COURSE SPECIFICATION

Course code	full-time programme:	**M#2-S1-ME-701**
	part-time programme:	
Course title in Polish	**Inżynieria jakości**	
Course title in English	**Quality Engineering**	
Valid from (academic year)	**2024/2025**	

GENERAL INFORMATION

Programme of study	**MECHANICAL ENGINEERING**
Level of qualification	**first-cycle**
Type of education	**academic**
Mode of study	**full-time programme**
Specialism	**all**
Department responsible	**Department of Metrology and Modern Manufacturing**
Course leader	**dr hab. Damian Gogolewski, prof. PŚk**
Approved by	**dr hab. Jakub Takosoglu, prof. PŚk, Dean of the Faculty of Mechatronics and Mechanical Engineering**

COURSE OVERVIEW

Course type		**programme-specific**
Course status		**compulsory**
Language of instruction		**English**
Semester of delivery	full-time programme	**Semester VII**
	part-time programme	
Pre-requisites		
Examination required (YES/NO)		**YES**
ECTS value		**3**

Mode of instruction		**lecture**	**class**	**laboratory**	**project**	**seminar**
No. of hours per semester	full-time programme	**15**			**15**	
	part-time programme					

LEARNING OUTCOMES

Category of outcome	**Outcome code**	**Course learning outcomes**	**Corresponding programme outcome code**
Knowledge	W01	The student has an advanced knowledge and understanding of the issues in the field of quality management instruments, analysis of experimental results about quality	MiBM1_W02

	W02	The student has a structured and theoretically supported advanced knowledge of metrology, management of equipment, management of production processes and manufacturing techniques taking into account quality management issues	MiBM1_W12 MiBM1_W13
Skills	U01	The student is able to plan and conduct experiments, critically interpret the obtained results and draw correct conclusions	MiBM1_U11 MiBM1_U15
	U02	The student is able to formulate and solve engineering tasks using properly selected quality management instruments, analytical, simulation and experimental methods	MiBM1_U03 MiBM1_U10 MiBM1_U18
	U03	The student is able to cooperate and work in a group during the realization of engineering projects and is able to appropriately determine priorities for the implementation of a task defined by himself or others	MiBM1_U20
Competence	K01	The student is aware of the need to supplement specialist knowledge through life and is able to select the proper sources of knowledge and methods of learning for himself and others	MiBM1_K03
	K02	The student is aware of the responsibility related to decisions made in engineering and managerial activities, especially in terms of own and others' safety	MiBM1_K05

COURSE CONTENT

Type of instruction lecture	Topics covered
lecture	The concept of quality. Requirements for the quality of products. Quality signs. Reliability of products. Basic concepts of mathematical statistics. Statistical control of production quality. Alternative control. Instruments used in quality management systems. Statistical process control SPC, measurement system analysis MSA, Six Sigma. Indicators of quality capability of processes, machines and measuring systems. Evolution of the organizational system of a production company from classical methods of quality control through quality assurance systems to quality management systems. Integrated quality management systems. Process approach to organizational management. Principles of creation and content of quality system documentation. Requirements for the competence of testing and calibration laboratories. Equipment for measurement, control and testing. Principles of management and calibration of measurement equipment. Methods and techniques of performing quality audits.
project	Quality management instruments, SPC, MSA, Six Sigma, management and calibration of measurement equipment

ASSESSMENT METHODS

Outcome code	Methods of assessment *(Mark with an X where applicable)*					
	Oral examination	Written examination	Test	Project	Report	Other
W01		X				

W02		X				
U01				X		
U02				X		
U03				X		
K01						X
K02						X

ASSESSMENT TYPE AND CRITERIA

Mode of instruction	Assessment type	Assessment criteria
lecture	examination assessment	The pass mark is a minimum of 50% for the exam
project	non-examination assessment	The pass mark is a minimum of 50% for all projects

OVERALL STUDENT WORKLOAD

ECTS weighting												
No.	Activity type	Student workload										Unit
		full-time programme					part-time programme					
		L	C	Lb	P	S	L	C	Lb	P	S	
1.	Scheduled contact hours	15			15							h
2.	Other contact hours (office hours, examination)	4			2							h
3.	**Total number of contact hours**	**36**										h
4.	**Number of ECTS credits for contact hours**	**1,4**										ECTS
5.	**Number of independent study hours**	**39**										h
6.	**Number of ECTS credits for independent study hours**	**1,6**										ECTS
7.	**Number of practical hours**	**38**										h
8.	**Number of ECTS credits for practical hours**	**1,5**										ECTS
9.	**Total study time**	**75**										h
10.	**ECTS credits for the course** *1 ECTS credit = 25-30 hours of study time*	**3**										ECTS

READING LIST

1. Adamczak S. Makieła W. Podstawy metrologii i inżynierii jakości dla mechaników. Ćwiczenia praktyczne. WNT Warszawa 2010, wydanie I
2. Sikora T. i inni „Zarządzanie jakością według norm ISO serii 9000:2000 Wydawnictwo Akademii Ekonomicznej w Krakowie Kraków 2005
3. Hamrol A. . „Zarządzanie jakością z przykładami" Wydawnictwo Naukowe PWN 2017
4. Dietrich E., Schulze A. „Metody statystyczne w kwalifikacji środków pomiarowych, maszyn i procesów produkcyjnych" Wydawnictwo Notika System Warszawa 2000
5. Wawak T. „Zarządzanie przez jakość" Wydawnictwo Informacji Ekonomicznej, Kraków 1997

6. Tabor A., Zając A., Rączka M.- praca zbiorowa „Zarządzanie jakością” tom I-VI Wydawnictwo Politechniki Krakowskiej, Kraków 1999-2000
7. Grudowski P., Leseure E. LSS Plutus Lean Six Sigma dla małych i średnich przedsiębiorstw, Wydawnictwo Naukowe PWN 2017
8. Polskie Normy (PN-ISO serii 9000, PN-ISO serii 10000, PN-ISO serii 14000, PN-EN ISO 19011, ISO/IEC 17025)