

Course code

C.12.

Course item

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1. INFORMATION ABOUT THE COURSE

A. Basic information

Course title	Computer Aided Quality
Field of study	Computer Aided Engineering
Cycle	<i>Second</i>
Study profile	<i>Academic</i>
Study mode	<i>Full-time</i>
Specialisation	<i>Not relevant</i>
Unit responsible for the field of study	<i>Faculty of Mechanical Engineering</i>
Lecturer	<i>Dr inż. Marek Szczutkowski,</i>
Introductory courses	<i>Total Quality Management, Mathematics, Mechanics, Physics, Information Technology, Organization and Management, Machine Building Technology, Machine Design.</i>
Prerequisites	<i>Basic knowledge of mathematics, mechanics, physics, information technology, machine design, machine building technology and management is required.</i>

B. Semester/ weekly timetable

Semester	Lectures	Classes	Laboratories	Project classes	Seminars	Field experience	ECTS credits
III	15	-	30	-	-	-	3

LEARNING OUTCOMES (acc. to National Qualifications Framework)

No.	Description of learning outcomes	Reference to learning outcomes for the field of study	Reference to learning outcomes for the area of study
KNOWLEDGE			
K1	knows computer aided quality software	CAE_W06	T2A_W06, T2A_W09
K2	knows methods of to increase the functionality of computer aided quality software	CAE_W08	T2A_W04, T2A_W05
K3	has knowledge sufficient enough to understand economical and practical aspects of engineering tasks	CAE_W09	T2A_W08, T2A_W10, T2A_W11
SKILLS			
S1	is able to stimulate an action of objects and technical devices and objects with usage of computer aided	CAE_U02	T2A_U09, T2A_U16,

	software and on the base of the process is able to propose improvement of existing systems and machines		T2A_U17
S2	is able to prepare technical documentation of technical devices with the usage of computer aided software with reference to economical analysis	CAE_U04	T2A_U02, T2A_U07, T2A_U14, T2A_U19
S3	Knows how to evaluate the need on computer aided tools for specific tasks to support technical processes e.g. quality, management and measurement ones	CAE_U05	T2A_U15, T2A_U18
SOCIAL COMPETENCES			
SC1	understands the need of personal constant development	CAE_K01	T2A_K01
SC2	understands non-technical aspects and outcomes of engineering activity, including environmental issues	CAE_K02	T2A_K02
SC3	role knows how to work within a team playing various stands	CAE_K03	T2A_K03
SC4	knows how to determine priorities to realize a goal defined by himself/ herself	CAE_K04	T2A_K04
SC5	correctly identifies and determines dilemmas assigned to the profession	CAE_K05	T2A_K05
SC6	can think and act in a creative and up-and-coming way	CAE_K06	T2A_K06

2. TEACHING METHODS

Multimedia lecture, laboratory classes, project, design classes, presentation, discussion, case study

2. METHODS OF EXAMINATION

Oral exam, written exam, e-report, presentation

3. COURSE CONTENT

Specify the content separately for each type of classes in accordance with point I.B.	<p>LECTURES</p> <p>Advantages and highlights of the computer aided quality control process, Computer Aided Inspection (CAI) and Computer Aided Testing (CAT), Integration of inspection with manufacturing process, Use of non-contact sensors, Computerized feedback control system, Computer aided quality control and CAD/CAM integration, Measuring equipment management, Documentation, SPC tools, Computer Aided Process Planning (CAPP), Legal issues - standardization - US/ UE and other regulations, Service to the customer software, Computer aided laboratory processes.</p> <p>LABORATORIES</p> <p>Individual classes correspond to topic of lectures presented above. Students use tools presented and introduced during lectures solving cases given by a teacher.</p>
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4. VALIDATION OF LEARNING OUTCOMES

(Each learning outcome from the list requires validation methods to ensure that it was achieved by a student.)

Learning outcome	Form of assessment (for example:)			
	Oral examination	Written examination	E-report	Presentation
K1	x	x	x	x
K2	x	x		x
K3	x	x		z
S1	x	x	x	x
S2		x	x	x
S3	x	x		
SC1	x	x		
SC2	x	x		
SC3			x	x
SC4			x	x
SC5	x	x	x	x
SC6	x	x	x	x

5. LITERATURE

Basic literature	<p>Murphy C., Yates J., 2009. The International Organization for Standardization (ISO): global governance through voluntary consensus. Taylor & Francis, Inc.</p> <p>de Vries H.J., 1999. Standardization: a business approach to the role of national standardization organizations. Kluwer Academic Publishers.</p> <p>Pyzdek T., 2003. Quality Engineering Handbook. Taylor & Francis, Inc.</p> <p>Ott E.R., Schilling E.G., Neubauer D.V., 2005. Process quality control: troubleshooting and interpretation of data. American Society for Quality, Quality Press.</p> <p>Szczutkowski M.. Computer aided laboratory accreditation process – service to the customer as a requirement of ISO/IEC 17025 standard – initial discussion paper, Journal of Polish Cimac Vol. 7/No.3/2012</p>
Supplementary literature	<p>Stamatis D. H., 1997. TQM engineering handbook. Marcel Dekker.</p> <p>Caulcutt R., 1995. Achieving quality improvement: a practical guide. Chapman & Hall.</p> <p>Oakland J.S., 2007. Statistical Process Control. Butterworth-Heinemann.</p> <p>Amsden R.T., Butler H.E., Amsden D.M., 1998. SPC simplified: practical steps to quality. Productivity Press.</p> <p>Choi W., Kurfess T. R. , Cagan J. Sampling uncertainty in coordinate measurement data analysis Prec. Eng., 22, 1998, pp. 153–163</p> <p>Yu T., Wang G., 2009 , Application of Computer-Aided Quality Control System, Second International Conference on Intelligent Computation Technology and Automation</p>

6. TOTAL STUDENT WORKLOAD REQUIRED TO ACHIEVE EXPECTED LEARNING OUTCOMES EXPRESSED IN TIME AND ECTS CREDITS

Student's activity	Student workload– number of hours
Participation in classes indicated in point 2.2	30
Preparation for classes	20
Reading assignments	20

Other (preparation for exams, tests, carrying out a project etc)	20
Total student workload	90
Number of ECTS credits allocated by the lecturer	3
Final number of ECTS credits (determined by the Programme Council for the Field of Study)	3