientific quality, from landscaping, urban planning and architecture to materialization in general and particularly in musical audition venues.

It will allow the student to acquire specific training in exterior and interior acoustics, from the sound landscape to the acoustics and electroacoustics of the equipment and audition venues and places of public attendance.

In particular, the student will be able to analyze the different phases of isolation to external and internal noises, impacts and vibrations, the existing acoustic theories for Auditoriums and Opera Rooms, and their specific calculation methods, with the exemplification of the designs made in these fields.

Specifically, the student will have knowledge that allows him / her to understand and realize the sound isolation to the architecture of equipment, from the planning, to the barriers and screens, the necessary acoustic conditioning treatments, and the objective and subjective parameters of room quality.

STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours large group</td>
<td>33,0</td>
<td>44.00</td>
</tr>
<tr>
<td>Self study</td>
<td>42,0</td>
<td>56.00</td>
</tr>
</tbody>
</table>

Total learning time: 75 h
## Acoustic architecture Room acoustics

**Description:**

A) Acoustic architecture
1. Reminder of basic concepts of sound communication in architecture.
2. The poetics and the sound landscape inside and outside. Acoustic architecture against noise.
3. Sound landscape, acoustic character and sound itineraries in cities and buildings.

B) Equipment acoustics
4. The acoustics and electroacoustics of enclosures.
5. Acoustic planning and isolation of equipment.
6. The isolation in the air sound, of impacts and vibrations.
7. Reverberation, reflection, absorption and diffusion.
8. Interior and exterior screenings.
9. Examples of equipment. Scheduled visit

C) Salas acoustics
10. The great hall, historical, architectural and acoustic process.
11. Wave, statistical, geometric and computer methods. Simulations
12. Subjective and objective parameters of sound quality.
13. Forms, proportions, finishing materials and textures.
15. Examples of auditorium, opera houses and special rooms. Scheduled visits

**Practices**

1. Sound itinerary in the city.
2. Acoustic inspection of an equipment.

**Related activities:**


**Full-or-part-time:** 75h

Theory classes: 33h
Self study : 42h
GRADING SYSTEM

System Continuous evaluation Final evaluation
Individual work ans exercises 50% 50%
Team work and exercises 50% 50%

Continuous evaluation
The continuous evaluation will be based on the work that the student will develop during the course, through the delivery of papers or the performance of written and / or oral tests, according to the criteria and calendar that are established.

Final evaluation
If the continuous evaluation is not positive, a second evaluation can be carried out, which will consist of a final global test in the format established according to the criteria of the responsible teacher (written or oral test and / or delivery of works).

Continuous telematic evaluation
In online teaching situations, continuous assessment will be carried out synchronously and asynchronously by the means established by the University and the School, with a periodic record of academic activity through submissions, forums, questionnaires or any other means facilitated by the Atenea platform, or the alternatives provided to the teaching staff. In the situations in which this telematic teaching is a product of face-to-face teaching that has already begun, or for questions of extra-academic order, the changes in the weightings or regular control systems of the teaching will be communicated in detail to all students by the Athena of each subject.

Telematic final evaluation
If the continuous telematic evaluation is not positive, a second evaluation can be carried out, which will consist of a final test of a global nature in telematic format that will be established in accordance with the criteria of the professor responsible and the media and ICTs provided by the University or School.

The measures for adaptation to non-classroom teaching will be implemented in accordance with the criteria of ICT security and personal data protection to ensure compliance with the legislation on Personal Data Protection (RGPD and LOPDGDD)

EXAMINATION RULES.

Individual work: search work on urban acoustics, sound heritage and sound art, and / or equipment architecture.
Collective work: analysis or design of an acoustic, urban or equipment space, theater, auditorium or opera room, real or fictional.

BIBLIOGRAPHY

Basic:

Complementary:

**RESOURCES**

**Other resources:**

REAL DECRETO 1371/2007, de 19 de octubre, por el que se aprueba el documento básico «DB-HR Protección frente al ruido» del Código Técnico de la Edificación y se modifica el Real Decreto 314/2006, de 17 de marzo, por el que se aprueba el Código Técnico de la Edificación.

EASE. Manual de utilización del programa de simulación E.A.S.E CattAcoustic, software de simulación acústica.