



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Product quality inspection 2

Course

Field of study

Product Lifecycle Engineering

Area of study (specialization)

Level of study

Second-cycle studies

Form of study

full-time

Year/Semester

2/3

Profile of study

practical

Course offered in

English

Requirements

elective

Number of hours

Lecture

10

Tutorials

Laboratory classes

10

Projects/seminars

10

Other (e.g. online)

Number of credit points

2

Lecturers

Responsible for the course/lecturer:

dr inż. Agnieszka Kujawińska

email: agnieszka.kujawinska@put.poznan.pl

tel. 61 665 27 38

Faculty of Mechanical Engineering

Piotrowo Street No 3, 60-965 Poznań

Responsible for the course/lecturer:

prof. dr hab. inż. Michał Wieczorowski

email: michal.wieczorowski@put.poznan.pl

tel. 61 665 35 67

Faculty of Mechanical Engineering

Piotrowo Street No 3, 60-965 Poznań

Prerequisites

Basic knowledge of technical metrology, technical drawing and machine parts. Basic knowledge of mathematical statistics. The ability to think logically and independently obtain information from various sources, as well as understanding the need for learning.



Course objective

To acquire knowledge about modern measurement systems used in industry and their correct selection and use.

Course-related learning outcomes

Knowledge

Classes will cover the theory of using selection methods of measuring systems to evaluate product quality. Student is able to characterize modern measurement systems used in industry. He knows the rules of their construction and technical restrictions.

Skills

Student is able to choose a measuring device and design a measurement strategy adequate to the measuring task.

The student is able to select and apply in practice non-destructive methods of material testing.

Student knows how to process and analyze the obtained measurement results.

Student is able to determine the sources of measurement errors and eliminate them.

Social competences

The student can work in a group. Student is aware of the need and role of data analysis methods and of modern measuring systems in the economy and the need to constantly expand knowledge.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: Credit in writing or oral on the basis of scoring questions (credit in the event of obtaining 51% of points: > 50% - dst, > 60% - dst plus, > 70% - db, > 80% - db plus, > 90% points - very good) carried out at the end of the module.

Laboratory: Credit based on reports from laboratory exercises. To get credit, all exercises must be passed.

Project: Credit based on the evaluation of the completed project presented in the form of a written report and presentation.

Programme content

Classes will be conducted in blocks consisting of lectures and laboratories / projects.

Topics of classes:

Coordinate measuring technique - measurements using CMM part 2 and 3.

Coordinate measuring technique - measurements with optical scanners part 2 and 3.

Methods for non-destructive testing of materials based on the measurement of physical quantities such as the value of induction and magnetic field strength, magnetostrictive and piezoelectrically generated ultrasonic pulses.

Test methods for thin coatings, flaw detection tests and test methods for materials based on measuring electrical resistivity, magnetic and acoustic properties, and internal friction. Hardness testing methods.



Teaching methods

Lecture: The lecture will be illustrated with a multimedia presentation containing the discussed program content

Laboratory: practical classes

Project: practical classes

Study visits: As part of the module, two study visits in industrial enterprises are planned. The purpose of the visits is to show in practice the functioning of various forms and types of quality inspection, measurement systems .

Bibliography

Basic

1. Handbook of Measurement Science, Vol.1:Theoretical Fundamentals-1982, vol2: Practical Fundamentals, Edited by P.H. Sydenham, 1983.
2. Paul E. Mix, Introduction to Nondestructive Testing: A Training Guide, 2nd Edition, Wiley, 2005.

Additional

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,0
Classes requiring direct contact with the teacher	30	1,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) ¹	20	1,0

¹ delete or add other activities as appropriate

