

# Course Specifications

From the academic year 2015-2016 up to and including the

## Physical Assessment of Environmental Pollution: Noise Pollution (E084951)

Course size (nominal values; actual values may depend on programme)

Credits 3.0 Study time 90 h Contact hrs 15.0 h

Course offerings and teaching methods in academic year 2018-2019

A (semester 1)	English	seminar: coached exercises	7.5 h
		lecture	15.0 h

Lecturers in academic year 2018-2019

Botteldooren, Dick	TW05	lecturer-in-charge
Van Renterghem, Timothy	TW05	co-lecturer

Offered in the following programmes in 2018-2019

	crdts	offering
Master of Science in Engineering: Architecture (main subject Architectural Design and Construction Techniques)	3	A
Master of Science in Engineering: Architecture (main subject Urban Design and Architecture)	3	A
Exchange Programme Architecture	3	A

Teaching languages

English

Keywords

Environmental noise, noise annoyance, sound propagation, acoustics

Position of the course

This course aims at providing the students insight in how sound is propagating in the outdoor and indoor environment, how sound is measured, what (statistical) parameters are used to express sound levels, and how noise is perceived by humans. The principles of noise legislation are taught. It is further studied how noise is generated by some important sources of noise (transport and industrial applications). The basic principles of the remediation of noise problems are indicated. Stress is on skills needed to perform a thorough acoustical investigation and to understand, analyse and compare measures.

Contents

1. Perception of noise
2. Measuring noise
3. Noise legislation
4. Sound propagation outdoors
5. Sound propagation indoors
6. Sources of noise: occurrence and remediation
7. Reducing noise annoyance

Initial competences

Basic knowledge of physics and mathematics, level of ac. Bachelor in beta-sciences.

Final competences

- 1 Student have the baic competences for calculating noise levels in dB, and for estimating noise spectra and statistical noise levels.
- 2 Students understand the fundamental mechanisms of sound generation for the most important sources of environmental noise.
- 3 Students have the competences needed to conduct measurement campaigns and to interpret noise impact and sanitation plans.

- 4 Students have the competence for quantifying indoor and outdoor noise levels from sound power on the basis of a thorough knowledge of sound propagation.

#### Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences assessment

#### Conditions for exam contract

This course unit cannot be taken via an exam contract

#### Teaching methods

Lecture, seminar: coached exercises

#### Extra information on the teaching methods

The lectures and exercises form the core of this course. In addition, the lecturer and his/her assistants are available during or in between lectures.

#### Learning materials and price

The presented slides during the lessons are available via MINERVA. A Dutch syllabus is available.

#### References

#### Course content-related study coaching

Student coaching and assistance: the lecturer and his/her assistants are available during or in between lectures.

#### Evaluation methods

end-of-term evaluation

#### Examination methods in case of periodic evaluation during the first examination period

Written examination, open book examination, oral examination

#### Examination methods in case of periodic evaluation during the second examination period

Written examination, open book examination, oral examination

#### Examination methods in case of permanent evaluation

#### Possibilities of retake in case of permanent evaluation

not applicable

#### Extra information on the examination methods

**Theory** : focus is on understanding and applying the course material to practical noise-related problems. Oral, open book exam, without written preparation

**Exercises**: applying the taught calculation models and calculations with dB values. Written, open book, during the theoretical exam.

#### Calculation of the examination mark

Students who eschew period aligned and/or non-period aligned evaluations for this course unit may be failed by the examiner.