



POLYTECHNIC OF MEĐIMURJE IN ČAKOVEC

COURSE SYLLABUS

ACADEMIC YEAR: 2020/2021

1. GENERAL COURSE INFORMATION										
1.1 Course name	Quality control									
1.2 Study program/s	TTS									
1.3 Course status (O,E)	O	1.6 Mode of instruction (number of hours)		Lectures	15					
1.4 Course code				Exercises	30					
1.5 Course abbreviation				Seminars						
1.6 Semester	III			E-learning						
1.7 ECTS	4	1.7 Place and time of instruction		Premises of the Polytechnic of Međimurje in Čakovec, according to the schedule published on the website						
2. TEACHING STAFF										
2.1 Course leader/s-title	Prof.dr.sc. Živko Kondić	contact		zkondic@mev.hr						
		contact								
2.2 Assistant/s- title		contact								
		contact								
2.3 Instruction held by- title		contact								
3. COURSE DESCRIPTION										
3.1 Course goals	Introducing students to the basics of quality management, the application of quality control in modern production, and modern views and approaches to quality management.									
3.2 Prerequisites	no conditions									
3.3 Course outcomes	<p>After successfully passing the course the student will be able to:</p> <ol style="list-style-type: none"> I 1. Recognize the importance of product and service quality in modern production and service delivery I2. Explain aspects of quality I3. Clarify the structure of quality management systems based on modern international standards, and manage systems. I4. Apply basic tools to solve quality problems I5. Calculate process capability indicators and other statistical quality indicators 									
3.4 Course content	<ol style="list-style-type: none"> 1. The concept of quality, quality control, quality assurance and quality management and aspects and indicators of quality. A brief historical overview of the management system. Principles of quality, environment and safety. 2. Modern approach to quality management systems to the requirements of international standards. 3. Statistical quality control (concept, parameters, process capability, control charts, causation, correlation and regression) 4. Tools, methods and methodologies for improving and solving quality control problems. 									
3.5 Types of coursework	x	Lectures	x	Exercises		Blended e-learning	x	Individual activities		Laboratory
		Seminars and workshops		Distant learning		Field classes		Multimedia and network		Mentorship
		Other								
3.6 Language of instruction	hrvatski									
3.7 Monitoring students'	1,5	Class attendance		1,0	Seminars		Essay			

work (enter the number of ECTS credits for each activity so that the total number of ECTS credits is equal to the total ECTS value of the course, 1 ECTS = 30 hours)		Class activity		Project		Report/paper																																																															
	1,5	Midterm exams		Practical task		Continuous knowledge check																																																															
		Written exam		Experimental work																																																																	
		Oral exam		Research																																																																	
3.8 Assessment and evaluation of students' work during classes and at the final exam	<table border="1"> <thead> <tr> <th>Activity specification</th> <th>Percent %</th> <th>Points</th> </tr> </thead> <tbody> <tr> <td colspan="3" style="text-align: center;">Assessment during instruction</td> </tr> <tr> <td>Attendance</td> <td>5%</td> <td>5</td> </tr> <tr> <td>Class activity</td> <td>5%</td> <td>5</td> </tr> <tr> <td>Seminar/ project/ essay</td> <td>30%</td> <td>30</td> </tr> <tr> <td>Midterm exam 1</td> <td>30%</td> <td>30</td> </tr> <tr> <td>Midterm exam 2</td> <td>30%</td> <td>30</td> </tr> <tr> <td colspan="3" style="text-align: center;"><i>Exam assessment for the students who failed to fulfill all the obligatory requirements during the semester</i></td> </tr> <tr> <td>Written exam</td> <td>60%</td> <td>60</td> </tr> <tr> <td>Total:</td> <td>100%</td> <td>100</td> </tr> </tbody> </table>						Activity specification	Percent %	Points	Assessment during instruction			Attendance	5%	5	Class activity	5%	5	Seminar/ project/ essay	30%	30	Midterm exam 1	30%	30	Midterm exam 2	30%	30	<i>Exam assessment for the students who failed to fulfill all the obligatory requirements during the semester</i>			Written exam	60%	60	Total:	100%	100																																	
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3.9 Assessment criteria – analysis per learning outcomes	<table border="1"> <thead> <tr> <th colspan="7">Ways of evaluating learning outcomes</th> </tr> <tr> <th></th> <th>Attendance</th> <th>Activity</th> <th>Mid-term exam 1</th> <th>Mid-term exam 2</th> <th>Practical work</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Outcome 1</td> <td></td> <td></td> <td>10</td> <td></td> <td></td> <td>10</td> </tr> <tr> <td>Outcome 2</td> <td></td> <td></td> <td>10</td> <td></td> <td>5</td> <td>15</td> </tr> <tr> <td>Outcome 3</td> <td></td> <td></td> <td>10</td> <td></td> <td>5</td> <td>15</td> </tr> <tr> <td>Outcome 4</td> <td></td> <td></td> <td></td> <td>20</td> <td>10</td> <td>30</td> </tr> <tr> <td>Outcome 5</td> <td></td> <td></td> <td></td> <td>10</td> <td>10</td> <td>20</td> </tr> <tr> <td>Outcome not-related</td> <td>5</td> <td>5</td> <td></td> <td></td> <td></td> <td>10</td> </tr> <tr> <td>Total</td> <td>5</td> <td>5</td> <td>40</td> <td>30</td> <td>30</td> <td>100</td> </tr> </tbody> </table> <p>Grading of outcomes (in order to pass the mid-term exam/exam the student must achieve at least 50% points for each learning outcome)</p> <p>Points Grade</p> <p>89 – 100 excellent (5)</p> <p>76 – 88 very good (4)</p> <p>63 – 75 good (3)</p> <p>50 – 62 pass (2)</p> <p>0 – 49 fail (1)</p>						Ways of evaluating learning outcomes								Attendance	Activity	Mid-term exam 1	Mid-term exam 2	Practical work	Total	Outcome 1			10			10	Outcome 2			10		5	15	Outcome 3			10		5	15	Outcome 4				20	10	30	Outcome 5				10	10	20	Outcome not-related	5	5				10	Total	5	5	40	30	30	100
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3.10 Specific features related with taking the course	<p>If a student collects 50% of the points of each outcome, he / she directly takes the exam, provided that he / she has submitted a paper. A student cannot access the exam period if he / she has not submitted a paper. The paper is submitted at least 3 days before the exam deadline. During the exam, it is possible to orally check the knowledge in the preparation of practical work.</p> <p>If a student does not achieve a sufficient number of points on the midterm exam, he / she cannot take the next midterm exam.</p> <p>Once achieved points in intermediate exams for each learning outcome are no longer deleted unless the student decides to correct the result for a particular learning outcome, whereby the points won until then are deleted and newly achieved points for that learning outcome are entered.</p> <p>The final grade is obtained on the exam period and is the sum of points earned during classes.</p> <p>Students who did not take the colloquium access the written part of the exam where all learning outcomes are checked, and are required to submit a</p>																																																																				

	practical paper before taking the exam.	
3.11 Students obligations	<p>Full-time students are required to attend at least 70% of the total number of hours of lectures and exercises in order to exercise the right to take the exam. Part-time students are required to attend at least 30% of the total number of hours of lectures and exercises in order to exercise the right to take the exam. If the student has not fulfilled all the obligations set by the course, he is obliged to attend the lectures again and meet the conditions for taking the exam.</p> <p>Attendance can be offset by online tuition, organised webinars and added assignments given by teachers. One lesson lasts 45 minutes, and several hours form a teaching unit. Absence from one teaching unit is counted as one absence. Delays and apologies are recorded separately. In that case, if the student missed more than 50% of classes, and has a justifiable reason/apology, the request should be submitted to the Department Council, which then decides on the justification of student absences with the obligatory opinion of the course leader.</p>	
3.12 Written assignments		
3.13 Required reading	1.	Živko Kondić, Leon Maglić, Duško Pavletić, Ivan Samardžić; Kvaliteta 1, ; Sveučilište u Osijeku, Sveučilište Sjevere i Sveučilište u Rijeci, Varaždin, 2018.
	2.	Živko Kondić, Leon Maglić, Duško Pavletić, Ivan Samardžić; Kvaliteta 2; Sveučilište u Osijeku, Sveučilište Sjevere i Sveučilište u Rijeci, Varaždin, 2018.
	3.	Živko Kondić, Leon Maglić, Duško Pavletić, Ivan Samardžić; Kvaliteta 3; Sveučilište u Osijeku, Sveučilište Sjevere i Sveučilište u Rijeci, Varaždin, 2018.
3.14 Additional reading	1.	Kondić, Ž. - Kvaliteta i metode poboljšanja, Zrinski, Čakovec, 2004.
	2.	Kondić Ž. - Kvaliteta i ISO 9000, TIVA, Varaždin, 2004.
4 ADDITIONAL COURSE INFORMATION		
4.1 Quality control	The quality of the program, teaching process, teaching skills and level of mastery of the material will be established by conducting a written evaluation based on questionnaires, and in other standardised ways and in accordance with the by-laws of the Polytechnic of Međimurje in Čakovec.	
4.2 Contact the teacher	Students can contact the teacher during the office hours and during classes, while for short questions and explanations they can contact him/her any day during working hours by coming in person or by landline. It is also possible to ask questions by e-mail, which will be answered in 48 hours at the latest. It is desirable for students to come as often as possible for any possible questions during the teacher's office hours.	
4.3 Information about the course	It is the obligation of each student to be regularly informed about the course. All notifications about the classes or possible postponement of classes will be posted on the bulletin board and on the website of the Polytechnic at least 24 hours in advance.	

4.4 Course contribution to the study program	<p>The contribution of the course to the study program is reflected in the following outcomes:</p> <p>I2- Use new technologies and techniques as part of the lifelong learning process</p> <p>I5- Critically evaluate arguments, assumptions and data in order to form an opinion and contribute to the solution of the problem</p> <p>I8- Interdisciplinary to solve engineering problems of sustainable development</p> <p>I11-Apply basics of thermoenergetics, thermodynamics and hydromechanics in spatial design of thermodynamic systems</p> <p>I12-Develop a technical plan in the field of design of mechanical thermotechnical systems</p> <p>I13-Analyze the basic elements and networks in electrical engineering and justify the use of non-renewable and renewable energy sources, applicable to thermotechnical systems</p>
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5. ANALYSIS OF COURSE TOPICS (the number of hours is equal to the number of lectures and exercises of the course)

LECTURES				
Hours	Topic and description	Method	Learning outcomes	Course outcome
1.	The concept of quality, quality control, quality assurance and quality management and aspects and indicators of quality. A brief historical overview of the management system. Principles of quality, environment and safety.	<ul style="list-style-type: none"> • Direct teaching (lecture, instruction, pp presentation) • Discovery learning (individual, lead, discussion) • Group learning • Case study • Field classes... 	Distinguish between concepts, quality control, quality management and quality assurance. Understand the historical development of quality and its role in the modern economy. Understand the principles on which the modern approach to quality is based.	I1 I2
2.	Principles of quality. Quality gurus. Japanese, American, European and Croatian approach to quality	Presentation, pp presentation	Understand the principles on which the modern approach to quality is based. Consider different views on quality, and the guru's contribution to the development of quality science	I1 I2
3.	Modern approach to quality management systems to the requirements of modern international standards	Presentation, pp presentation	Explain the procedures for implementing international standards in the field of quality	I3
4.	Modern approach to quality management systems to the requirements of modern international standards; ISO 9001 and the ISO 9000 family of standards.	Presentation, pp presentation	Consider the basic requirements of modern international quality standards	I3
5.	Use of descriptive statistics in quality control	Presentation, pp presentation	Use basic tools of descriptive statistics in analyzing the quality of	I3

			products and services	
6.	Statistical quality control (concept, parameters, process capability, control charts, causation, correlation and regression)	Presentation, pp presentation	Calculate basic statistical indicators in quality control and know how to interpret them.	15
7.	Statistical quality control (concept, parameters, process capability, control charts, causation, correlation and regression)	Presentation, pp presentation	Calculate basic statistical indicators in quality control and know how to interpret them.	15
8.	Statistical quality control (concept, parameters, process capability, control charts, causation, correlation and regression)	Presentation, pp presentation	Calculate basic statistical indicators in quality control and know how to interpret them.	15
9.	Statistical quality control, acceptance tests by sampling (attributes and measurement characteristics)	Presentation, pp presentation	Upoznati se s osnovnim testovima uzorkovanja, te znati primijeniti norme za uzorkovanje.	15
10.	Documentation in quality control and quality management in business systems	Presentation, pp presentation	Introduction to basic documents in quality assurance and management	14 15
11.	Importance of measuring, control and monitoring equipment in quality control	Presentation, pp presentation	Get acquainted with the importance of measuring equipment and control methods.	14 15
12.	Input, intermediate and final quality control in processes	Presentation, pp presentation	Get acquainted with the basic principles of quality control in production processes.	14 15
13.	Tools, methods and methodologies for improving and solving problems of quality control and environmental protection and safety at work	Presentation, pp presentation	Apply modern tools and methods for identifying and solving quality problems	14
14.	Tools, methods and methodologies for improving and solving problems of quality control and environmental protection and safety at work	Presentation, pp presentation	Apply modern tools and methods for identifying and solving quality problems	14
15.	Tools, methods and methodologies for improving and solving problems of quality control and environmental protection and safety at work	Presentation, pp presentation	Apply modern tools and methods for identifying and solving quality problems	14

VJEŽBE/ SEMINARI

Hours	Topic and description	Method	Learning outcomes	Course outcome
		<ul style="list-style-type: none"> • Direct teaching (lecture, instruction, pp presentation) • Discovery learning (individual, lead, discussion) • Group learning • Case study • Field classes... 		
1.	Japanese view of quality	Exposure pp presentations case stud	Consider a modern approach to quality	11 12
2.	American view of quality	Exposure pp presentations case stud	Consider a modern approach to quality	11 12
3.	European and Croatian view on quality	Exposure pp presentations	To consider the modern approach to the quality	11 12

		case stud	of developed EU countries as well as in the Republic of Croatia	
4.	Quality aspects	Exposure pp presentations case stud	Understand the basic aspects of quality	12
5.	Analysis of ISO 9001 requirements	Exposure pp presentations case stud	Apply the requirements of the standard	13
6.	Analysis of ISO 9004 requirements	Exposure pp presentations case stud	Apply the requirements of the standard	13
7.	Statistical quality control-calculation of basic parameters	Exposure pp presentations case stud	Calculate and interpret basic statistical quality parameters	15
8.	Statistical quality control-correlation and regression in quality control	Exposure pp presentations case stud	Calculate and interpret basic statistical quality parameters	15
9.	Statistical quality control-assessment and analysis of process stability	Exposure pp presentations case stud	Calculate and interpret basic statistical quality parameters	15
10.	Statistical quality control-application of sampling method	Exposure pp presentations case stud	Calculate and interpret basic statistical quality parameters	15
11.	Seven basic tools for quality improvement - PDCA circuit and parate analysis	Exposure pp presentations case stud	Apply PDCA and Pareto analysis	14
12.	Seven basic tools for quality improvement-Ishikawa diagram	Exposure pp presentations case stud	Apply Ishikawa diagram -principle	14
13.	Seven basic tools for quality improvement - Control charts in production processes	Exposure pp presentations case stud	Understand and apply seven basic quality tools	14
14.	Business excellence and quality management	Exposure pp presentations case stud	Understand the concept and procedures for achieving business excellence	14
15.	Lean production and quality control	Exposure pp presentations case stud	Connect the concepts of Lean and quality control	14