

## COURSE GUIDE

<u>Subject name</u>	<b>Quality control in special processes</b>
<u>Course of study</u>	<b>Quality and Production Management</b>
<u>The form of study</u>	<b>Full-time</b>
<u>Level of qualification</u>	<b>First</b>
<u>Year</u>	<b>III</b>
<u>Semester</u>	<b>VI</b>
<u>The implementing entity</u>	<b>Department of Production Engineering and Safety</b>
<u>The person responsible for preparing</u>	<b>dr hab. inż. Dorota Klimecka-Tatar</b>
<u>Profile</u>	<b>General academic</b>
<u>ECTS points</u>	<b>2</b>

### TYPE OF TEACHING – NUMBER OF HOURS PER SEMESTER

<b>LECTURE</b>	<b>CLASS</b>	<b>LABORATORY</b>	<b>PROJECT</b>	<b>SEMINAR</b>
<b>15</b>		<b>30</b>	-	-

### COURSE AIMS

- C1. Knowledge and ability to identify basic methods of quality control in special processes.
- C2. Knowledge and ability to characteristics of special processes.
- C3. Understanding the possibilities of quality control processes in the special.

### ENTRY REQUIREMENTS FOR KNOWLEDGE, SKILLS AND OTHER COMPETENCES

1. Student demonstrates knowledge of basic physical and chemical laws.
2. Student can make mathematical calculations.
3. Student knows the basic tools of quality management.
4. Student knows the specificity of processes and quality control.

### LEARNING OUTCOMES

- EU1. Student can define special processes.
- EU2. Student can characterize methods of quality control in selected special processes.
- EU3. Student knows basic methods of quality control in special processes.
- EU4. Student is able to choose research methods to solve the problem

### COURSE CONTENT

<b>Type of teaching – LECTURE</b>	<b>Number of hours</b>
W1. Brief characteristics of quality, visual and visual inspection.	3
W2. Basis of standardization (industrial standards for selected industries).	3
W3. Characteristics of special processes (based on entries in the standard).	3
W4. Discussion of the specificity of the selected special processes: casting, heat treatment, fermentation, etc.	3
W5. Specification of destructive and non destructive tests.	3
<b>Type of teaching - LABORATORY</b>	<b>Number of hours</b>
L1. Introductory Classes - discuss the rules of the course, discuss the methods of credit.	3
L2. Microscopic studies: grain size measurement, computational and comparative method.	8
L3. Microscopic studies: evaluation of structural errors (e.g. analysis of non-metallic separations, the size and morphology analysis of structures - using the free Image J program.	8
L4. Non-destructive tests.	8
L5. Test and assesment of knowledge.	3

## TEACHING TOOLS

1. Manuals and scripts.
2. Audiovisual equipment.
3. Flaw detektor.
4. Optical microscopes - metallographic.
5. Hardness Testers.

## WAYS OF ASSESSMENT (F – FORMATIVE, P – SUMMATIVE)

- F1. Evaluation of the implementation tasks in the classroom.  
P1. Written test.

## STUDENT WORKLOAD

Form of activity		Average number of hours for realization of the activity		
		[h]	ECTS	ECTS
Contact hours with the teacher	Lecture	15	0.6	0.6
Contact hours with the teacher	Laboratory	30	1.2	1.32
Preparation for laboratory		3	0.12	
Consultation		2	0.08	0.08
<b>TOTAL NUMBER OF HOURS / ECTS POINTS FOR THE COURSE</b>		<b>50</b>	<b>2</b>	

## BASIC AND SUPPLEMENTARY RESOURCE MATERIALS

### Basic resources

1. Ashby M., Shercliff H., Cebon D. Materials: Engineering, Science, Processing and Design. Amsterdam,, Oxford : Butterworth-Heinemann / Elsevier, 2014.
2. Pietraszek J., Klimecka-Tatar D. Technical Aspects of Materials Quality. Oficyna Wydawnicza Stowarzyszenia Menedżerów Jakości i Produkcji. Częstochowa 2013.
3. Borkowski S., Sygut P. (eds.) Improvement Processes in Materials Engineering and Commodity Science. Zagreb, Croatian Quality Managers Society, 2015.

### Supplementary resources

1. Dobrzański L. A. Podstawy nauki o materiałach i metaloznawstwo. Materiały inżynierskie z podstawami projektowania materiałowego, WNT, Warszawa 2009.
2. Przybyłowicz K., Przybyłowicz J. Materiałoznawstwo w pytaniach i odpowiedziach. WNT, Warszawa 2000.
3. Borkowski S., Selejdak J., Ulewicz R. Materiałoznawstwo dla ekonomistów. WNT, Warszawa 2005.
4. Klimecka-Tatar D., Pietraszek J., Midor K. Zarządzanie jakością w procesach specjalnych. Of. Wyd. SMJiP, Częstochowa 2016.

## TEACHERS (NAME, SURNAME, E-MAIL ADDRESS)

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## MATRIX OF LEARNING OUTCOMES REALISATION

Learning outcome	Reference of given outcome to outcomes defined for whole program (PRK)	Course aims	Course content	Teaching tools	Ways of assessment
EU1	K_W01, K_W02, K_W03, K_W07, K_W09, K_U01, K_U02, K_U03, K_U04, K_U05, K_U06, K_U07, K_U09, K_U10, K_K01, K_K02	C1-C3	W1-W5, L1-L5	1, 2	F1, F2, P1

<b>EU2</b>	K_W01, K_W02, K_W03, K_W07, K_W09, K_U01, K_U02, K_U03, K_U04, K_U05, K_U06, K_U07, K_U09, K_U10, K_K01, K_K02	C1-C3	W1-W5, L1-L5	1, 3-5	F1, P1
<b>EU3</b>	K_W01, K_W02, K_W03, K_W07, K_W09, K_U01, K_U02, K_U03, K_U04, K_U05, K_U06, K_U07, K_U09, K_K01, K_K02	C1-C3	W1-W5, L1-L5	1, 3-5	F1, P1
<b>EU4</b>	K_W01, K_W02, K_W03, K_W07, K_W09, K_U01, K_U02, K_U03, K_U04, K_U05, K_U06, K_U07, K_U09, K_U10, K_K01, K_K02	C1-C3	W1-W5, L1-L5	1, 3-5	F1, P1

#### FORM OF ASSESSMENT - DETAILS

	<b>grade 2</b>	<b>grade 3</b>	<b>grade 4</b>	<b>grade 5</b>
<b>EU1</b>	Student cannot define special processes.	Student knows the definition of special processes.	Student can define special processes and discuss their specificities.	Student can define special processes and discuss their specificities in detail, referring to specific examples.
<b>EU2</b>	Student can not characterize methods of quality control in special processes.	Student can characterize methods of quality control in selected special processes.	Student is able to characterize and discuss methods of quality control in selected special processes.	Student is able to characterize and discuss in detail the methods of quality control in selected special processes.
<b>EU3</b>	Student does not know basic methods of quality control in special processes.	Student knows the basic methods of quality control but cannot apply them independently.	Student knows basic methods of quality control in special processes.	Student knows methods of quality control in processes, can apply them and discuss them.
<b>EU4</b>	Student cannot choose the research method to solve the problem.	Student can indicate a group of research methods to solve the problem.	Student can indicate the research method to solve the problem, but cannot apply it correctly.	Student is able to point and apply the right research methods to solve the problem.

#### ADDITIONAL USEFUL INFORMATION ABOUT THE COURSE

1. Information where presentation of classes, instruction, subjects of seminars can be found, etc. - presented to students during first classes, if required by the formula classes are sent electronically to the e-mail addresses of individual dean groups.
2. Information about the place of classes - Information can be found on the website of the Faculty of Management.
3. Information about the timing of classes (day of the week / time) - Information can be found on the website of the Faculty of Management.
4. Information about the consultation (time + place) - Information can be found on the website of the Faculty of Management.