

## Foundations of Musical Acoustics and Sonology (A005289)

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

**Credits 5.0** **Study time 150 h**

**Course offerings and teaching methods in academic year 2023-2024**

A (semester 1)	Dutch, English	Gent	seminar
			excursion
			lecture

**Lecturers in academic year 2023-2024**

Maes, Pieter-Jan	LW17	lecturer-in-charge
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**Offered in the following programmes in 2023-2024**

	<b>crdts</b>	<b>offering</b>
<a href="#">Bachelor of Arts in Art History, Musicology and Theatre Studies</a>	5	A
<a href="#">Exchange Programme Art Studies</a>	5	A
<a href="#">Preparatory Course Master of Arts in Art History, Musicology and Theatre Studies</a>	5	A

**Teaching languages**

English, Dutch

**Keywords**

Musical acoustics, sonology, analog and digital techniques for audio measurement, synthesis, and playback, contemporary music, digital innovation in the cultural and creative sector

**Position of the course**

This course gives students insight into the acoustic and sonologic principles of music with a strong emphasis on the practical use and applications.

**Contents**

A tentative overview of the course:

- Sound waves (sources, propagation, and parameters)
- Pure and complex tones, musical instruments, additive and subtractive synthesis
- Room acoustics
- Musical scales, temperament and tuning
- Analog and digital audio
- Spectrum analysis of audio signals
- Audio playback systems (multichannel, 3D audio, etc.)
- Microphones, recording techniques
- The role of acoustics in contemporary music (aesthetics)
- Interaction of humans with their acoustic environment
- Futurism, acoustic ecology, soundscape, sonic branding

The course contains a part of theoretical lectures and a part of practical seminars, which are mutually reinforcing.

**Initial competences**

No prerequisite knowledge required

**Final competences**

- 1 Gain insights into the foundation of acoustics and sonology in music and music science.
- 2 Gain knowledge and competences related to the analysis, synthesis, recording and playback of musical audio.
- 3 Gain insights into the role and influence of acoustics in classical and contemporary music.
- 4 Gain insights into acoustics, music and digital innovation.

**Conditions for credit contract**

Access to this course unit via a credit contract is unrestricted: the student takes into consideration the conditions mentioned in 'Starting Competences'

### **Conditions for exam contract**

Access to this course unit via an exam contract is unrestricted

### **Teaching methods**

Seminar, Excursion, Lecture

### **Extra information on the teaching methods**

Theoretical lectures, practical seminars (PC-exercises, reading and presentation exercises, group discussions, etc.)

### **Learning materials and price**

Course materials (slides lectures, syllabus, exercises, additional literature) will be made available on the Minerva/Ufora digital learning platform.

The estimated cost for printing is €20.

### **References**

- van der Wey, C. W. (1996). *Professionele audiotechnieken*.
- Leman, M. (2002). *De klankwereld van muziek*. Leuven/Leusden: ACCO.
- Loy, G. (2006). *Musimathics: The Mathematical Foundations of Music*. Cambridge, MA: MIT Press.
- Everest, F. A. & Pohlmann, K. C. (2009). *Master handbook of acoustics*, 5th edition. New York: McGraw-Hill/TAB Electronics.

### **Course content-related study coaching**

Weekly feedback on the practical exercises, for further questions the students can contact the teacher by appointment or via e-mail.

### **Assessment moments**

end-of-term and continuous assessment

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

Written assessment

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

Written assessment

### **Examination methods in case of permanent assessment**

Skills test, Participation, Assignment

### **Possibilities of retake in case of permanent assessment**

examination during the second examination period is not possible

### **Extra information on the examination methods**

The non-period bound evaluation is related to the various tasks given in the practical seminars throughout the semester. For this evaluation, no reexamination is possible.

The period bound evaluation is a written exam. This exam consists of questions related to the theoretical lectures and the practical seminars.

### **Calculation of the examination mark**

Non-period bound evaluation: 30%

Period bound evaluation: 70%

### **Facilities for Working Students**

- Possible exemption from educational activities, after consultation.
- Feedback can be given by email, or during an appointment during office hours.