250665 - CONTACUST - Noise Pollution

Coordinating unit: 250 - ETSECCPB - Barcelona School of Civil Engineering
Teaching unit: 739 - TSC - Department of Signal Theory and Communications
Academic year: 2015
Degree: MASTER'S DEGREE IN ENVIRONMENTAL ENGINEERING (Syllabus 2014). (Teaching unit Optional)
ECTS credits: 5
Teaching languages: Catalan, Spanish, English

Teaching staff

Coordinator: JORDI ROMEU GARBI
Others: JORDI ROMEU GARBI

Opening hours

Timetable: Hours to be arranged by email or class

Teaching methodology

The methodology is based on the combination of several activities

- Classroom lectures on theoretical concepts that are related to the course. Related problems are also solved.
- A set of individual problems are proposed as a homework.
- Experimental noise impact assessment activity is individually carried out also as a homework
- Calculation of acoustic impact of infrastructure by simulation. Work group within the classroom sessions and as homework.

Learning objectives of the subject

CE01 - Apply scientific concepts to environmental problems and their correlation with technological concepts.
CE08-Dimension unconventional systems and advanced treatment and raise their mass balance and energy.

Explore scientific concepts and technical principles of quality management of the receiving means, atmosphere, water and soil, and applied to problem solving.
Explore scientific concepts and technical principles of management and treatment of gaseous emissions, water supply, sewage and waste and remediation techniques for groundwater and contaminated soils.
Sized systems for the treatment of major pollutants vectors in specific sectors of activity.
Interprets rules, identifies goals, assesses technical alternatives proposed unconventional solutions and priority actions.

Definition of the characteristic parameters of sound and its perception.
Sound propagation in free field. Sound power. Corrections to the theoretical propagation.
Reflection and sound absorbing materials. Acoustic behavior of a room.
Sound measurements. Using sound level meter and analyzer. Good practice in sampling.
Noise impact study. Input data, assumptions and deliverables. Calculation methods and simulation models. Study applied the existing legal framework.
The goal of the course is that the student is able to make the study of acoustic assessment of existing or future activity.

### Study load

| Total learning time: 125h | Theory classes: 15h 12.00% | Practical classes: 10h 8.00% | Laboratory classes: 10h 8.00% | Guided activities: 10h 8.00% | Self study: 80h 64.00% |
### Content

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<tr>
<th>Noise measurement</th>
<th>Learning time: 19h 12m</th>
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<tr>
<td><strong>Description:</strong></td>
<td>Presentation of theoretical concepts relating to the measurement of noise</td>
</tr>
<tr>
<td></td>
<td>Solving problems related to noise measurement</td>
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<tr>
<td><strong>Specific objectives:</strong></td>
<td>Understand the theoretical principles governing noise measurement</td>
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<tr>
<td></td>
<td>Application of theoretical concepts of measurement noise, Strengthen he theory governing the measurement of noise.</td>
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<tr>
<th>Environmental noise assessment</th>
<th>Learning time: 26h 24m</th>
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<tr>
<td><strong>Description:</strong></td>
<td>Establish the criteria and procedure for the assessment of environmental noise</td>
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<td>Case study of theoretical evaluation of environmental noise</td>
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<td></td>
<td>Experimental noise assessment caused by an activity using a sound level meter.</td>
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<tr>
<td><strong>Specific objectives:</strong></td>
<td>Have the basic tools to proceed with an assessment of environmental noise</td>
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<tr>
<td></td>
<td>Understand how to assess environmental noise</td>
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<td>Learn to evaluate a real noise caused by activities</td>
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<th>Generation of sound</th>
<th>Learning time: 14h 23m</th>
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<tr>
<td><strong>Description:</strong></td>
<td>Presenting the fundamentals of noise generation</td>
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<td>Solving problems related to the generation of sound</td>
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<td><strong>Specific objectives:</strong></td>
<td>Understand how to generate noise and set a sound source</td>
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<td>Learn how to characterize acoustic sound sources</td>
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Sound propagation

Learning time: 33h 36m
Theory classes: 4h
Practical classes: 2h
Laboratory classes: 8h
Self study: 19h 36m

Description:
Theory about the effects that affect sound propagation
Problems related to the phenomena of sound propagation
Computational acoustic impact of a great activity in your environment

Specific objectives:
Understand the phenomena that affect sound propagation
Properly characterize and predict the propagation of sound and reduce it as a matter of noise control strategy.
Learn to make noise impact studies of great sources in its environment

Qualification system

Home work individual activities: 35%
Experimental work on acoustic impact assessment of an activity: 35%
Computer practice on acoustic impact assessment: 30%

Regulations for carrying out activities

Results not delivered within the deadline will result in zero points for the activity.

Bibliography

Basic:
J. Romeu. Apunts de l'assignatura (ATENEA).

Complementary: