GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Studio Measurements, PG_00048327		
Field of study	Electronics and Telecommunications		
Date of commencement of studies	February 2024	Academic year of realisation of subject	2024/2025
Education level	second-cycle studies	Subject group	Optional subject group Subject group related to scientific research in the field of study
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	Polish
Semester of study	2	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	exam
Conducting unit	Department of Multimedia Systems -> Faculty of Electronics, Telecommunications and Informatics		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Grzegorz Szwoch	
	Teachers	dr hab. inż. Grzegorz Szwoch	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	15.0	0.0	0.0	30

E-learning hours included: 0.0

Learning activity and number of study hours

Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours	Self-study	SUM
Number of study hours	30	4.0	16.0	50

Subject objectives

The aim is to teach students how to perform measurements in studio technology. Students learn about modern measurement equipment, methodology of acoustic and electroacoutic measurements and sound quality assessment. During the laboratory classes, students perform audio measurements on their own.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_W03] Knows and understands, to an increased extent, the construction and operating principles of components and systems related to the field of study, including theories, methods and complex relationships between them and selected specific issues - appropriate for the curriculum.	Student knows the most important parameters that describe the quality of devices and systems used in studio technology. Student understands the relationship between the test results and the usefulness of the tested system in a specific studio technology application.	[SW1] Assessment of factual knowledge
[K7_U03] can design, according to required specifications, and make a complex device, facility, system or carry out a process, specific to the field of study, using suitable methods, techniques, tools and materials, following engineering standards and norms, applying technologies specific to the field of study and experience gained in the professional engineering environment	Student knows how to create a test system necessary to measure the quality of devices and systems used in studio technology. Student knows how to perform a test in a way that the obtained results may be used for assessment of the tested unit.	[SU4] Assessment of ability to use methods and tools
[K7_U06] can analyse the operation of components, circuits and systems related to the field of study; measure their parameters; examine technical specifications; interpret obtained results and draw conclusions	Student knows how to evaluate the obtained test results in order to assess the quality of systems and devices used in studio technology. Student knows how to create reports with test results. Student knows how to interpret the obtained test results and how to evaluate the tested unit for a specific application in studio technology.	[SU5] Assessment of ability to present the results of task [SU2] Assessment of ability to analyse information [SU1] Assessment of task fulfilment

<table>
<tr><td>Subject contents</td><td>1. Introduction

2. Computer systems for electroacoustic measurements

3. Test signals and measurement units

4. Characteristics of the electroacoustic systems

5. Frequency response tests

6. Phase distortion tests

7. Nonlinear distortion tests

8. Intermodulation distortion tests

9. Other tests: signal-to-noise, crosstalk and separation, frequecy, phase, impedance

10. Digital signal generators and analysers

11. Measurements of digital sound systems

12. Testing compressors, expanders and other studio devices

13. Testing microphones, loudspeakers and earphones

14. Quasi-anechoic measurements in enclosed spaces

15. Digital systems for real-time measurements

16. Subjective testing of sound quality

17. Testing quality of the encodec speech and music

18. Video measurements</td></tr>
<tr><td>Prerequisites and co-requisites</td><td></td></tr>
<tr><td>Assessment methods and criteria</td><td><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Practical exercises</td><td>51.0%</td><td>50.0%</td></tr>
<tr><td>Final exam</td><td>51.0%</td><td>50.0%</td></tr>
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<tr><td>Recommended reading</td><td>Basic literature</td><td>Lecture presentations and supplementary materials: http://sound.eti.pg.gda.pl/student/materialy.html

Instructions for laboratory classes: http://sound.eti.pg.gda.pl/student/laboratoria.html</td></tr>
</table>

	Supplementary literature	J. Sereda: Pomiary w elektroakustyce. WKiŁ, Warszawa 1981. K. Blair Benson: Audio Engineering Handbook. McGraw Hill, 1988. H.B. Miller: Acoustical measurements. HRP Company, Pelsynwania 1982. Z. Żyszkowski: Miernictwo akustyczne. WNT, Warszawa 1987. G. Davis, R. Jones: The Sound Reinforcement Handbook. HP Hal Leonard Publishing Corp., 1990. J. Sereda: Pomiary w elektroakustyce. WKiŁ, Warszawa 1981.
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	