



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Supervising measuring devices

Course

Field of study

Mechatronics

Area of study (specialization)

Automation and Supervision of Production Systems

Level of study

Second-cycle studies

Form of study

full-time

Year/Semester

1/2

Profile of study

general academic

Course offered in

polish

Requirements

compulsory

Number of hours

Lecture

15

Laboratory classes

15

Other (e.g. online)

0

Tutorials

0

Projects/seminars

0

Number of credit points

2

Lecturers

Responsible for the course/lecturer:

Ph.D. Radomir Majchrowski

Responsible for the course/lecturer:

email: radomir.majchrowsk@put.poznan.pl

tel. 61 665 3223

FACULTY OF MECHANICAL ENGINEERING

Prerequisites

Knowledge: of the basics of metrology and technical metrology as well as production management and control, organizational preparation of production at the level of engineering studies

Skills: synthesis and analysis of possessed and acquired knowledge in basic and technical fields, use of various sources of information
Social competences: understanding the need for learning and acquire new knowledge

Social competencies: understanding the need to learn and the need to establish a substantive dialogue between specialists in various fields and techniques

Course objective

Preparing students to independently solve various tasks related to management, supervision and testing of measurement and control equipment.



Course-related learning outcomes

Knowledge

The student has theoretically founded detailed knowledge of the assessment and preparation of technical systems, including measurement systems - [K2_W04]

Skills

Is able to evaluate the production and measurement system and undertake work aimed at adjusting them to the requirements of the manufacturing process being implemented - [K2_U11]

Social competences

The student understands the need for lifelong learning; can inspire and organize the learning process of other people - [K2_K01]

Is aware of the effects of engineering activities both in the technical and non-technical areas. Is aware of the consequences of decisions made and responsibility for decisions made - [K2_K02]

Is able to properly define the priorities for the implementation of the team specified by himself or other members - [K2_K04]

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: Written credit

Laboratory: Credit based on an oral or written answer regarding the content of each laboratory exercise. To obtain a credit, all exercises must be passed.

Programme content

1. Tasks conditioning the proper management of measurement and control equipment.
2. Management of equipment for control, measurement and testing: purchasing planning, management of measuring equipment, supervision over measuring equipment.
3. System of identification of measurement and control equipment.
4. Breaks between approvals.
5. Defining equipment for control, measurement and research.
6. Computer programs for supervision over control, measurement and research equipment.
7. The Law on Measures. Legal and industrial metrology (legalization, calibration).
8. Examples of calibration of measuring instruments.
9. Division of measuring equipment? discussion.
10. Testing the ability of measuring tools, analysis of the Cg, Cgk measurement tools according to Ford and Bosch.



11. Testing of measurement systems (testing repeatability and reproducibility), examples.
12. Requirements for the competence of research and calibration laboratories, technical requirements according to PN-EN ISO / IEC 17025.
13. Measurement management systems. Requirements for measuring processes and measuring equipment according to PN - ISO 10012.

Teaching methods

Lecture: presentation illustrated with examples given on the blackboard, solving problems.

Bibliography

Basic

Norma PN EN ISO/IEC 17025:2005 - Ogólne wymagania dotyczące kompetencji laboratoriów badawczych i wzorcujących.

Norma PN ISO 10012 - Systemy zarządzania pomiarami. Wymagania dotyczące procesów pomiarowych i wyposażania pomiarowego.

PKN-ISO/IEC Guide 99:2010 - Międzynarodowy słownik metrologii. Pojęcia podstawowe i ogólne oraz terminy z nimi związane (VIM).

Additional

Tomasik J., „Sprawdzanie przyrządów do pomiaru długości i kąta”. Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa, 2009

Dietrich E., Schulze A.,: „Metody statystyczne w kwalifikacji środków pomiarowych, maszyn i procesów produkcyjnych” Notika System, Warszawa 2000

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,0
Classes requiring direct contact with the teacher	40	1,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) ¹	10	1,0

¹ delete or add other activities as appropriate