



REPUBLIC OF MACEDONIA
„Ss. CYRIL AND METHODIUS“ UNIVERSITY IN SKOPJE
FACULTY OF MECHANICAL ENGINEERING - SKOPJE



AN ELABORATE

**FOR ACCREDITATION OF STUDY PROGRAM,
SECOND CYCLE OF UNIVERSITY ACADEMIC STUDIES
(ONE-YEAR STUDIES)**

STUDY PROGRAM

“LEAN MANAGEMENT”

“LEAN MEHAŢIMEHT”

NOMINATING INSTITUTION

**„Ss. CYRIL AND METHODIUS“ UNIVERSITY IN SKOPJE FACULTY OF MECHANICAL
ENGINEERING - SKOPJE**

SKOPJE, DECEMBER, 2018

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Proposed by: Faculty's Board

Adopted by: Educational-scientific Council

REFERENCED LEGAL PROVISIONS

The Accreditation Elaborate for Lean Management study programme of second cycle was developed pursuant to the provisions of:

- the Law on Higher Education ("Official Gazette of the Republic of Macedonia" No. 82/2018),
- the Rulebook on the Organisation, Operation, Manner of Decision Making, Methodology for Accreditation and Evaluation, Standards for Accreditation and Evaluation and other issues related to the work of the Board for Accreditation of Higher Education ("Official Gazette of the Republic of Macedonia" No. 151/2012),
- the Decree on the Norms and Standards for Establishing Higher Education Institutions and Performing Higher Education Activities ("Official Gazette of Republic of Macedonia" No. 103/2010 and 168/2010, Appendix 1 – Classification of Scientific and Research Fields in Accordance with the Frascati Classification),
- the Law on the National Qualifications Framework ("Official Gazette of the Republic of Macedonia" No. 137/2013 and 30/2016),
- the Decree on the National Framework for Higher Education Qualifications ("Official Gazette of the Republic of Macedonia" No. 154/2010),
- the Rulebook on the Requirements, Criteria, and Regulations for Enrolment and Studying at the First and Second Cycle of University Studies ("University Herald" No. 254/2013),
- the Rulebook on the Mandatory Components of the Study Programmes of the First, Second, and Third Cycle ("Official Gazette of the Republic of Macedonia" No. 25/2011 and 154/2011),
- the Rulebook on the Content and the Form of the Diploma, Guidelines for Preparation of the Diploma Supplement and Other Public Documents ("Official Gazette of the Republic of Macedonia" No. 102/2018).

Additional document consulted:

- Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG), (2015). Brussels, Belgium.
- General Criteria for the Accreditation of Degree Programmes, ASIIN e.V.- Accreditation Agency for Degree Programmes in Engineering, Informatics/Computer Science, the Natural Sciences and Mathematics, 2015.
- Subject Specific Criteria for the Accreditation of Degree Programmes for Mechanical Engineering and Process Engineering, ASIIN e.V.- Accreditation Agency for Degree Programmes in Engineering, Informatics/Computer Science, the Natural Sciences and Mathematics, 2011.
- Assessment of Higher Education Learning Outcomes (AHELO), Organisation for Economic Co- operation and Development (OECD), 2009.
- International Standard Classification of Education: Fields of Education and Training 2013 (UNESCO).

1. HIGHER EDUCATION INSTITUTION MAP

Name of the high education institution	„Ss. Cyril and Methodius” University in Skopje Faculty of Mechanical Engineering - Skopje
Address	Rugjer Boshkovic 18, P.O.Box 464, 1000 Skopje
Web page	http://www.mf.edu.mk/
Type of the high education institution (public, private-public non-profit, private non-profit, private profit)	University / Faculty
Data for the founder (private higher education institution)	National assembly of Republic of Macedonia
Data for the last accreditation	First cycle – year 2016, decision no. 14-1177 from 17.07.2017 Second cycle – year 2008, 2011, 2012, 2014 Third cycle – year 2018
Study and research areas for which accreditation has been obtained	Research fields: Machinery, Energy, Industrial Engineering and Management, Quality Control, Materials, Environment, Transport, Transportation, Construction and Water Management, Regulation and management of technological processes Scientific research area: Technical and Technological Sciences
Faculty in the higher education institution	Faculty at „Ss. Cyril and Methodius” University in Skopje 28 members (23 faculties and 5 institutes). Faculty of Mechanical Engineering consists of 6 institutes and 1 department.
Study programs that are realized in the unit who requires extension of the activity by introducing new study program	First cycle: a) Four years academic study programs (240 ECTS): Production Engineering Transport, Mechanization and Logistics Thermal Engineering Hydraulic Engineering and Water Management Materials, processes and inovations Industrial Engineering and Management Motor Vehicles Energy and environment Mechatronics Automation and Control Systems Industrial design Second cycle: a) Study program for one year Master studies: <ul style="list-style-type: none"> • Production Engineering • Transport and Logistics • Thermal Engineering • Automatics and fluids engineering • Materials and Welding • Industrial Engineering and Management

	<ul style="list-style-type: none"> • Motor Vehicles • Sustainable energy and environment • Mechatronics • Product lifecycle management • Management and Quality Control <p>b) Name of the study program for two year Master studies:</p> <ul style="list-style-type: none"> • Industrial design and marketing • Management of occupational health and safety systems • Management and Quality Control <p>Third cycle:</p> <ul style="list-style-type: none"> • Study program in Machinery • Study program Industrial engineering and management 																																																																																															
Data for international cooperation in the field of teaching, research and student mobility	<p>The Faculty of Mechanical Engineering has international cooperation in the field of teaching, research and student mobility within the CEEPUS mobility program of teaching and student staff, Erasmus and Erasmus + program (signed several agreements with foreign universities, information available at http://www.ukim.edu.mk/dokumenti_m/431_Erazmus+%20dogovori.doc) and other agreements on international cooperation.</p>																																																																																															
Information about area for teaching and research	<p>1.Total area (gross area) (space for teaching and yard) 9918 m² 2.Total teaching area (net space) 4840 m² 3.Number of lecture theaters with total number of chairs lecture theaters with total number of chairs 480 4.Number of classrooms with total number of chairs 24 classrooms with total number of chairs 1111</p>																																																																																															
	<table border="1"> <thead> <tr> <th>no.</th> <th>Types of didactic space numeration</th> <th>Number of premises</th> <th>Area in square metres</th> <th>Total seating capacity</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Lecture theaters</td> <td>2</td> <td>426</td> <td>480</td> </tr> <tr> <td></td> <td>AMF</td> <td>1</td> <td>228</td> <td>300</td> </tr> <tr> <td></td> <td>225</td> <td>1</td> <td>198</td> <td>180</td> </tr> <tr> <td>2.</td> <td>Classrooms</td> <td>25</td> <td>1628,8</td> <td>1113</td> </tr> <tr> <td></td> <td>123</td> <td>1</td> <td>87</td> <td>56</td> </tr> <tr> <td></td> <td>124</td> <td>1</td> <td>87</td> <td>64</td> </tr> <tr> <td></td> <td>125</td> <td>1</td> <td>75</td> <td>40</td> </tr> <tr> <td></td> <td>224</td> <td>1</td> <td>111</td> <td>80</td> </tr> <tr> <td></td> <td>310</td> <td>1</td> <td>127</td> <td>88</td> </tr> <tr> <td></td> <td>311</td> <td>1</td> <td>76</td> <td>48</td> </tr> <tr> <td></td> <td>A1-1</td> <td>1</td> <td>88</td> <td>88</td> </tr> <tr> <td></td> <td>A1-2 left</td> <td>1</td> <td>38</td> <td>38</td> </tr> <tr> <td></td> <td>A1-2 right</td> <td>1</td> <td>43</td> <td>28</td> </tr> <tr> <td></td> <td>A1-3</td> <td>1</td> <td>43</td> <td>28</td> </tr> <tr> <td></td> <td>A1-5</td> <td>1</td> <td>43</td> <td>28</td> </tr> <tr> <td></td> <td>F1-2</td> <td>1</td> <td>54,5</td> <td>22</td> </tr> <tr> <td></td> <td>F2-4</td> <td>1</td> <td>60,4</td> <td>32</td> </tr> <tr> <td></td> <td>F2-5</td> <td>1</td> <td>42,3</td> <td>18</td> </tr> </tbody> </table>	no.	Types of didactic space numeration	Number of premises	Area in square metres	Total seating capacity	1.	Lecture theaters	2	426	480		AMF	1	228	300		225	1	198	180	2.	Classrooms	25	1628,8	1113		123	1	87	56		124	1	87	64		125	1	75	40		224	1	111	80		310	1	127	88		311	1	76	48		A1-1	1	88	88		A1-2 left	1	38	38		A1-2 right	1	43	28		A1-3	1	43	28		A1-5	1	43	28		F1-2	1	54,5	22		F2-4	1	60,4	32		F2-5	1	42,3	18
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	F2-6	1	53,3	22	
	K2-6	1	44,7	28	
	K2-7	1	44,7	25	
	K2-15	1	44,7	20	
	K3-9	1	80	40	
	K3-1	1	55,1	36	
	K3-18	1	55,1	36	
Information about the equipment for teaching and research	1. Number of classrooms with computer and capacity of computer workplaces 10 classrooms with total 274 workplaces				
	no.	Types of didactic space numeration	Number of premises	Area in square metres	Total seating capacity
	1	Computer rooms	10	391	274
		Room 309	1	75	25
		Room 312 Web Lab	1	75	25
		Computer center 1	1	79	30
		Computer center 2	1	84	44
		Room K1-2	1	47,4	24
		Room K1-3	1	47,4	24
		Room K2-8	1	48,3	40
		Room K3-18 Idea.lab	1	44,7	12
		Room F1-1	1	35	22
		Room A1-4	1	43	28
		2. Number of laboratories for practical teaching 21			
		3. Equipment for performing higher education activities Equipment value 13.829.470,00 MKD			
Number of students that a accreditation is obtained for	Number of students 1413				
Number of students (enrolled for the first time)	Number of regular students on postgraduate studies 310				
Number of staff in teaching and research, scientific and teaching positions	Structure of the teaching staff in teaching science, research, teaching and associate titles				
	Full professor		37		
	Associate professor		10		
	Assistant professor		13		

Number of staff with assistant positions	Structure of associates after teaching science, research, teaching and associate titles Teaching Assistant 10 Research assistant 1
Teacher : students ratio (number of students per teacher) for each unit separately	1413 / 60 = 23.55
	http://www.mf.edu.mk/sites/default/files/files/IZVESH_TAJ%20za%20samoevaluacija%20na%20MFS%202013.pdf
Frequency of self-evaluation process (every year, two years, three years)	In order to provide conditions for continuous improvement of the quality of teaching (educational process) it is provided a self-evaluation in every three years.
Data of last conducted external evaluation of the institution	Report for the subsequent evaluation of Ss Cyril and Methodius University in Skopje issued by the European University Association, 2015: http://www.ukim.edu.mk/dokumenti_m/EUA_Izvestaj-
Other information that the institution wants to specify as an argument for its success	
Internal mechanisms that ensure quality control for the studies	<ul style="list-style-type: none"> • Development of teaching contents • Completion of the teaching process • Evaluation of students • Graduation paper, • Rating the quality of teaching by students with surveys at the end of each semester for each subject, • Evaluate the quality of the study program by the students in the award of the diploma and • Other procedures relating to resources and logistics of the teaching process.

1a. General classification descriptors for one-year university studies of second cycle comprising 60 ECTS, organised by the Faculty of Mechanical Engineering – Skopje, pursuant to the Decree on the National Framework for Higher Education Qualifications.

Level in the National Framework for Higher Education Qualifications	Higher Education	Level in the European Framework for Higher Education Qualifications
VIIIA	Second cycle of university, academic Master studies, one-year studies, 60 ECTS	7

<p>Knowledge and understanding</p>	<p>The student demonstrates knowledge and understanding in the scientific and research fields of mechanical engineering, power engineering, industrial engineering and management, quality control, materials, environment, traffic and transport, civil and water management, regulation and management of technological processes, organisational sciences and management, which build upon the previous education and training acquired in the first cycle of studies, including knowledge in the domain of theoretical, practical, conceptual, comparative, and critical perspectives in the scientific fields and areas using appropriate methodology.</p> <p>Demonstrates understanding of the relevant fields that are subject of the study of the second cycle and knowledge of the current issues related to the scientific research and new sources of knowledge.</p>
<p>Applying knowledge and understanding</p>	<p>Is able to apply the acquired knowledge and understanding to the field of the subject of the study programmes demonstrating an in-depth, professional, and competent approach to solving tasks at work or in the profession.</p> <p>Demonstrates competencies for identification, analysis, and problem solving in the scientific subject areas from the second cycle of studies.</p> <p>Is capable of finding and supporting arguments within the study field of the second cycle of studies.</p>
<p>Making judgments</p>	<p>Possesses the ability to collect, analyse, evaluate, and present information, ideas, and concepts in the frames of the conducted scientific and research activities, using relevant data.</p> <p>Is able to make appropriate assessments taking into account personal, social, scientific and research, developmental, and ethical aspects.</p> <p>Is able to evaluate theoretical and practical issues, to formulate opinion and provide explanation of the causes that give rise to certain phenomena and to choose an appropriate solution.</p>
<p>Communication skills</p>	<p>Is able to establish contacts, develop arguments and discuss with both specialist and non-specialist audience on issues and about information, ideas, problems, tasks, and solutions when the criteria for decision making and the scope of the task are clearly defined.</p> <p>Takes over a divided, separate responsibility for issues arising from teamwork and related to collective results.</p> <p>Is capable to participate independently in specific, scientific, and interdisciplinary discussions while demonstrating a professional and comprehensive approach.</p>
<p>Learning skills</p>	<p>Takes initiative to identify the needs for acquiring further knowledge and learning with a high degree of autonomy.</p>

1b. Specific qualification descriptors determining the learning outcomes for second cycle one-year university academic studies comprising 60 ECTS, Lean Management (LEAN) study programme, pursuant to the Decree on the National Framework for Higher Education Qualifications

Knowledge and understanding	<p>Demonstrates profound knowledge and understanding of the scientific and research fields and areas acquired in the second cycle of studies. These refer to:</p> <ul style="list-style-type: none"> • Understanding the concept of Lean Management; • Broad knowledge in analyzing processes; • Understanding the basic Lean principles; • Detailed knowledge in implementing some Lean tools; • Generating variants for improvement; • Ways to change the organisational culture in an organisation.
Applying knowledge and understanding	<p>Is capable of studying tasks that are subject to analysis as a complex, demonstrating elements of discernment, and can apply the knowledge and understanding in a manner indicating a professional approach to the job or the profession.</p> <p>Demonstrates competencies for identification, analysis, and problem solving in the relevant scientific areas studied in the second cycle of studies.</p> <p>Is capable of finding and supporting arguments within the field and areas of study.</p>
Making judgments	<p>Possesses the ability to collect, analyse, evaluate, and present information, ideas, and concepts using relevant data.</p> <p>Makes appropriate assessments taking into account personal, social, scientific and ethical aspects.</p> <p>Is able to evaluate theoretical and practical issues from the area of Lean Management, to provide well-supported explanations of the causes of certain phenomena, to explain the laws behind them, and to choose an appropriate solution.</p>
Communication skills	<p>Develops the ability to establish communication and to discuss with both specialist and non-specialist audience about information, ideas, problems, and solutions when the decision criteria and the scope of the task are clearly defined.</p> <p>Takes a divided, separate responsibility for collective results.</p> <p>Is capable to participate independently, taking a professional approach, in specific, scientific, and interdisciplinary discussions.</p>
Learning skills	<p>Undertakes initiative to identify the needs for acquiring further knowledge and learning with a high degree of autonomy, i.e. the student evaluates the need for continuous enhancement of their knowledge and skills.</p>

2. Decision on adopting the study programmes by the Scientific and Educational Council of the Faculty (Faculty of Mechanical Engineering - Skopje), the Educational Council of the autonomous higher vocational school or the Scientific Council of the scientific institution.

The Decision is enclosed as Appendix 1 near at the end of the Elaborate.

3. Decision on adopting the study programme by the Rector's Board, the University Senate, or the Council of the scientific Institution

The Decision is attached as Appendix 2 near the end of the Elaborate.

4. Scientific and research area, field and domain of the study programme

Study programme: Lean Management

Scientific and research area	Technical and technological sciences
Scientific and research field	Industrial Engineering and Management
Scientific and research branch	Method of analysis of the structure and functioning of the enterprise, Planning, Analysis and measurement of work and time, Study of the factors of the working environment and safety at work, Organization of technological processes, Organization of administrative processes, Methods of system theory and system analysis, Industrial dynamics, Theory of decision making, Operations Research and branches of the aforementioned research fields in accordance with the subjects covered by the study programme, as well as the areas that correspond with the subjects studied in the study programme that belong to the scientific and research fields that are not listed.

5. Type of study programme (academic or vocational studies)

Lean Management study programme, organised by the Faculty of Mechanical Engineering - Skopje is an academic university study programme.

6. Degree of education (first or second cycle)

Lean Management study programme at the Faculty of Mechanical Engineering - Skopje is an academic university study programme of second cycle, organised as a year-long programme comprising 60 ECTS.

7. Objectives and rationale for the Lean Management study programme

The Faculty of Mechanical Engineering of the Ss. Cyril and Methodius University in Skopje is the country's leading institution when it comes to education of mechanical engineers. In order to meet the needs of both the foreign investors and the domestic production companies, permanent education of professionals who possess new interdisciplinary knowledge and will successfully respond to the global trends is necessary.

The Institute of Production Engineering and Management at the Faculty of Mechanical Engineering in Skopje is proposing a study programme that stemmed from a previous comprehensive analysis and identification of the needs and employment opportunities of the graduates in: research, analytics, control and management processes in production and service organisations, leading and improvement of production capacities, leading project processes and teams, reducing losses in operation.

Recognising the basic competences of the profile and the acquired qualifications from the field of industrial engineering and management, this study programme justifies the expectations for understanding the concept of Lean Management, broad knowledge in analysing processes, understanding the basic Lean principles, detailed knowledge in implementing some Lean tools,

generating variants for improvement, and the ways to change the organisational culture in an organisation.

The proposed study program is made according to the example of similar study programs at renowned European and world universities, that is, an account is taken of the compliance of the study program with the norms, standards and methodology that are accepted in the single European Higher Education Area, thus allowing comparability with the programs of higher education institutions in that area. In that direction, during the design of the curricula, a comparison has been performed with the following study programs: Lean Enterprise Excellence at the Waterford Institute of Technology, Waterford, Ireland [https://www.wit.ie/courses/type/business/department_of_graduate_business_studies/master-of-business-in-lean-enterprise-excellence], Lean Operations Management at Montpellier Business School, France [<https://www.montpellier-bs.com/international/our-programmes/msc-en/our-masters-of-science-in-business-operations-management/>], Logistics and Supply Chain Management with Lean Six Sigma at Heriot-Watt University, Edinburgh, United Kingdom [<https://www.hw.ac.uk/study/uk/postgraduate/logistics-supply-chain-management-lean-six-sigma.htm>], Lean and Agile Manufacturing at University of Wales, Trinity Saint David, United Kingdom [<https://www.uwtsd.ac.uk/msc-lean-agile-manufacturing/>].

The abovementioned reasons give rise to the basic elements of the social justification and benefits from this study programme, as well as its sustainability in the future.

8. Duration of the study programme expressed in years and semesters

The Lean Management study programme is implemented in one year, two semesters, in accordance with the 4+1 model.

9. ECTS credits obtained by the student

By completion of one-year long university studies of second cycle in Lean Management study programme organised by the Faculty of Mechanical Engineering – Skopje, the student acquires 60 ECTS credits.

10. Manner of financing, and for private higher education and scientific institutions also a proof of secured a quality financial guarantee for the study programme

The expenses for conducting the graduate studies in **Lean Management** study programme will be covered by the students in the form of self-financing or co-financing. The sum, the manner of payment, as well as all the other requirements are regulated by the Rulebook on the Requirements, Criteria, and Regulations for Enrolment and Studying at the First and Second Cycle of University Studies of the Ss. Cyril and Methodius University in Skopje. In case of future participation in financing by the State, the amount of participation shall be taken into account in defining the amount for co-financing.

11. Enrollment requirements

The right to be enrolled in this study program belongs to candidates with completed university academic studies with acquired 240 ECTS, or candidates with completed undergraduate studies pursuant to the Law on Higher Education in force prior to implementation of ECTS system pursuant to the Bologna Declaration.

Enrollment of students in all the study programmes of the studies of second cycle shall be done pursuant to the provisions of the 'Call for Enrollment of Students at Studies of Second Cycle at the Ss. Cyril and Methodius University in Skopje'.

The Educational and Scientific Committee of the study programme shall be deciding on the fulfillment of the criteria of relatedness of the previous education with the study programme.

12. Information on continuation of education

After completing university studies of second cycle, **Lean Management** study programme at the Faculty of Mechanical Engineering – Skopje, the students can continue their education at third cycle of studies.

13. Determined ratio between compulsory and elective courses with a list of compulsory courses, list of elective courses, and defined manner of choosing courses

Lean Management study programme of university academic studies of second cycle is organised as full-time one-year (two semesters) studies.

The study programme represents a continuation – enhancement of knowledge acquired in the first cycle of university academic studies of 4-year duration.

These one-year university studies of second cycle encompass a certain number of subject programmes (courses) which are expressed in a number of credits defined in the course programmes.

The structure of the **Lean Management** study programme, one-year academic university studies of second cycle, is presented in Table 1, and the ratio between the compulsory and elective courses are presented in Table 2.

Table 1.

Ord. no.	Courses	ECTS	Winter semester	Summer semester
1.	Compulsory Course 1 (Table 1)	6	6	
2.	Compulsory Course 2 (Table 1)	6	6	
3.	Compulsory Course 3 (Table 1)	6	6	
4.	Compulsory Course 4 (Table 1)	6		6
5.	Elective Course 1 (to be chosen from Table 2)	6	6	
6.	Elective Course 2 (to be chosen from Table 2)	6		6
7.	Elective Course 3 (to be chosen from Table 2)	6	6	
8.	Master's Thesis	18		18
	Total credits	60	30	30

Table 2.

Ord. no.	Study programme	Duration of studies (years)/ ECTS	Total number / ECTS percentage	Number/ Percentage of compulsory ECTS	Number/ Percentage of elective ECTS
1	Thermal Engineering	1 year/ 60 ECTS	60 / 100%	42 / 70%	18 / 30%

The programme subjects for the compulsory and the elective courses are presented in Table 3 and Table 4, respectively.

Table 3. Compulsory Courses

Ord. no.	Code	Course	ECTS	Year / Semester
1.	2LEAN01	Lean Thinking	6	I/winter or I/summer
2.	2LEAN02	Lean Tools 1	6	I/winter or I/summer
3.	2LEAN03	Motivation and Creative Teams	6	I/winter or I/summer
4.	2LEAN04	Lean Tools 2	6	I/winter or I/summer

Table 4. Elective Courses

Ord. no.	Code	Course	ECTS	година / семестар
1.	2IIM18	Applied Modelling and Simulation in Business Processes	6	I/winter or I/summer
2.	2LEAN06	Organisational Design – Lean Approach	6	I/winter or I/summer
3.	2LEAN07	Design of Quality Management Systems	6	I/winter or I/summer
4.	2LEAN08	Lean Project	6	I/winter or I/summer
5.	2LEAN09	Applied Statistics	6	I/winter or I/summer
6.	2LEAN10	Economical Aspect of Lean	6	I/ winter or I/summer
7.	2LEAN11	Lean & Other Approaches	6	I/ winter or I/summer
8.	2LEAN12	Workplace Safety Management	6	I/ winter or I/summer
9.	2LEAN13	Total Productivity Maintenance	6	I/ winter or I/summer
10.	2LEAN14	TQM	6	I/ winter or I/summer
11.	2LEAN15	Ergonomic Systems	6	I/ winter or I/summer
12.	2LEAN16	Green Lean	6	I/ winter or I/summer
13.	2LEAN17	Project Cycle Management	6	I/ winter or I/summer

Regarding the elective courses, the student is allowed to choose courses offered by other accredited university studies which are 6 ECTS worth.

Students are allowed to attend and take examination for up to two courses offered by one same professor.

Pursuant to the Law on Higher Education, the programme is delivered in Macedonian language. However, compliant to the provision of Article 139 Paragraph 10 of the Law on Higher Education certain courses can be delivered in English.

14. Information on the premises foreseen for realization of the study programme

The graduate studies are organised as full-time studies with instruction.

The Faculty of Mechanical Engineering has on disposal sufficient special capacity for realisation of the educational process on the first, second, and third cycle of studies, noted in the Higher Education Institution Map.

The practice part of the instruction is mainly carried out in the laboratories of the Institute of Production Engineering and Management. The Industrial Engineering and Management laboratory is the venue for most of the practice work, but, when needed, other laboratories own by the Faculty of Mechanical Engineering and stated in the Higher Education Institution Map can serve as a location for practising.

15. List of equipment foreseen for implementation of the study programme

The Faculty of Mechanical Engineering – Skopje has got the following pieces of equipment at its disposal for instruction:

- Hydraulic system for measurements of small turbine;
- System for laboratory tests of fluidized bed combustion (defining the flow and the temperature in the combustion of solid fuels in fluidized bed);
- System for testing turbopumps, model turbines, and pipeline armature (the system is composed of three-chamber reservoir, electric motor driven pump, vacuum pump, compressor, compressed air reservoir);
- Machines from the field of pneumatics, electro-pneumatics, hydraulics, electro-hydraulics, proportional hydraulics and application of computers in programmable memory control;
- Measuring Amplifier instrument for dynamical measurements HBM KWS/6A-5;
- Measuring Amplifier instrument for dynamical measurements HBM type KWS 673.D4. ;
- Multi-channel measurement instrument HBM type 3835A (6 x UM3301A);
- Instrumentation Data Acquisition Tape Recorder HP 3964A and HP 3968A;
- Two-channel Oscilloscope HBM type H2B.13A;
- Spectrum Analyzer HP 3582A;
- Six-channel electronic writer type R65 with RS232 interface;
- Two-coordinate electronic writer HP type 7015B;
- Set for application of measure gauges HBM- DAK2;
- Measuring amplifier for no contact measure of torque HBM-BLM;
- Five-channel measure amplifier- acquisition system DMC- SHARP;
- PC computer with built-in A/D (D/A) cards NATIONAL INSTRUMENTS type AT -MIO-16;
- Interfaces for online signal processing and equipment control;
- XS Plotter ROLLAND- DXS.880;
- Six-channel measuring amplifier instrument for static and quasi static measurements HBM-UPM60;
- Junction box HBM-BT21 93;
- Strain gauges for tensometric testing (HBM и PHILIPS) of different types;
- Inductive transducers for displacement HBM type W20 (1), W50 (2) and W100 (4);
- Inductive transducer for acceleration HBM type B12 (8);
- Transmission system transducer - registering pressure force;
- Fluid pressure transducer HBM type P11/10; P1/200;
- Force transducers HBM type 36X2/1t, 312/50 и 312/200;
- Press for inflicting force MF1;
- Transducers (of different types) for temperature measurement;

- Tensometric transducers for measuring torque;
- Collector rings and brushes HBM;
- Device for measuring the thickness of metal walls (metal sheets);
- Apparatuses and systems for determining physical and chemical characteristics of fuels, lubrication oils, and water;
- Device for examination of surface cracks;
- Equipment for dimensional measurement, control of length and angular characteristics, quality of surface, mass and other controls;
- Devices for examination of harmful substances in exhaust gasses;
- Etalon gasses for comparison and control of gas analyzers;
- Tachometer (RPM gauge) ISKRA;
- Weighing scales with weight range 50 to 10,000 kg.;
- Aggregate HONDA 800 for charging the measure instruments when dynamic testing of vehicles are performed;
- Computers (DIGITAL, XP, PC), used as servers, graphics and autonomous workstations;
- Instruments and devices for vibration measurements (vibration analyser, vibrometer, calibration vibrator etc.)
- Devices for measurement of noise (noise analyser, filter, microphones and other aids)
- Testing stands for protective equipment and shelters (shock wave simulators, flow rate measurements with micromanometers);
- Device for measuring relative humidity and speed;
- Chamber for air conditioning on a certain temperature and relative humidity;
- Chamber of examination and testing of thermal devices;
- Instruments for measuring heat;
- Instructional cooling aggregate “Graco” with measurement and regulation devices for thermoenergetic balancing
- Cooling calorimetric aggregates as teaching resource and for balancing;
- Forced draught cooling tower with water system, lamellate heat exchanger for water cooling for the air conditioning chamber and thermal testing;
- Heat pump model plant;
- “Vaporax” steam boiler for fast steam production and burners;
- Device for chemical preparation of water, supply reservoir, etc.;
- Instruments for exhaust gases analysis;
- Motor octane number determining (IT9-2M) using the motor method;
- Professional Software ADAMS, CAD, FLUENT, LAB WINDOWS Ideas, Nisa, Algor, Delphi, Matlab, CATIA, SOLID, SIEMENS (NX, Technomatix, Teamcenter, ...), Solidworks, Autodesk Inventor, ArtCAM, X3 Medical V6, RapidWorks and other;
- Hand-held devices for water quality measuring Eureka Environmental Manta Multiprobe Logger3.0, Cond Graphite, 4 electrode, Amphibian Display Package;
- Ultrasonic flowmeter EESIFLO PORTALOK 7S;
- Hiperspectral process photometer spectro::lyser:
- Data acquisition system con::stat - industrial process control terminal (900/1800 MHz GSM);
- Laboratory measuring equipment Laboratory Conductivity Meter, Laboratory Oxygen Meter;
- Set for soil testing;
- GPS – Global Positioning Unit, One Frequency R3 GPS system (base+rover) with post-processing software Trimble Recon ;
- Zeta-Meter System 3.0+ with Unitron FSB 4X Microscope;
- M-CAM 40 - CNC wood processing machine;
- XSenors - pressure mapping system;
- NextEngine - 3D Scanner;
- Styrocut thermo cutter.

- Control stick L= 50 mm, Mitutoyo, No.167 - 102 Nominal length: 50 mm,
Tolerance: (1+L/50), L in mm
- Control stick L= 75 mm, Mitutoyo, No. 167 - 103 Nominal length: 75 mm,
Tolerance: (1+L/50), L in mm
- Control stick L = 100 mm, Mitutoyo, No. 167 - 104 Nominal length: 100 mm,
Tolerance: (1+L/50), L in mm
- Control stick L =125 mm, Mitutoyo, No.167 - 105 Nominal length: 125 mm,
Tolerance: (1+L/50), L in mm
- Control stick L = 150 mm, Mitutoyo, No. 167 - 106 Nominal length: 150 mm,
Tolerance: (1+L/50), L in mm

- Control ring Ø 50 mm, Einst, Kp-02 Nominal diameter: 50 mm,
Cylindricity: 1 µm,
- Control glass for flatness testing 12 mm, Mitutoyo, No. 157 – 101 Thickness: 12 mm
Flatness: 0.1 µm
Parallelism: 0.2 µm
- Set of plane-parallel control glasses for inspection of parallelism (4 pieces) Mitutoyo, No. 157 - 903 Thickness: 12,00; 12,12; 12,25; 12,37,
Flatness: 0.1 µm
Parallelism: 0.2 µm
- Set of plane-parallel bordering scales (10 pieces), Mitutoyo, Code No: 516 - 107, Serial No. 219652 Measuring range: 2,5-25,0 mm,
Class I (in accordance with DIN 863)
- Universal length measuring machine, Carl Zeiss Jena, No. 2492 Measuring range: to 600 mm,
Resolution: 1 µm
- Universal length measuring machine, Carl Zeiss Jena, No. 1591 Measuring range: to 600 mm,
Resolution: 1 µm
- Universal length measuring machine, SIP, Type: MUL-300, No. 556 Measuring range: to 300 mm,
Resolution: 0.5 µm
With possibility of coil profile measuring
- Universal measuring microscope, Carl Zeiss Jena, No. 10344 Measuring range: 25 x 25 (50 x 150) mm
Resolution: 0.01 mm
- Universal measuring microscope, UIM-21, No. 610978 Measuring range: 100 x 250 mm
Resolution: 0.01 mm
- Granite measuring plate, Hommel - dura, No. 11043 Dimensions: 1000x630x150 mm,
Accuracy class: 1

16. Course programmes, including information related to Article 4 of the Rulebook on the Mandatory Components of the Study Programmes of the First, Second, and Third Cycle (“Official Gazette of the Republic of Macedonia” No. 25/2011) and the Rulebook on Changes and Amendments of the Rulebook on the Mandatory Components of the Study Programmes of the First, Second, and Third Cycle (“Official Gazette of the Republic of Macedonia” No. 154/2011)

Add. 3		Course program for the second level (second cycle - postgraduate) of studies
1.	Course title	Lean Thinking
2.	Code	2LEAN01
3.	Study group(s)	Lean Management
4.	The organizer of the study program (unit, institute, department)	“Ss. Cyril and Methodius” University in Skopje, Faculty of Mechanical Engineering - Skopje
5.	Level (first, second, third degree)	Second

6.	Academic year / semester	I / winter	7.	ECTS credits	6
8.	Professor	Prof. PhD Robert Minovski			
9.	Prerequisites for enrolling the course	None			
10.	<p>Course objectives (competences):</p> <p>The main objective of the course is to prepare the participants understand the general concept of Lean Management through understanding the differences between the traditional production thinking and Lean thinking.</p> <p>Additionally, it should introduce the participants in the roots of the Lean management and they should be able to recognize the wastes in the organization and have understanding about practicing the Lean principles.</p>				
11.	<p>Course content:</p> <p>Goals of one profit oriented organization. How does Lean contribute to accomplishing those goals. Definition of Lean. History of Lean and Toyota Production System. Understanding the waste. 7(8) Types of wastes. Methodology for implementation of Lean. Prerequisites for Lean implementation.</p>				
12.	Study methods: Interactive lectures, team work (if applicable) project assignments				
13.	Total hours	6 ECTS x 30 = 180 hours			
14.	Hours allocation per activity:	30+30+30+30+60=180 hours			
15.	Lectures/Lab	15.1.	Lectures (15 weeks x 2)	30 hours	
		15.2.	Lab (student work)	30 hours	
16.	Project Work/Assignments	16.1.	Project assignments	30 hours	
		16.2.	Individual assignments	30 hours	
		16.3.	Self-study	60 hours	
17.	Points/Marks:				
	17.1.	Exams	60 points		
	17.2.	Projects	30 points		
	17.3.	Attendance	10 points		
18.	Grading scale	Under 50%		5 (five) (F)	
		51 - 64%		6 (six) (D)	
		65 - 74%		7 (seven) (C)	
		75 - 84%		8 (eight) (B-)	
		85 - 94%		9 (nine) (A-/B+)	
		95 - 100%		10 (ten)(A/A+)	
19.	Prerequisites for taking the final exam	Seminar work delivered and approved			
20.	Language	English / Macedonian			
21.	Course evaluation	Student questionnaire			
22.	Textbooks				
	22.1	Instruction materials			
		No.	Author	Title	Publisher
	1.	R. Minovski at all.,	Lean Management	Seminar materials in scope of the InComSMEs project	2018

	2.	J. Womack, D. Jones	Lean Thinking	Free Press	2000
	3.	/	Contemporary materials (presentations, papers) on Lean Management	/	/
22.2	Supplemental Instruction Materials				
	No.	Author	Title	Publisher	Year
	1.	L. Wilson	How to implement Lean Manufacturing	McGraw Hill	2010

Add. 3		Course program for the second level (second cycle - postgraduate) of studies			
1.	Course title	Lean tools 1			
2.	Code	2LEAN02			
3.	Study group(s)	Lean Management			
4.	The organizer of the study program (unit, institute, department)	"Ss. Cyril and Methodius" University in Skopje, Faculty of Mechanical Engineering - Skopje			
5.	Level (first, second, third degree)	Second			
6.	Academic year / semester	I / winter	7.	ECTS credits	6
8.	Professor	Assistant professor PhD Bojan Jovanoski			
9.	Prerequisites for enrolling the course	None			
10.	Course objectives (competences): The main objective of the course is to give the participants theoretical and practical experience on selected Lean Management tools i.e. to make them competent to understand and implement those tools.				
11.	Course content: House of Lean and the importance of the Lean tools. Theoretical explanation and analysis of case studies of selected Lean tools, like 5S, Visualization, Takt time, Poka Yoke, etc.				
12.	Study methods: Interactive lectures, auditory and/or laboratory practice, selfrunning and/or team work on project assignments, selfrunning assignments				
13.	Total hours	6 ECTS x 30 = 180 hours			
14.	Hours allocation per activity:	30+30+30+30+60=180 hours			

15.	Lectures/Lab		15.1.	Lectures (15 weeks x 2)	30 hours	
			15.2.	Lab (student work)	30 hours	
16.	Project Work/Assignments		16.1.	Project assignments	30 hours	
			16.2.	Individual assignments	30 hours	
			16.3.	Self-study	60 hours	
17.	Points/Marks:					
	17.1.	Exams		50 points		
	17.2.	Projects		50 points		
	17.3.	Attendance				
18.	Grading scale		Under 50%		5 (five) (F)	
			51 - 64%		6 (six) (D)	
			65 - 74%		7 (seven) (C)	
			75 - 84%		8 (eight) (B-)	
			85 - 94%		9 (nine) (A-/B+)	
			95 - 100%		10 (ten)(A/A+)	
19.	Prerequisites for taking the final exam		Seminar work delivered and approved			
20.	Language		English/Macedonian			
21.	Course evaluation		Student questionnaire			
22.	Textbooks					
	22.1	Instruction materials				
		No.	Author	Title	Publisher	Year
		1.	Lonnie Wilson	How to Implement Lean Manufacturing	McGraw-Hill	2010
		2.	Javier Santos, Richard Wysk, Jose Manuel Torres	Improving Production With Lean Thinking	Willy and Sons	2006
	3.					
	22.2	Supplemental Instruction Materials				
No.		Author	Title	Publisher	Year	
1.		John Nicholas	Lean Production for Competitive Advantage	CRC Press	2018	

Add. 3		Course program for the second level (second cycle - postgraduate) of studies			
1.	Course title	Motivation and creative teams			
2.	Code	2LEAN03			
3.	Study group(s)	Lean Management			
4.	The organizer of the study program (unit, institute, department)	Institute for Production and Industrial Engineering, Faculty of Mechanical Engineering "Ss. Cyril and Methodius" University in Skopje, - Skopje			
5.	Level (first, second, third degree)	Second			
6.	Academic year / semester	I / winter	7.	ECTS credits	6
8.	Professor	Prof. PhD Radmil Polenakovikj			
9.	Prerequisites for enrolling the course	None			
10.	Course objectives (competences): Students will be capable to recognize different motivational theories; to implement behavioral and cognitive approaches of motivation in teams; to motivate employees to work according LEAN principles; to manage creative teams in LEAN surroundings				
11.	Course content: Motivational theories; Psychological mechanisms for motivation; Behavioral approaches to motivation; Cognitive approaches to motivation; Creativity principles; How to develop creative teams? Which teams gave best performances? Motivation and working in LEAN teams; What are LEAN...				
12.	Study methods: Interactive lectures, auditory and/or laboratory practice, selfrunning and/or team work on project assignments, selfrunning assignments				
13.	Total hours	6 ECTS x 30 = 180 hours			
14.	Hours allocation per activity:	30+0+60+30+60=180 hours			
15.	Lectures/Lab	15.1.	Lectures (15 weeks x 2)	30 hours	
		15.2.	Lab (student work)	0 hours	
16.	Project Work/Assignments	16.1.	Project assignments	60 hours	
		16.2.	Individual assignments	30 hours	
		16.3.	Self-study	60 hours	
17.	Points/Marks:				
	17.1.	Exams			50 points
	17.2.	Projects			40 points
	17.3.	Attendance			10 points
18.	Grading scale	Under 50%		5 (five) (F)	
		51 - 64%		6 (six) (D)	
		65 - 74%		7 (seven) (C)	
		75 - 84%		8 (eight) (B-)	
		85 - 94%		9 (nine) (A-/B+)	
		95 - 100%		10 (ten)(A/A+)	
19.	Prerequisites for taking the final exam	Seminar work delivered and approved			
20.	Language	English / Macedonian			
21.	Course evaluation	Student questionnaire			
22.	Textbooks				
	22.1	Instruction materials			
		No.	Author	Title	Publisher

		1.	Polenakovikj R.	Development of human resources (internal textbook)	FME, UKIM	2010	
		2.	Different authors	Selected case studies, videos, Journal papers, etc			
		3.					
	22.2	Supplemental Instruction Materials					
		No.	Author	Title	Publisher	Year	
		1.	C. Grivas, G. Puccio	The Innovative Team: Unleashing Creative Potential for Breakthrough Results	Jossey-Bass	2011	
		2.	J. A. Autry	The Servant Leader: How to Build a	Crown Business	2007	
		3.	J. Haden	The Motivation Myth: How High	Portfolio	2018	

Add. 3		Course program for the second level (second cycle - postgraduate) of studies			
1.	Course title	Lean tools 2			
2.	Code	2LEAN04			
3.	Study group(s)	Lean Management			
4.	The organizer of the study program (unit, institute, department)	"Ss. Cyril and Methodius" University in Skopje, Faculty of Mechanical Engineering - Skopje			
5.	Level (first, second, third degree)	Second			
6.	Academic year / semester	I / summer	7.	ECTS credits	6
8.	Professor	Prof. PhD Robert Minovski Assistant professor PhD Bojan Jovanoski			
9.	Prerequisites for enrolling the course	None			
10.	Course objectives (competences): The main objective of the course is to give the participants theoretical and practical experience on selected Lean Management tools i.e. to make them competent to understand and implement those tools.				
11.	Course content: House of Lean and the importance of the Lean tools. Theoretical explanation and analysis of case studies of selected Lean tools, like KAIZEN, VSM, SMED, Balancing operators, etc.				
12.	Study methods: Interactive lectures, auditory and/or laboratory practice, selfrunning and/or team work on project assignments, selfrunning assignments				
13.	Total hours	6 ECTS x 30 = 180 hours			
14.	Hours allocation per activity:	30+30+30+30+60=180 hours			
15.	Lectures/Lab	15.1.	Lectures (15 weeks x 2)	30 hours	
		15.2.	Lab (student work)	30 hours	
16.	Project Work/Assignments	16.1.	Project assignments	30 hours	
		16.2.	Individual assignments	30 hours	
		16.3.	Self-study	60 hours	

17.	Points/Marks:			
17.1.	Exams			60 points
17.2.	Projects			30 points
17.3.	Attendance			10 points
18.	Grading scale		Under 50%	5 (five) (F)
			51 - 64%	6 (six) (D)
			65 - 74%	7 (seven) (C)
			75 - 84%	8 (eight) (B-)
			85 - 94%	9 (nine) (A-/B+)
			95 - 100%	10 (ten)(A/A+)
19.	Prerequisites for taking the final exam		Seminar work delivered and approved	
20.	Language		English/Macedonian	
21.	Course evaluation		Student questionnaire	
22.	Textbooks			
22.1	Instruction materials			
	No.	Author	Title	Publisher
	1.	Lonnie Wilson	How to Implement Lean Manufacturing	McGraw-Hill
	2.	Javier Santos, Richard Wysk, Jose Manuel Torres	Improving Production With Lean Thinking	Willy and Sons
	3.			
22.2	Supplemental Instruction Materials			
	No.	Author	Title	Publisher
	1.	John Nicholas	Lean Production for Competitive Advantage	CRC Press
			Year	

Add. 3	Course program for the second level (second cycle - postgraduate) of studies				
1.	Course title		Applied modelling and simulation in business processes		
2.	Code		2IIM18		
3.	Study group(s)		Lean Management /IIM		
4.	The organizer of the study program (unit, institute, department)		"Ss. Cyril and Methodius" University in Skopje, Faculty of Mechanical Engineering - Skopje		
5.	Level (first, second, third degree)		Second		
6.	Academic year / semester		I / summer	7.	ECTS credits
8.	Professor		Assistant professor PhD Bojan Jovanoski		
					6

9.	Prerequisites for enrolling the course	None			
10.	Course objectives (competences): Creating simulation models of real problems and better understanding how certain phenomena in reality work through models. Creating strategies based on quantitative methods, better understanding of complex business problems, problem analysis and finding optimal solutions for them.				
11.	Course content: Introduction to complex business systems. Dynamics of the systems. Modeling process. Introduction to simulation software. Structure and behavior of dynamic systems. Presenting and analyzing the created computer model. Cyclical diagrams and flow diagrams. Dynamics of inventory and flows (as elements of each model). Delays. Forecasting modeling. Presenting new aspects in simulation and modeling. Creating a complex model.				
12.	Study methods: Interactive lectures, auditory and/or laboratory practice, selfrunning and/or team work on project assignments, selfrunning assignments				
13.	Total hours	6 ECTS x 30 = 180 hours			
14.	Hours allocation per activity:	30+30+30+30+60=180 hours			
15.	Lectures/Lab	15.1.	Lectures (15 weeks x 2)	30 hours	
		15.2.	Lab (student work)	30 hours	
16.	Project Work/Assignments	16.1.	Project assignments	30 hours	
		16.2.	Individual assignments	30 hours	
		16.3.	Self-study	60 hours	
17.	Points/Marks:				
	17.1.	Exams	50 points		
	17.2.	Projects	50 points		
	17.3.	Attendance			
18.	Grading scale	Under 50%		5 (five) (F)	
		51 - 64%		6 (six) (D)	
		65 - 74%		7 (seven) (C)	
		75 - 84%		8 (eight) (B-)	
		85 - 94%		9 (nine) (A-/B+)	
		95 - 100%		10 (ten)(A/A+)	
19.	Prerequisites for taking the final exam	Seminar work delivered and approved			
20.	Language	English/Macedonian			
21.	Course evaluation	Student questionnaire			
22.	Textbooks				
	22.1	Instruction materials			
	No.	Author	Title	Publisher	Year
	1.	Sterman, J.D.	Business Dynamics, Systems Thinking and Modeling for a	McGrew Hill Higher Education, USA	2004

	2.	Stewart Robinson	Simulation: The Practice of Model Development and Use	John Wiley & Sons	2004
	3.				
22.2	Supplemental Instruction Materials				
	No.	Author	Title	Publisher	Year
	1.		Tutorials from the simulation software		
	2.	Manuel Laguna Iohan Marklund	Business Process Modeling Simulation	Prentice Hall	2004
	3.	Jerry Banks	Handbook of simulation	John Wiley & Sons	1998

Add. 3		Course program for the second level (second cycle - postgraduate) of studies			
1.	Course title	Organisational design - Lean Approach			
2.	Code	2LEAN06			
3.	Study group(s)	Lean Management			
4.	The organizer of the study program (unit, institute, department)	Institute for Production and Industrial Engineering, Faculty of Mechanical Engineering "Ss. Cyril and Methodius" University in Skopje, - Skopje			
5.	Level (first, second, third degree)	Second			
6.	Academic year / semester	I/ winter	7.	ECTS credits	6
8.	Professor	Prof. PhD Radmil Polenakovikj			
9.	Prerequisites for enrolling the course	None			
10.	Course objectives (competences): Students will be capable to recognize the importance of organizational design and its relation to organizational strategy and performances; to develop LEAN structures				
11.	Course content: Organisational Design Theory; Key Concepts of the Organisational Design Process; Linking Organisational Strategy to Organisational Design; Organisational Structure; Processes and Lateral Capability; Agility; Lean approaches towards organizational design				
12.	Study methods: Interactive lectures, videos, auditory and/or laboratory practice, selfrunning and/or team work on project assignments, selfrunning assignments				
13.	Total hours	6 ECTS x 30 = 180 hours			
14.	Hours allocation per activity:	30+0+60+30+60=180 hours			
15.	Lectures/Lab	15.1.	Lectures (15 weeks x 2)	30 hours	
		15.2.	Lab (student work)	0 hours	
16.	Project Work/Assignments	16.1.	Project assignments	60 hours	
		16.2.	Individual assignments	30 hours	

		16.3.	Self-study	60 hours		
17.	Points/Marks:					
	17.1.	Exams		50 points		
	17.2.	Projects		40 points		
	17.3.	Attendance		10 points		
18.	Grading scale		Under 50%	5 (five) (F)		
			51 - 64%	6 (six) (D)		
			65 - 74%	7 (seven) (C)		
			75 - 84%	8 (eight) (B-)		
			85 - 94%	9 (nine) (A-/B+)		
			95 - 100%	10 (ten)(A/A+)		
19.	Prerequisites for taking the final exam		Seminar work delivered and approved			
20.	Language		English / Macedonian			
21.	Course evaluation		Student questionnaire			
22.	Textbooks					
	22.1	Instruction materials				
		No.	Author	Title	Publisher	Year
		1.	Javier Villalba-Diez	The Hoshin Kanri Forest: Lean Strategic Organizational Design	Productivity Press	2017
		2.	Different authors	Selected case studies, videos, Journal papers, etc		
		3.				
	22.2	Supplemental Instruction Materials				
		No.	Author	Title	Publisher	Year
		1.	Donald L. Anderson	Organization Design: Creating Strategic & Agile Organizations	SAGE Publications	2018
		2.	R. M. Burton	Organisational design (3 rd ed.)	Cambridge University Press	2015

Add. 3	Course program for the second level (second cycle - postgraduate) of studies	
1.	Course title	Design of Quality Management Systems
2.	Code	2LEAN07
3.	Study group(s)	Lean Management
4.	The organizer of the study program (unit, institute, department)	“Ss. Cyril and Methodius” University in Skopje, Faculty of Mechanical Engineering - Skopje
5.	Level (first, second, third degree)	Second

6.	Academic year / semester	I / summer	7.	ECTS credits	6
8.	Professor	Prof. PhD Robert Minovski			
9.	Prerequisites for enrolling the course	None			
10.	Course objectives (competences): Understanding the need for implementation of the standard ISO 9001, being capable for analysis and/or practical implementation of parts of the standard.				
11.	Course content: Family of standards ISO 9000. Requirements of the standard ISO 9001. Prerequisites for successful implementation of ISO 9001. Implementation process of ISO 9001. What comes after implementation of ISO 9001 – integrating ISO 9001 and Lean. Practical analysis/implementation of ISO 9001.				
12.	Study methods: Interactive lectures, team work (if applicable) project assignments				
13.	Total hours	6 ECTS x 30 = 180 hours			
14.	Hours allocation per activity:	30+30+30+30+60=180 hours			
15.	Lectures/Lab	15.1.	Lectures (15 weeks x 2)	30 hours	
		15.2.	Lab (student work)	30 hours	
16.	Project Work/Assignments	16.1.	Project assignments	30 hours	
		16.2.	Individual assignments	30 hours	
		16.3.	Self-study	60 hours	
17.	Points/Marks:				
	17.1.	Exams			60 points
	17.2.	Projects			30 points
	17.3.	Attendance			10 points
18.	Grading scale	Under 50%		5 (five) (F)	
		51 - 64%		6 (six) (D)	
		65 - 74%		7 (seven) (C)	
		75 - 84%		8 (eight) (B-)	
		85 - 94%		9 (nine) (A-/B+)	
		95 - 100%		10 (ten)(A/A+)	
19.	Prerequisites for taking the final exam	Seminar work delivered and approved			
20.	Language	English / Macedonian			
21.	Course evaluation	Student questionnaire			
22.	Textbooks				
	22.1	Instruction materials			
		No.	Author	Title	Publisher
	1.	/	Contemporary materials (presentations, papers, ...) on QMS and Lean	/	/

		2.	n.n.	Quality management systems - Requirements (ISO 9001:2015)	International Organization for Standardization	2015
		3.				
	22.2	Supplemental Instruction Materials				
		No.	Author	Title	Publisher	Year
		1.	Micklewright, Mike	Lean ISO 9001, Adding Spark to your ISO 9001 QMS and Sustainability to your Lean Efforts	American Society for Quality, Quality Press	2010

Add. 3		Course program for the second level (second cycle - postgraduate) of studies			
1.	Course title	Lean project			
2.	Code	2LEAN08			
3.	Study group(s)	Lean Management			
4.	The organizer of the study program (unit, institute, department)	"Ss. Cyril and Methodius" University in Skopje, Faculty of Mechanical Engineering - Skopje			
5.	Level (first, second, third degree)	Second			
6.	Academic year / semester	I / summer	7.	ECTS credits	6
8.	Professor	Prof. PhD Robert Minovski Assistant professor PhD Bojan Jovanoski			
9.	Prerequisites for enrolling the course	None			
10.	Course objectives (competences):	The initially recommended improvements using the Lean tools can be applied, experimented and further improved in the Lean laboratory. Experience in experimenting and evaluating scenarios will be gained.			
11.	Course content:	<ul style="list-style-type: none"> ▪ Developing a project-plan ▪ Developing a systematic approach in the experimentation process ▪ Developing scenarios ▪ developing analysis, decision and reports ▪ Developing implementation plan 			
12.	Study methods:	Interactive lectures, auditory and/or laboratory practice, selfrunning and/or team work on project assignments, selfrunning assignments			
13.	Total hours	6 ECTS x 30 = 180 hours			
14.	Hours allocation per activity:	30+30+30+30+60=180 hours			
15.	Lectures/Lab	15.1.	Lectures (15 weeks x 2)	30 hours	
		15.2.	Lab (student work)	30 hours	
16.	Project Work/Assignments	16.1.	Project assignments	30 hours	

		16.2.	Individual assignments	30 hours
		16.3.	Self-study	60 hours
17.	Points/Marks:			
	17.1.	Exams		30 points
	17.2.	Projects		70 points
	17.3.	Attendance		
18.	Grading scale		Under 50%	5 (five) (F)
			51 - 64%	6 (six) (D)
			65 - 74%	7 (seven) (C)
			75 - 84%	8 (eight) (B-)
			85 - 94%	9 (nine) (A-/B+)
			95 - 100%	10 (ten)(A/A+)
19.	Prerequisites for taking the final exam		Seminar work delivered and approved	
20.	Language		English/Macedonian	
21.	Course evaluation		Student questionnaire	
22.	Textbooks			
	22.1	Instruction materials		
		No.	Author	Title
			Publisher	Year
		1.	Lonnie Wilson	How to Implement Lean Manufacturing
			McGraw-Hill	2010
		2.	Javier Santos, Richard Wysk, Jose Manuel Torres	Improving Production With Lean Thinking
			Willy and Sons	2006
		3.		
	22.2	Supplemental Instruction Materials		
		No.	Author	Title
			Publisher	Year
		1.		

Add. 3		Course program for the second level (second cycle - postgraduate) of studies			
1.	Course title	Applied statistics			
2.	Code	2Lean09			
3.	Study group(s)	Lean management			
4.	The organizer of the study program (unit, institute, department)	"Ss. Cyril and Methodius" University in Skopje, Faculty of Mechanical Engineering - Skopje			
5.	Level (first, second, third)	Second			
6.	Academic year / semester	I / winter	7.	ECTS credits	6
8.	Instructor	Prof. PhD Nikola Tuneski Assistant professor PhD Mirko Petrushevski			

9.	Prerequisites	None				
10.	Course objectives (competences): Introduction to the elements of statistics and statistical estimates necessary for engineering practice. Case studies with suitable software.					
11.	Course content: Estimates. Point estimate. Interval estimates (confidence intervals) and test of hypothesis: for the proportion, for the mean, for the dispersion. Linear regression and correlation. Test on the distribution.					
12.	Study methods: lectures, lab, project assignments, individual assignments, self-study.					
13.	Total hours	6 ECTS x 30 hours = 180 hours				
14.	Hours allocation per activity:	30+30+30+30+60=180 hours				
15.	Lectures/Lab	15.1.	Lectures	30 hours		
		15.2.	Lab (student work)	30 hours		
16.	Project Work/Assignments	16.1.	Project assignments	30 hours		
		16.2.	Individual assignments	30 hours		
		16.3.	Self-study	60 hours		
17.	Points/Marks:					
	17.1.	Exams			50	
	17.2.	Projects			50	
	17.3.	Attendance				
18.	Grading scale	Under 50%		5 (five) (F)		
		51 - 64%		6 (six) (D)		
		65 - 74%		7 (seven) (C)		
		75 - 84%		8 (eight) (B-)		
		85 - 94%		9 (nine) (A-/B+)		
		95 - 100%		10 (ten)(A/A+)		
19.	Prerequisites for taking the final exam	activity 16.1				
20.	Language of Instruction	English / Macedonian				
21.	Course evaluation	Student questionnaire				
22.	Textbooks					
	22.1.	Instruction materials				
		No.	Author	Title	Publisher	Year
		1.	Walpole R.E., Myers R.H., Myers S.L., Ye K.	Probability & Statistics for Engineering & Scientists	Prentice Hall	2007
		2.	J.P. Marques de Sa	Applied Statistics using SPSS, STATISTICA and MATLAB	Springer-Verlag	2003
	3.	Tuneski, N.	Problems in probability and statistics, in progress. (in Macedonian)			
	22.2.	Supplemental Instruction Materials				
		No.	Author	Title	Publisher	Year
		1.	Mendenhal W., Sincich T.	Statistics for Engineering and the Sciences	Maxwel Macmillan	1992

Add. 3		Course program for the second level (second cycle - postgraduate) of studies			
1.	Course title	Economical aspect of Lean			
2.	Code	2LEAN10			
3.	Study group(s)	Lean Management			
4.	The organizer of the study program (unit, institute, department)	"Ss. Cyril and Methodius" University in Skopje, Faculty of Mechanical Engineering - Skopje			
5.	Level (first, second, third degree)	Second			
6.	Academic year / semester	I / winter-summer	7.	ECTS credits	6
8.	Professor	Prof. PhD Valentina Gecevska			
9.	Prerequisites for enrolling the course	None			
10.	Course objectives (competences): Knowledge for Lean financial models, value chain and costs estimating related to Lean tools. Competences for Lean business modeling and mapping financial performances for operational improvement.				
11.	Course content: Lean financial models. Business model for value creating. Financial models and costs estimating of Lean tools. Lean business modeling, mapping business drivers and Lean KPI. Analytical finding analysis by financial performances and Lean KPI. Lean changes and technology adopting (JIT, VSM, Lean manufacturing). Management accounting and financial reporting. Transition to Lean financial models. Finding organization operational success factors and costly improvement. Detecting hidden costs of reorganization. Multi-period simulation model for Lean manufacturing. Comparison analysis with direct costing, ABC, TPC, TC, VC methods. Development of Order Activity Product Costing (OAPC vs. ABC). Lean approach and impact of Pareto distribution for product cost calculations. Agile and Scrum Lean techniques for 3E product/process/service development.				
12.	Study methods: Interactive lectures, auditory and/or laboratory practice, self-running and/or team work on project assignments, self-running assignments				
13.	Total hours	6 ECTS x 30 = 180 hours			
14.	Hours allocation per activity:	30+30+30+30+60=180 hours			
15.	Lectures/Lab	15.1.	Lectures (15 weeks x 2)	30 hours	
		15.2.	Lab (student work)	30 hours	
16.	Project Work/Assignments	16.1.	Project assignments	30 hours	
		16.2.	Individual assignments	30 hours	
		16.3.	Self-study	60 hours	
17.	Points/Marks:				
	17.1.	Exams	60 points		
	17.2.	Projects	30 points		
	17.3.	Attendance	10 points		
18.	Grading scale	Under 50%		5 (five) (F)	
		51 - 64%		6 (six) (D)	
		65 - 74%		7 (seven) (C)	
		75 - 84%		8 (eight) (B-)	
		85 - 94%		9 (nine) (A-/B+)	
		95 - 100%		10 (ten)(A/A+)	
19.	Prerequisites for taking the final exam	Seminar work delivered and approved			
20.	Language	English / Macedonian			
21.	Course evaluation	Student questionnaire			

22.	Textbooks				
22.1	Instruction materials				
	No.	Author	Title	Publisher	Year
	1.	Meade D.	Financial Models and Tools for Managing Lean	T&F Publ.	2012
	2.	Blank S, Ries E.	Int ro	AW-Pub.Comp.	2016
	3.	Parmenter D.	Lean Practices to Transform Financial Results	Elsevier	2018
22.2	Supplemental Instruction Materials				
	No.	Author	Title	Publisher	Year
	1.	Anderson D.	Engineering to Rapidly Develop Low-Cost, High-Quality Products for Lean Production	CRC Press, T&F	2018
	2.	Leyborn E.	<u>Directing The Agile Organization: A Lean Approach To Business Management</u>	IT Publishing	2013
	3.				

Add. 3	Course program for the second level (second cycle - postgraduate) of studies				
1.	Course title	LEAN & OTHER APPROACHES			
2.	Code	2LEAN11			
3.	Study group(s)	Lean Management			
4.	The organizer of the study program (unit, institute, department)	"Ss. Cyril and Methodius" University in Skopje, Faculty of Mechanical Engineering - Skopje			
5.	Level (first, second, third degree)	Second			
6.	Academic year / semester	I / summer	7.	ECTS credits	6
8.	Professor	Prof. PhD Atanas Kochov			
9.	Prerequisites for enrolling the course	None			
10.	Course objectives (competences):	<p>The course on Lean management and other approaches is designed in a way so as to bring in the quick realization of the many tools and techniques employed by Lean to improve efficiency and quality of businesses across many industries. One of the new modern approaches is the cleaner production technology (CPT) in a small and medium enterprise. With this course and the examples it provides, the student will be able to implement the teachings quicker than expected. It also depends on student's level of interest and for the widespread of Lean management and CPT.</p>			

11.	Course content:					
	The course is dedicated to explore the Lean Principles based on the following: Within Lean management, there is a certain order that when put to use can successfully implement the notions of Lean management vs Cleaner production technologies and low carbon economy(LCE) principles, within the required processes. These principles of Lean management and CPT, LCE, the end result are a customer satisfaction and increase in efficiency and quality, contribution to the principles of circular economy (CE). Topics covered in this course will include:					
	<ul style="list-style-type: none"> • Identifying the value – Identify the value of the product from the perspective of the many customers the product is catering to; • Mapping the principles of CPT, LCE, CE; • Natural resources efficient usage, 3R principles; 5 R principles • Creating a flow, giving the products the smoothest ride towards the customers 					
12.	Study methods: Interactive lectures, auditory and/or laboratory practice, self-running and/or team work on project assignments, self-running assignments					
13.	Total hours		6 ECTS x 30 = 180 hours			
14.	Hours allocation per activity:		30+30+30+30+60=180 hours			
15.	Lectures/Lab	15.1.	Lectures (15 weeks x 2)	30 hours		
		15.2.	Lab (student work)	30 hours		
16.	Project Work/Assignments	16.1.	Project assignments	30 hours		
		16.2.	Individual assignments	30 hours		
		16.3.	Self-study	60 hours		
17.	Points/Marks:					
	17.1.	Exams	60 points			
	17.2.	Projects	30 points			
	17.3.	Attendance	10 points			
18.	Grading scale	Under 50%		5 (five) (F)		
		51 - 64%		6 (six) (D)		
		65 - 74%		7 (seven) (C)		
		75 - 84%		8 (eight) (B-)		
		85 - 94%		9 (nine) (A-/B+)		
		95 - 100%		10 (ten)(A/A+)		
19.	Prerequisites for taking the final exam	Seminar work delivered and approved				
20.	Language	English / Macedonian				
21.	Course evaluation	Student questionnaire				
22.	Textbooks					
	22.1	Instruction materials				
		No.	Author	Title	Publisher	Year
		1.	Michael Balle and Daniel Jones	The Lean Strategy: Using Lean to Create Competitive Advantage, Unleash Innovation, and Deliver Sustainable Growth	McGraw-Hill Education; 1 edition	March 23, 2017
		2.	Paul Myerson	Lean Supply Chain and Logistics Management	McGraw-Hill Education; 1 edition	February 27, 2012

		3.	James P. Womack and Daniel T. Jones	Lean Thinking: Banish Waste and Create Wealth in Your Corporation	Free Press; 2nd edition	November 23, 2010	
		4.	David Mann	Creating a Lean Culture	Routledge; 3 edition	October 24, 2014	
	22.2	Supplemental Instruction Materials					
		No.	Author	Title	Publisher	Year	
		1.	Jason Little	Lean Change Management: Innovative practices for managing organizational change	Happy Melly Express; 2 edition	October 8, 2014	
		2.	Don P. Clausing	Total Quality Development: A Step-By-Step Guide to World-Class Concurrent Engineering (ASME Press series on international advances in design productivity)	Amer Society of Mechanical	April 1, 1994	
		3.	Erik Young	The Power of Lean Process: Increase Profits, Delight Customers and Improve Your Company's Culture	McGraw-Hill Education;	2014	

Add. 3		Course program for the second level (second cycle - postgraduate) of studies			
1.	Course title	Workplace safety management			
2.	Code	2LEAN12			
3.	Study group(s)	Lean Management			
4.	The organizer of the study program (unit, institute, department)	"Ss. Cyril and Methodius" University in Skopje, Faculty of Mechanical Engineering Skopje			
5.	Level (first, second, third degree)	Second			
6.	Academic year / semester	I / summer	7.	ECTS credits	6
8.	Professor	Prof. PhD Jasmina Chaloska			
9.	Prerequisites for enrolling the course	None			
10.	Course objectives (competences):	To create a good safety culture, health and safety program, written action plan to identify and control hazards, define safety responsibilities and respond to emergencies that result in the prevention of accidents and occupational diseases. The objective of a course is to integrate safety and health into all work practices and conditions.			
11.	Course content:	Safety policy, identification and correct unsafe acts and conditions with the potential to cause injury or disease, identification the cause of an injury or disease to prevent recurrences including near miss incidents which could have resulted in injury or disease, Hazard Identification System, risk assessment, Work Procedures, Monitoring for Implementation and Effectiveness of OSH systems			
12.	Study methods:	Interactive lectures, auditory and/or laboratory practice, self running and/or team work on project assignments, self running assignments			
13.	Total hours	6 ECTS x 30 = 180 hours			

14.	Hours allocation per activity:		30+30+30+30+60=180 hours			
15.	Lectures/Lab	15.1.	Lectures (15 weeks x 2)	30 hours		
		15.2.	Lab (student work)	30 hours		
16.	Project Work/Assignments	16.1.	Project assignments	30 hours		
		16.2.	Individual assignments	30 hours		
		16.3.	Self-study	60 hours		
17.	Points/Marks:					
	17.1.	Exams			70 points	
	17.2.	Projects			20 points	
	17.3.	Attendance			10 points	
18.	Grading scale	Under 50%		5 (five) (F)		
		51 - 64%		6 (six) (D)		
		65 - 74%		7 (seven) (C)		
		75 - 84%		8 (eight) (B-)		
		85 - 94%		9 (nine) (A-/B+)		
		95 - 100%		10 (ten)(A/A+)		
19.	Prerequisites for taking the final exam		Seminar work delivered and approved			
20.	Language		English / Macedonian			
21.	Course evaluation		Student questionnaire			
22.	Textbooks					
	22.1	Instruction materials				
		No.	Author	Title	Publisher	Year
		1.	J.Chaloska	Workplace safety management	Internal book, MFS	2017
		2.	Roger L. Brauer	Safety and Health for Engineers	John Wiley and Sons	2016
	3.	Benjamin O. Alli	Fundamental principles of	ILO	2011	
	22.2	Supplemental Instruction Materials				
No.		Author	Title	Publisher	Year	
1.		James Reason	Managing the Risks of Organizational Accidents	Ashgate Publishing	2015	

Add. 3		Course program for the second level (second cycle - postgraduate) of studies		
1.	Course title	Total Productivity Maintenance		
2.	Code	2LEAN13		
3.	Study group(s)	Lean Management		
4.	The organizer of the study program (unit, institute, department)	Institute for Production and Industrial Engineering, Faculty of Mechanical Engineering "Ss. Cyril and Methodius" University in Skopje, - Skopje		
5.	Level (first, second, third degree)	Second		

6.	Academic year / semester	I / winter	7.	ECTS credits	6	
8.	Professor	Prof. PhD Radmil Polenakovikj				
9.	Prerequisites for enrolling the course	None				
10.	Course objectives (competences): Students will be capable to recognize the need for implementation of new methods for maintenance in the production companies; planning and implementation of TPM (Total Productivity Maintenance)					
11.	Course content: Introduction to maintenance management; structure of maintenance function in production companies; Maintenance in service sector; Different methods of Maintenance; Reliability; Preventive and Predictive Maintenance; Introduction of TPM; TPM and tools for process improvements in					
12.	Study methods: Interactive lectures, videos, auditory and/or laboratory practice, selfrunning and/or team work on project assignments, selfrunning assignments					
13.	Total hours	6 ECTS x 30 = 180 hours				
14.	Hours allocation per activity:	30+0+60+30+60=180 hours				
15.	Lectures/Lab	15.1.	Lectures (15 weeks x 2)	30 hours		
		15.2.	Lab (student work)	0 hours		
16.	Project Work/Assignments	16.1.	Project assignments	60 hours		
		16.2.	Individual assignments	30 hours		
		16.3.	Self-study	60 hours		
17.	Points/Marks:					
	17.1.	Exams		50 points		
	17.2.	Projects		40 points		
	17.3.	Attendance		10 points		
18.	Grading scale	Under 50%		5 (five) (F)		
		51 - 64%		6 (six) (D)		
		65 - 74%		7 (seven) (C)		
		75 - 84%		8 (eight) (B-)		
		85 - 94%		9 (nine) (A-/B+)		
		95 - 100%		10 (ten)(A/A+)		
19.	Prerequisites for taking the final exam	Seminar work delivered and approved				
20.	Language	English / Macedonian				
21.	Course evaluation	Student questionnaire				
22.	Textbooks					
	22.1	Instruction materials				
		No.	Author	Title	Publisher	Year
		1.	Donev V	Maintenance Management	System +	2010
		2.	Different authors	Selected case studies, videos, Journal papers, etc		
	3.					
22.2	Supplemental Instruction Materials					
	No.	Author	Title	Publisher	Year	

		1.	K. Peng	Equipment Management in the Post-Maintenance Era: A New Alternative to Total Productive Maintenance (TPM)	Productivity Press	2012
		2.	M. Stephens	Productivity and Reliability-Based	Purdue University	2010

Add. 3		Course program for the second level (second cycle - postgraduate) of studies					
1.	Course title	TQM					
2.	Code	2LEAN14					
3.	Study group(s)	Lean Management					
4.	The organizer of the study program (unit, institute, department)	„Ss. Cyril and Methodius“ University in Skopje, Faculty of Mechanical Engineering – Skopje Institute of Production Engineering and Management					
5.	Level (first, second, third degree)	Second degree					
6.	Academic year / semester	I / winter-summer			7.	ECTS credits	6
8.	Professor	Prof. PhD Gligorche Vrtanoski					
9.	Prerequisites for enrolling the course	None Completed undergraduate studies					
10.	Course objectives (competences):	This course will contribute to getting acquires knowledge about the overall activities that are undertaken within an organization to achieve the goals of the Total Quality Management philosophy.					
11.	Course content:	Introduction to Total Quality Management philosophy as a tool for improving the performances of companies. Basics of TQM. Customer focus and satisfaction. Participation and teamwork. Process management and continuous improvement. Infrastructure, practice, quality tools and techniques. Quality function deployment. Leadership and strategic planning. Management of measurements and strategic information. Human resources management. Performance measures. Audit, evaluation and final scores. Organization and implementation of TQM.					
12.	Study methods:	Interactive lectures, auditory and/or laboratory practice, self running and/or team work on project assignments, self running assignments					
13.	Total hours	6 ECTS x 30 = 180 hours					
14.	Hours allocation per activity:	30+20+80+20+30=180 hours					
15.	Lectures/Lab	15.1.	Lectures (15 weeks x 2)			30 hours	
		15.2.	Lab (student work)			20 hours	
16.	Project Work/Assignments	16.1.	Project assignments			80 hours	
		16.2.	Individual assignments			20 hours	
		16.3.	Self-study			30 hours	
17.	Points/Marks:						
	17.1.	Exams				30 points	
	17.2.	Projects				60 points	
	17.3.	Attendance				10 points	
18.	Grading scale				Under 50%	5 (five) (F)	
					51 - 64%	6 (six) (D)	
					65 - 74%	7 (seven) (C)	

		75 - 84%	8 (eight) (B-)		
		85 - 94%	9 (nine) (A-/B+)		
		95 - 100%	10 (ten)(A/A+)		
19.	Prerequisites for taking the final exam	Seminar works delivered and approved			
20.	Language	English / Macedonian			
21.	Course evaluation	Student questionnaire and other methods for continual self evaluation			
22.	Textbooks				
22.1	Instruction materials				
	No.	Author	Title	Publisher	Year
	1.	Gligorche Vrtanoski	Unauthorized lectures of the Methods and Techniques of TQM	Faculty of Mechanical Engineering	2018
	2.	Stephen George, Arnold Weimerskirch	Total Quality Management - Strategies and Techniques	John Wilye & Sons	1998
	3.	John Oakland	TQM Text with Cases	Butterworth Heinemann	2003
22.2	Supplemental Instruction Materials				
	No.	Author	Title	Publisher	Year
	1.	Fiorenzo Franceschini	Advanced Quality Function Deployment	ST. Lucie Press	2002
	2.	Tauseef Aized	Total Quality Management and Six Sigma	InTech	2012
	3.	Graeme Knowles	Quality Management	Bookboon.com	2011

Add. 3		Course program for the second level (second cycle - postgraduate) of studies			
1.	Course title	Ergonomic systems			
2.	Code	2LEAN15			
3.	Study group(s)	Lean Management			
4.	The organizer of the study program (unit, institute, department)	"Ss. Cyril and Methodius" University in Skopje, Faculty of Mechanical Engineering Skopje			
5.	Level (first, second, third degree)	Second			
6.	Academic year / semester	I / summer	7.	ECTS credits	6
8.	Professor	Prof. PhD Jasmina Chaloska			
9.	Prerequisites for enrolling the course	None			
10.	<p>Course objectives (competences): Enhance understanding in an area of ergonomics systems, and to develop skills applicable in a wide range of circumstances. The student is expected to develop skills in research, investigation, planning, scheduling, evaluation and written communication. This course is designed to be undertaken by students in any organisation who can apply ergonomics in their work. The candidates will apply the material and ideas from this ergonomics course to a real ergonomics investigation of value to their organisation.</p>				
11.	<p>Course content: The course topics include: introduction to ergonomics; the body at work; anthropometry; simple biomechanics; workplace design; work seating; work related upper limb disorders; manual handling; display screen equipment; effects of environmental factors; influence of work organization, risk assessment, virtual design of working places, practice within organizations; ethical issues; legislation, standards and competencies when applying ergonomics; presentation skills; practical ergonomics tasks within organizations.</p>				
12.	<p>Study methods: Interactive lectures, auditory and/or laboratory practice, self running and/or team work on project assignments, self running assignments</p>				

13.	Total hours		6 ECTS x 30 = 180 hours			
14.	Hours allocation per activity:		30+30+30+30+60=180 hours			
15.	Lectures/Lab	15.1.	Lectures (15 weeks x 2)	30 hours		
		15.2.	Lab (student work)	30 hours		
16.	Project Work/Assignments	16.1.	Project assignments	30 hours		
		16.2.	Individual assignments	30 hours		
		16.3.	Self-study	60 hours		
17.	Points/Marks:					
	17.1.	Exams			70 points	
	17.2.	Projects			20 points	
	17.3.	Attendance			10 points	
18.	Grading scale	Under 50%	5 (five) (F)			
		51 - 64%	6 (six) (D)			
		65 - 74%	7 (seven) (C)			
		75 - 84%	8 (eight) (B-)			
		85 - 94%	9 (nine) (A-/B+)			
		95 - 100%	10 (ten)(A/A+)			
19.	Prerequisites for taking the final exam		Seminar work delivered and approved			
20.	Language		English / Macedonian			
21.	Course evaluation		Student questionnaire			
22.	Textbooks					
	22.12	Instruction materials				
		No.	Author	Title	Publisher	Year
		1.	J. Chaloska	Ergonomic systems	Internal book, MFS	2017
		2.	R.S. Bridger	Introduction to Ergonomics	Taylor & Francis	2003
	3.					
	22.2	Supplemental Instruction Materials				
No.		Author	Title	Publisher	Year	
1.		Scott Openshaw, Erin Taylor	Ergonomics and Design	Allsteel Inc.	2006	

Add. 3		Course program for the second level (second cycle - postgraduate) of studies			
1.	Course title	Green Lean			
2.	Code	2LEAN16			
3.	Study group(s)	Lean Management			
4.	The organizer of the study program (unit, institute, department)	"Ss. Cyril and Methodius" University in Skopje, Faculty of Mechanical Engineering - Skopje			
5.	Level (first, second, third degree)	Second			
6.	Academic year / semester	I / winter	7.	ECTS credits	6
8.	Professor	Assistant professor PhD Igor Shesho			
9.	Prerequisites for enrolling the course	None			

10.	Course objectives (competences): Be able to identify and quantify the available waste energy of an industrial system that can be converted into a useful form, evaluate the feasibility for integration of renewable energy sources – Green Lean. To identify the need for actions based on the acquired information, optimizing, selecting and implementing appropriate measures and technologies for improving the energy efficiency in the production process. To evaluate the performance of heat recovery applications, evaluate their impact on overall energy consumption and CO ₂ emissions. Identify the most relevant energy transition processes (consumers) of the most relevant energy carriers with the highest identified saving factor (costs or ecological impact). Analyze the impacts of potential improvements to the plant system.			
11.	Course content: Energy efficiency potentials and selection of appropriate measures in the context of discrete manufacturing environments. Introduction to the concept of Green Lean. Waste source identification and quantification, qualitative evaluation of waste causes and finally feasible derivation of alternatives for waste minimization in the industry sector. Performing analysis for the waste heat stream in terms of its waste heat quantity (the approximate energy contained in the waste heat stream), quality (typical exhaust temperatures), current recovery technologies and practices, and barriers to heat recovery. System approach method. Technologies and solutions for improving energy efficiency. State of the art systems and devices for utilization of renewable energy sources. Techno-economic analysis and selection of the optimal energy-efficiency technology. Evaluation of the potential for integration of renewable energy sources.			
12.	Study methods: Interactive lectures, auditory and/or laboratory practice, selfrunning and/or team work on project assignments, selfrunning assignments			
13.	Total hours		6 ECTS x 30 = 180 hours	
14.	Hours allocation per activity:		30+30+30+30+60=180 hours	
15.	Lectures/Lab	15.1.	Lectures (15 weeks x 2)	30 hours
		15.2.	Lab (student work)	30 hours
16.	Project Work/Assignments	16.1.	Project assignments	30 hours
		16.2.	Individual assignments	30 hours
		16.3.	Self-study	60 hours
17.	Points/Marks:			
	17.1.	Exams		50 points
	17.2.	Projects		40 points
	17.3.	Attendance		10 points
18.	Grading scale		Under 50%	5 (five) (F)
			51 - 64%	6 (six) (D)
			65 - 74%	7 (seven) (C)
			75 - 84%	8 (eight) (B-)
			85 - 94%	9 (nine) (A-/B+)
			95 - 100%	10 (ten)(A/A+)
19.	Prerequisites for taking the final exam		Seminar work delivered and approved	
20.	Language		Macedonian/English	
21.	Course evaluation		Student questionnaire	
22.	Textbooks			
	22.1	Instruction materials		
	No.	Author	Title	Publisher

	1.	Andrea Pampanelli, Neil Trivedi, Pauline Found	The Green Factory, Creating Lean and Sustainable manufacturing	CRC Press Taylor & Francis Group	2016
	2.	D. Yogi Goswami Frank Kreith	Energy Efficiency and Renewable Energy Handbook	CRC Press	2016
	3.	Jochen Fricke and Walter L. Borst	Essentials of Energy Technology	Wiley	2013
22.2	Supplemental Instruction Materials				
	No.	Author	Title	Publisher	Year
	1.	Walter Short, Daniel J. Packey, Thomas Holt	A Manual for the Economic Evaluation of Energy Efficiency and Renewable Energy	National Renewable Energy Laboratory	1995

Add. 3		Course program for the second level (second cycle - postgraduate) of studies			
1.	Course title	Project Cycle Management			
2.	Code	2LEAN17			
3.	Study group(s)	Lean Management			
4.	The organizer of the study program (unit, institute, department)	Institute for Production and Industrial Engineering, Faculty of Mechanical Engineering "Ss. Cyril and Methodius" University in Skopje, - Skopje			
5.	Level (first, second, third degree)	Second			
6.	Academic year / semester	I / winter	7.	ECTS credits	6
8.	Professor	Prof. PhD Radmil Polenakovikj			
9.	Prerequisites for enrolling the course	None			
10.	Course objectives (competences):	Students will be capable to recognize the need for working in teams; planning and implementation of complex projects; to implement project management tools (logical framework matrix, time management, performance management, WBS, etc.); to lead project teams			
11.	Course content:	Historical overview of project management; project organizational structure; time management; scheduling, performance management (KPI); cost management and budgeting; risk management; monitoring and evaluation; project closure and reporting			
12.	Study methods: Interactive lectures, videos, auditory and/or laboratory practice, selfrunning and/or team work on project assignments, selfrunning assignments				
13.	Total hours	6 ECTS x 30 = 180 hours			
14.	Hours allocation per activity:	30+0+60+30+60=180 hours			
15.	Lectures/Lab	15.1.	Lectures (15 weeks x 2)	30 hours	
		15.2.	Lab (student work)	0 hours	
16.	Project Work/Assignments	16.1.	Project assignments	60 hours	
		16.2.	Individual assignments	30 hours	
		16.3.	Self-study	60 hours	

17.	Points/Marks:				
17.1.	Exams			50 points	
17.2.	Projects			40 points	
17.3.	Attendance			10 points	
18.	Grading scale		Under 50%	5 (five) (F)	
			51 - 64%	6 (six) (D)	
			65 - 74%	7 (seven) (C)	
			75 - 84%	8 (eight) (B-)	
			85 - 94%	9 (nine) (A-/B+)	
			95 - 100%	10 (ten)(A/A+)	
19.	Prerequisites for taking the final exam		Seminar work delivered and approved		
20.	Language		English / Macedonian		
21.	Course evaluation		Student questionnaire		
22.	Textbooks				
22.1	Instruction materials				
	No.	Author	Title	Publisher	Year
	1.	Polenakovikj R., Jovanovski B.	Project management (Internal textbook)	FME, UKIM	2018
	2.	Different authors	Selected case studies, videos, Journal papers, etc		
	3.				
22.2	Supplemental Instruction Materials				
	No.	Author	Title	Publisher	Year
	1.	J. Gido, J. Clements	Successful Project Management (7 th ed.)	Cengage Learning	2017
	2.	Project Management Institute	A Guide to the Project Management Body of Knowledge (PMBOK(R) Guide-Sixth Edition	Project Management Institute	2017

17. List of the teaching staff, including the data stated in Article 5 of the Rulebook on the Mandatory Components of the Study Programmes of the First, Second, and Third Cycle (“Official Gazette of the Republic of Macedonia” No. 25/2011) and the Rulebook on Changes and Amendments of the Rulebook on the Mandatory Components of the Study Programmes of the First, Second, and Third Cycle (“Official Gazette of the Republic of Macedonia” No. 154/2011)

The following professors participate in the realisation of the Lean Management study programme:

1. Full Professor Robert Minovski, PhD
2. Full Professor Radmil Polenakovikj, PhD

3. Full Professor Valentina Gecevska, PhD
4. Full Professor Atanas Kochov, PhD
5. Full Professor Jasmina Chaloska, PhD
6. Full Professor Gligorche Vrtanoski, PhD
7. Full Professor Nikola Tuneski, PhD
8. Assistant Professor Bojan Jovanoski, PhD
9. Assistant Professor Igor Seso, PhD
10. Assistant Professor Mirko Petrushevski, PhD

When needed, teaching staff members from other organisational units (institutes, departments) of the Faculty of Mechanical Engineering in Skopje, as well as from other higher education institutions, take part in the realization of the instruction, pursuant to the legal procedure for election of course programmes and engagement of teaching staff in the instruction process.

The Educational and Scientific Board of the Faculty pays special attention to securing that the provisions of the Law on Higher Education regarding the workload of the teaching staff members are met.

Add. 4		Information about the teachers that lecture at the first, second and third study program and are mentors on the doctoral thesis		
1.	Name (First, Last)	Robert Minovski		
2.	Date of birth	20.11.1964		
3.	Scientific degree / Title	Ph.D.		
4.	Title of the scientific degree	Ph.D. in Technical Sciences		
5.	Year and institution of the scientific degree	Education	Year	Institution
		PhD in Technical Sciences	1999	Faculty of Mechanical engineering - Skopje
		M.Sc. in Mechanical Engineering	1994	Faculty of Mechanical engineering - Skopje
		B.Sc. in Mechanical Engineering	1989	Faculty of Mechanical engineering - Skopje
6.	Area, field and particular specialty of master of science degree	Area	Field	Specialty
		Technical sciences	Mechanical Engineering	
7.	Area, field and area of doctoral degree	Area	Field	Specialty
		Technical sciences	Industrial Engineering and Management	
8.	If employed, state the institution where he/she works and the title and area in which is named	Institution		Title and area
		UKIM, Faculty of Mechanical Engineering		Full time professor Mechanical engineering
9.	List of courses that the teacher is lecturing separately for first, second and third cycle			
	9.1.	List of courses that the teacher is lecturing in the first cycle		
		No.	Course	Study program/institution
		1.	Design of Information Systems	Industrial Engineering and Management
		2.	Management of Information Systems	Industrial Engineering and Management
		3.	Work Study	Industrial Engineering and Management
4.	Production Systems	Industrial Engineering and Management		
9.2.	List of courses that the teacher is lecturing in the second cycle			

		No.	Course	Study program/institution	
		1.	Business Information Systems	Industrial Engineering and Management	
		2.	Restructuring of Organizations	Industrial Engineering and Management	
		3.	Contemporary Production Systems	Industrial Engineering and Management	
		4.	Motivation and Compensation Systems	Industrial Engineering and Management	
	9.3.	List of courses that the teacher is lecturing in the third cycle			
		No.	Course	Study program/institution	
		1.	Performance Measurement Systems	Industrial Engineering and Management	
		2.	Integrated Quality Management processes	Industrial Engineering and Management	
		3.	Approaches for modeling and Simulation of business	Industrial Engineering and Management	
		4.	Managerial production philosophies	Industrial Engineering and Management	
10.	Selected work in the past five years				
	10.1.	Relevant scientific printed paper (up to 5)			
		No.	Author	Title	Publisher/year
		1.	B. Jovanoski, R. Minovski, S. Voessner and G. Lichtenegger	Managing strategy and production through hybrid Simulation	Journal of Industrial Management & Data Systems 113(8): 1110-1132/2013
		2.	B. Jovanoski, R. Minovski, D. Jovanoski	Modelling and Simulation of Business Processes: Review and Recommendations	Development of Intelligent and Innovative Tools for Production Process Engineering and
		3.	B. Jovanovski, R. Minovski, S. Voessner and G. Lichtenegger	Combining system dynamics and discrete event simulations - overview of hybrid simulation models	Journal of Applied Engineering Science, Vol. 10 No. 3, pp. 135–142/2013
		4.	S. Srebrenkoska, A. Kochov, R. Minovski	Six sigma and design of experiments for improving the production of composite pipes	Journal for Technology of Plasticity, Vol. 41(2016), Number 2, pp.11-18
			Ž. Kotevski, B. Jovanoski, R. Minovski	Simulation model for improved production planning and control through quality, cycle time and batch size management	Journal of Engineering Management and Competitiveness, Vol. 5, No. 1, 2015, pp. 40-45
		5.	B. Jovanoski, R. Minovski, S. Voessner and G. Lichtenegger	Managing strategy and production through hybrid Simulation	Journal of Industrial Management & Data Systems 113(8): 1110-1132/2013
	10.2.	Participation in scientific national and international projects (up to 5)			
		No.	Author	Title	Publisher/year
		1.	R. Minovski et al.	Joint Simulation Model for Strategic Decision Support	Macedonian-Austrian bilateral scientific project / 2011-2013

	2.	R. Minovski et al.	Adaptation of different simulations models for certain functional needs	University of Ss. Cyril and Methodious in Skopje/2012-2013
	3.	M. Klarin, R. Minovski et al.	Development of Stochastic Model for Determination of the Elements of the Working Time of the Production Cycle and their Optimization for Batch Production in the Metalworking Industry and Recycling Processes	Ministry of Science and Technological Development of Serbia / 2011-
10.3.	Printed books in the last five years (up to 5)			
	No.	Author	Title	Publisher/year
	1.	Р. Миновски	Менаџмент информациски	УКИМ / во печат
		Р. Миновски	Виртуелна фирма	Поглавје во книгата „Како до сопствен бизнс“, второ издание, УКИМ-БСЦ принт, стр. 301-324/2012
		Р. Миновски, Б. Јованоски	PLM Информациски системи	Машински факултет, Скопје, интерна скрипта / 2012
10.4.	Printed professional papers in the last 5 years (up to 5)			
	No.	Author	Title	Publisher/year
	1.	B. Jovanoski, R. Polenakovik, V. Gecevska, R. Minovski	Applying a suitable simulation approach for processes on different management levels	Proceedings of 16 th Industrial Systems Conference pp. 327-333 / 2014
	2.	Stanisavljev, S., Stojanovic, Z., Minovski, R., Jovanoski, B., & Zakin, M	The Elements of production cycle time in serial production	9th International Multidiciplinary Scientific Conference - EUROBRAND, Zrenjanin, Serbia / 2014
	3.	M. Stanojeska, R. Minovski and B. Jovanoski	Employee Motivation as an Initiator In Improving the State of QMS – Literature Review	International Conference on Innovative Technologies IN-TECH 2016, pp. 67-71/2016, Prague, Czech Republic
	4.	Stanojeska, M., Minovski, R., Sajfert, Z., Čočkaló, D., Stanisavljev, S., Jovanoski, B.	Employees Motivation and Transition OF ISO 9001 QMS Towards TQM	6th International Symposium on Industrial Engineering - SIE, Belgrade, Serbia / 2015

	5.	Stanojeska, M., Minovski, R., Jovanoski, B.	Management Role in Improving the State Of QMS through Managing of Employee Motivation	VI International Symposium Engineering Management and Competitiveness 2016 (EMC 2016), Kotor, Montenegro	
11.	Supervision (mentorship) of undergraduate, master and doctoral studies students				
	11.1.	Undergraduate	Over 20		
	11.2.	Master	Over 10		
	11.3.	Doctoral	3		
12.	For mentors of doctoral thesis, selected work for the last four / five years				
	12.1.	Proof of printed scientific papers in international scientific journals or international publications in the related field (up to 6) in the past five years			
		No.	Author	Title	Publisher/year
		1.	B. Jovanoski, R. Minovski, S. Voessner and G. Lichtenegger	Managing strategy and production through hybrid simulation	Journal of Industrial Management & Data Systems 113(8): 1110-1132/2013
		2.	Lj. Gjergjeska, V. Gecevska, R. Minovski	Application of Artificial Neural Networks for Improving Contemporary Business Systems	Development of Intelligent and Innovative Tools for Production Process Engineering and Sustainable Management, Scientific Monography, Chapter 10, p.p. 110-131, Maribor-Skopje/2013
		3.	B. Jovanoski, R. Minovski, D. Jovanoski	Modelling and Simulation of Business Processes: Review and Recommendations	Development of Intelligent and Innovative Tools for Production Process Engineering and Sustainable Management, Scientific Monography, Chapter 8, p.p. 81-96, Maribor-Skopje/2013
		4.	S. Stanisavljev, D. Čočkaló, D. Đorđević, R. Minovski	The production cycle time in serial production: reduction of the duration in metal processing industry case	Journal of Applied Engineering Science, 2013, vol. 11, No. 3, pp. 115-122 / 2013
		5.	D. Čočkaló, D. Đorđević, S. Bogetić, D. Sajfert, R. Minovski	Quality of Business, Entrepreneurship Education and Business start up Intentions Among Students in Serbia: Research Results	Journal "Industrija", Vol.41, No.3, pp. 135-145 / 2013

	6.	B. Jovanoski, R. Minovski, D. Jovanoski	Modelling and Simulation of Business Processes: Review and Recommendations, Development of Intelligent and Innovative Tools for Production Process Engineering and Sustainable Management	Scientific Monography, Chapter 8, p.p. 81-96, Maribor-Skopje / 2013	
12.2.	Proof of at least two printed scientific papers in international scientific journals that have impact factor in the related field in the past five years				
	No.	Author	Title	Publisher/year	
	1.	B. Jovanoski, R. Minovski, S. Voessner and G. Lichtenegger	Managing strategy and production through hybrid simulation	Journal of Industrial Management & Data Systems 113(8): 1110-1132/2013	
	2.	B. Jovanovski, R. Minovski, D. Jovanoski	Assessment of the Press Replacement Using Simulation	Journal for Technology of Plasticity, Vol. 37 (2012), Number 2, pp. 161-171/2012	
	3.	D. Jovanoski, R. Minovski, G. Kostovska, B. Jovanovski	Modeling & Simulation as Tools for Optimisation of Material Flow in Production Systems	Journal for Technology of Plasticity, Vol. 37 (2012), Number 1, pp. 23-34/2012	
	4.	R. Minovski, B. Jovanoski, P. Galevski	Lean implementation and implications: experiences from Macedonia	International Journal of Lean Six Sigma (accepted for publishing)	
12.3.	Proof of at least three international meetings' participation in the past four years				
	No.	Author	Title	International meeting/conference	year
	1.	M. Stanojeska, R. Minovski and B. Jovanoski	Employee Motivation as an Initiator In Improving the State of QMS – Literature Review	International Conference on Innovative Technologies IN-TECH 2016, pp. 67-71/2016, Prague, Czech Republic	2016
	2.	B. Jovanoski, R. Minovski, G. Lichtenegger, S. Voessner	Hybrid modeling of strategy and production in the manufacturing industry - taking the best from system dynamics and discrete event simulation	In M. Klumpp, ed. Proceedings of the 2012 European Simulation and Modelling Conference. Essen, Germany, Oct. 22-24: EUROSIS, pp. 274-282	2012
	3.	Mucha, B. Jovanoski, R. Minovski, V. Gechevska	Simulation Module For Production Planning And Control	Proceedings of the II International Scientific Conference, High Technologies, Business, Society, pp., 171-174	2017

Add. 4		Information about the teachers that lecture at the first, second and third study program and are mentors on the doctoral thesis			
1.	Name (First,	Nikola Tuneski			
2.	Date of birth	16.07.1971			
3.	Scientific degree /	Ph.D.			
4.	Title of the	Ph.D. in mathematical sciences			
5.	Year and institution of the scientific degree	Education	Year	Institution	
		Ph.D. in mathematics	1994	University of Belgrade,	
		M. Sc. in mathematics	1997	UKIM, Macedonia	
		B. Sc. In Engineering	1999	UKIM, Macedonia	
6.	Area, field and particular specialty of	Area	Field	Specialty	
		Mathematics	Probability	Random process	
7.	Area, field and area of	Area	Field	Specialty	
		Mathematics	Complex analysis	Geometric function	
8.	If employed, state the institution where he/she	Institution			Title and area
		Faculty of Mechanical Engineering Ss. Cyril and Methodius University in Skopje			Full Professor, Mathematics and
9.	List of courses that the teacher is lecturing separately for first, second and third cycle				
	9.1.	List of courses that the teacher is lecturing in the first cycle			
		No.	Course	Study program/institution	
		1.	Mathematics 1	all on MFS	
		2.	Mathematics 2	all on MFS	
		3.	Numerical Mathematics	Welding and welded constructions	
	9.2.	List of courses that the teacher is lecturing in the second cycle			
		No.	Course	Study program/institution	
		1.	Selected topics in mathematics and	all on MFS	
		2.	Probability models and simulations	Mechatronics	
	9.3.	List of courses that the teacher is lecturing in the third cycle			
		No.	Course	Study program/institution	
		1.	Theory and Application of Differential Subordinations	Mathematical sciences and application	
		2.	Theory of Univalent Functions and its Application	Mathematical sciences and application	
10.	Selected work in the past five years				
	10.1.	Relevant scientific printed paper (up to 5)			
		No.	Author	Title	Publisher/year

1.	N. Tuneski, T. Bulboaca, B. Jolevska-Tuneska	Sharp results on linear combination of simple expressions of analytic functions, Hacettepe Journal of Mathematics and Statistics, Vol.45 No.1 (2016), 121-128. (2013 IMPACT FACTOR 0.433)	Hacettepe University, Ankara, Turkey / 2016
2.	N. Tuneski, M. Nunokawa, B. Jolevska-Tuneska	Extension of some results on univalent functions, Journal of Inequalities and Applications, Vol 2015, No. 1, 2015:322. DOI 10.1186/s13660-015-0845-7. (2014 IMPACT FACTOR 0.773)	Springer-Verlag / 2015
3.	M. Nunokawa, H. Srivastava, N. Tuneski, B. Jolevska-Tuneska	Some Marx-Strohhacker Type Results for a Class of Multivalent Functions, Miskolc Mathematical Notes, Vol. 18 (2017), No. 1, 353–364. DOI: 10.18514/MMN.2017.1952 (2015 IMPACT FACTOR 0.335)	University of Miskolc, Hungary / 2017
4.	M. Elin, D. Shoikhet, N. Tuneski	Parametric Embedding of Starlike Function, Complex Anal. Oper. Theory, (2017) 11:1543–1556. DOI 10.1007/s11785-016-0634-4	Springer / 2017
5.	N. Tuneski, T. Bulboaca	Sufficient conditions for bounded turning of analytic functions, Ukrainian Mathematical Journal, Vol.70, No.8, (2018), 1118 – 1127. (IMPACT FACTOR 2016: 0.228)	Springer, Ukrainian Academy of Science / 2018
10.2.	Participation in scientific national and international projects (up to 5)		
No.	Author	Title	Publisher/ year
1.	Thierry Bourgoignie, Ivan Hendrikx	Building Quality Infrastructure System in Saudi Arabia	Кралството Саудиска Арабија, 2018
2.	Никола Тунески (раководител - главен истражувач)	Теорија и примена на еднолисниите функции	Меѓународен научно-истражувачки проект финансиран од Министерство за образование и наука на Р. Македонија и ТУБИТАК - Турција, 2006 – 2008
3.	Никола Тунески (раководител - главен истражувач)	Геометриска теорија на функциите и нејзина примена	Национален научно-истражувачки проект финансиран од Министерство за образование и наука на Р. Македонија, 2001-2004
4.	Ivan Hendrikx (Head of the project)	Strengthening of the Serbian system of market surveillance for non-food and food products	European Union (EU Contract Number: 2012/292-614)

	5.	Никола Тунески (член на тимот за реализација на проектот)	Воведување на нов простор на дистрибуции	Меѓународен научно-истражувачки проект финансиран од Министерство за образование и наука на Р. Македонија и Министерство за образование на Црна Гора, 2016 - 2018.
10.3.	Printed books in the last five years (up to 5)			
	No.	Author	Title	Publisher/ year
	1.	Thomas, Derek K.; Tuneski, Nikola; Vasudevarao, Allu	Univalent functions. A primer	De Gruyter Studies in Mathematics, 2018.
10.4.	Printed professional papers in the last 5 years (up to 5)			
	No.	Author	Title	Publisher/ year
	1.	I. Hendriks, B.D. Jovanoski, N. Tuneski	Dynamic simulations of market surveillance actions, 2016 IEEE Symposium on Product Compliance Engineering (ISPCE), 16-18 May 2016, Anaheim, CA, USA. DOI: 10.1109/ISPCE.2016.7492846	IEEE / 2016
	2.	N.Tuneski	Embedding α -convex functions in the class U, Proceedings of a symposium held at the Research Institute for Mathematical Sciences, Kyoto University, Kyoto, Japan, May 22–24, 2013, 94-99. (English; Japanese)	Kyoto University, Japan / 2013
11.	Supervision (mentorship) of undergraduate, master and doctoral studies students			
	11.1.	Undergraduate	/	
	11.2.	Master	1	
	11.3.	Doctoral	2	
12.	For mentors of doctoral thesis, selected work for the last four / five years			
	12.1.	Proof of printed scientific papers in international scientific journals or international publications in the related field (up to 6) in the past five years		
	No.	Author	Title	Publisher/ year
	1.	E. Aliaga, N. Tuneski	On existence of sufficient condition for univalence depending on two parameters, Proceedings of the V Congress of Mathematicians of Macedonia, September 24–27, 2014, Ohrid, R. Macedonia, Vol.2 (2015) 5–9.	Union of Mathematicians of Macedonia, 2015
	2.	E. Aliaga, N. Tuneski	Some results on the class of α -convex Janowski type functions and class U, Int. J. Appl. Math. Vol. 28 No 4 (2015), 415-425. doi: http://dx.doi.org/10.12732/ijam.v28i4.9	Hikari, Bulgaria / 2015

	3.	N.Tuneski	Embedding α -convex functions in the class U, Proceedings of a symposium held at the Research Institute for Mathematical Sciences, Kyoto University, Kyoto, Japan, May 22–24, 2013, 94-99. (English; Japanese)	Kyoto University, Japan / 2013	
	4.	N. Tuneski, T. Bulboaca, E. Aliaga	Some Results Over the First Derivative of Analytic Functions, Advances in Mathematics: Scientific Journal, Vol. 1 No. 1 (2012), 7 - 13.	Research Publication, Macedonia / 2012	
	5.	N. Tuneski, M. Darus, E. Gelova	Simple Criteria for Bounded Turning of an Analytic Function, Advances in Mathematics: Scientific Journal, Vol. 1 No. 2 (2012), 87 - 93.	Research Publication, Macedonia / 2012	
12.2.	Proof of at least two printed scientific papers in international scientific journals that have impact factor in the related field in the past five years				
	No.	Author	Title	Publisher/ year	
	1.	N. Tuneski, T. Bulboaca, B. Jolevska-Tuneska	Sharp results on linear combination of simple expressions of analytic functions, Hacettepe Journal of Mathematics and Statistics, Vol.45 No.1 (2016), 121-128. (2013 IMPACT FACTOR 0.433)	Hacettepe University, Ankara, Turkey / 2016	
	2.	N. Tuneski, M. Nunokawa, B. Jolevska-Tuneska	Extension of some results on univalent functions, Journal of Inequalities and Applications, Vol 2015, No. 1, 2015:322. DOI 10.1186/s13660-015-0845-7. (2014 IMPACT FACTOR 0.773)	Springer-Verlag / 2015	
	3.	M. Nunokawa, H. Srivastava, N. Tuneski, B. Jolevska-Tuneska	Some Marx-Strohhacker Type Results for a Class of Multivalent Functions, Miskolc Mathematical Notes, Vol. 18 (2017), No. 1, 353–364. DOI: 10.18514/MMN.2017.1952 (2015 IMPACT FACTOR 0.335)	University of Miskolc, Hungary / 2017	
	4.	M. Elin, D. Shoikhet, N. Tuneski	Parametric Embedding of Starlike Function, Complex Anal. Oper. Theory, (2017) 11:1543–1556. DOI 10.1007/s11785-016-0634-4	Springer / 2017	
	5.	N. Tuneski, T. Bulboaca	Sufficient conditions for bounded turning of analytic functions, Ukrainian Mathematical Journal, Vol.70, No.8, (2018), 1118 – 1127. (IMPACT FACTOR 2016: 0.228)	Springer, Ukrainian Academy of Science / 2018	
12.3.	Proof of at least three international meetings' participation in the past four years				
	No.	Author	Title	International	Year

1	N. Tuneski, D. Shoikhet, M. Elin	Starlike functions and semigroup generators	International Congress of Mathematicians 2018 (ICM 2018), Rio de Janeiro, 01-09 August 2018.	2018
2	N. Tuneski, D. Shoikhet, M. Elin	Some results about a filtration of starlike functions	Transform Methods and Special Functions 2017, 8th International Conference, Sofia, Bulgaria, 27-30 August 2017	2017
3	N. Tuneski, David Shoikhet, Mark Elin	Some results about a filtration of starlike functions	6–th Congress of Mathematicians of Macedonia, Ohrid, Macedonia, June 15 – 18, 2016.	2016
4	Ivan Hendriks, Bojan D. Jovanoski, Nikola Tuneski	Dynamic simulations of market surveillance actions	IEEE Symposium on Product Compliance Engineering, May 16-18 2016, Anaheim, CA, USA.	2016
5	Nikola Tuneski	On a class of starlike functions	2nd Workshop on Complex and Harmonic Analysis, April 13-15, 2016, Holon Institute of Technology, Holon, Israel.	2016
6	N. Tuneski, M. Nunokawa, B. Jolevska-Tuneska	Some results on multivalent functions	“International Workshop on Geometry of Riemannian and Hermitian Manifolds”, 7-10 December 2015, Sofia, Bulgaria	2015

Add. 4		Information about the teachers that lecture at the first, second and third study program and are mentors on the doctoral thesis		
1.	Name (First, Last)	Gligorche Vrtanoski		
2.	Date of birth	April 15, 1966		
3.	Scientific degree / Title	Ph.D.		
4.	Title of the scientific degree	Ph.D. in Technical Sciences		
5.	Year and institution of the scientific degree	Education	Year	Institution
		Ph.D. in Mechanical Engineering	2003	Faculty of Mechanical engineering - Skopje
		M.Sc. in Mechanical Engineering	1996	Faculty of Mechanical engineering - Skopje
		B.Sc. in Mechanical Engineering	1991	Faculty of Mechanical engineering - Skopje
6.	Area, field and particular	Area	Field	Specialty

	specialty of master of science degree	Technical-technology sciences	Mechanical engineering	Integrated CAD/CAM/CAE/ Systems and FEM of composite material structures	
7.	Area, field and area of doctoral degree	Area Technical-technology sciences	Field Mechanical engineering	Specialty Design of Machine Tool Structures with Composite Materials	
8.	If employed, state the institution where he/she works and the title and area in which is named	Institution UKIM, Faculty of Mechanical Engineering		Title and area Full time professor of Mechanical engineering	
9.		List of courses that the teacher is lecturing separately for first, second and third cycle			
	9.1.	List of courses that the teacher is lecturing in the first cycle			
		No.	Course	Study program/institution	
		1.	Design, Testing and Maintenance of Machine Tools	Production Engineering	
		2.	Quality Management	Industrial Engineering and Management	
		3.	Computer Aided Product Development	Production Engineering	
		4.	Computer Design and Animations	Production Informatics	
		5.	Internet and Web Design	Production Informatics	
		6.	Business Processes and Metrics	Production Informatics	
	9.2.	List of courses that the teacher is lecturing in the second cycle			
		No.	Course	Study program/institution	
		1.	Product Development	Production engineering	
		2.	Management of Processes	Production engineering	
		3.	Management of Development of New Products and Processes	Metrology, Management and Quality Control	
		4.	Methods and Techniques of TQM	Metrology, Management and Quality Control	
		5.	Development and Management of Products	Product Life-Cycle Management – PLM	
		6.	Modeling and Simulation of Physical Systems	Production engineering	
	9.3.	List of courses that the teacher is lecturing in the third cycle			
		No.	Course	Study program/institution	
		1.	CAX Technologies	Mechanical engineering	
		2.	Substitution of the Materials	Mechanical engineering	
		3.	Management of Development of New Products	Mechanical engineering	
10.	Selected work in the past five years				
	10.1.	Relevant scientific printed paper (up to 5)			
		No.	Author	Title	Publisher/Year
		1.	Simona Domazetovska, Gligorche Vrtanoski, Dame Dimitrovski	Description and Analysis of Energy Management Information Systems, As a Useful Management Tool	Mechanical Scientific Engineering Journal, Vol. 35, No. 1, pp 61-72, Skopje 2017, Coden: MINSC5, ISSN 1857-5293, UDC 621.
		2.	Nace Manushev, Gligorche Vrtanoski	Creating a Conceptual Innovation Model for	Mechanical Scientific

			Development of the Companies	Engineering Journal, Vol. 35, No. 1, pp 17-30, Skopje 2017, Coden: MINSC5, ISSN 1857-5293, UDC 621.
	3.	Zoran Pandilov, Betim Shabani, Dejan Shishkovski, Gligorche Vrtanoski	Reverse Engineering – An Effective Tool for Design and Development of Mechanical Parts	ACTA Technica Corviniensis – Bulletin for Engineering, Tome XI (2018) Fascicule 2 (April – June), e-ISSN: 2067 - 3809 (online)
	4.	Marija Naskova, Gligorche Vrtanoski	Digital Marketing – Tool for Extending Product Lifecycle	Mechanical Scientific Engineering Journal, Vol. 34, No. 1, pp 415-422, Skopje 2016, Coden: MINSC5, ISSN 1857-5293, UDC 621.
	5.	Kire Dimanoski, Gligorche Vrtanoski, Gordan Stojich	Simulation Model for Dimensioning Capacity of Border Railway Stations	Mechanical Scientific Engineering Journal, Vol. 34, No. 1, pp 27-33, Skopje 2016, Coden: MINSC5, ISSN 1857-5293, UDC 621.
10.2.	Participation in scientific national and international projects (up to 5)			
	No.	Author	Title	Publisher/year
	1.	Vrtanoski Gligorce (local team leader):	<i>EBRD Project No. C32161:</i> Rail Corridor VIII: First Phase / Fleet Renewal Project - Design and Implementation of Energy Management Information System in the Rail Sector, (01/2016 – Present (07/2019), Client: / Funding: EBRD Grant to MRT JSC Skopje and PERI Skopje / EBRD Grant, SubContractor: PADECO, Tokyo, Japan, Position: Local Team Leader and Railway Rolling Stock Expert.	Меѓународен проект финансиран од Европска Банка за Обнова и Развој / (01/2016 – 07/2019).
	2.	Vrtanoski Gligorce (team leader):	<i>EBRD Project No. C32418CC:</i> Business Segmentation and Fleet Management Advisory Services for Railway Transport Company, (11/2015 – Present (10/2018), Client: / Funding: EBRD Grant to Ministry of	Меѓународен проект финансиран од Европска Банка за Обнова и Развој / (11/2015 – 10/2018).

			Transport and Communication / EBRD Grant, SubContractor: PricewaterhouseCoopers, Rome, Italy, Position: Local Team Leader and Fleet Management Expert.	
	3.	Vrtanoski Gligorce:	Management support for the integrated tariff environment (ITE) systems 2011S 118-193705 Publication Reference <i>EuropeAid13366DSERMK</i> , (08/2013 – 07/2014) Client: / Funding: FAA Gmbh, address Heiligenstädter Lände 29, 1190, Wien, Austria, Position: Manager for Recruiting Experts and Supervision of their work	Меѓународен проект финансиран од Европска комисија / (08/2013 – 07/2014).
	4.	Vrtanoski Gligorce (team leader):	<i>EBRD Project No. 43997, – TCS ID: 7040-37045: Macedonian Railways Rolling Stock Renewal</i> Assistance to PIU for TS: Electric Locomotive GO Modernization (10/2012 – 07/2016) Client: / Funding: EBRD Grant to MRT JSC Skopje / EBRD Grant, SubContractor: AECOM, London, Great Britain, Position: Freight Wagon Specialist. Team Leader and Electric Locomotives Maintenance Specialist	Меѓународен проект финансиран од Европска Банка за Обнова и Развој / (10/2012 – 07/2016).
	5.	Vrtanoski Gligorce (team leader):	Macedonian Railways Rolling Stock Renewal Project, EBRD Project No. 43997, (10/2012 – 03/2016) – TCS ID: 37045: Macedonian Railways Rolling Stock Renewal Project – Assistance to PIU for TS: Freight Wagon; Contract No.: C26160/AUS1-2013-03-03, Client: / Funding: EBRD Grant to MRT JSC Skopje / EBRD Grant, SubContractor: iC consulenten ZT GmbH, Vienna, Austria, Position: Freight Wagon Specialist.	Меѓународен проект финансиран од Европска Банка за Обнова и Развој / (10/2012 – 03/2016).
10.3.	Printed books in the last five years (up to 5)			
	No.	Author	Title	Publisher/Year
	1.			
	2.			
	3.			

	4.			
	5.			
	10.4.	Printed professional papers in the last 5 years (up to 5)		
		No.	Author	Title
		1.	Georgi Hristov, Gligorche Vrtanoski	Establishing a National Regulator on water services in Macedonia: Watch what you wish
		2.	Igor Korunoski, Kire Dimanoski, Gligorche Vrtanoski	The Influence of the Railway Fleet Modernization on the Energy Efficiency
		3.	Gligorche Vrtanoski	WIPO Tool on Management of Academic Intellectual Property, Current Status of Teaching Intellectual Property at Higher Education Institutions
		4.	Kire Dimanoski, Gordan Stojich, Gligorche Vrtanoski	Model for Measuring Quality of Railway Passanger Service
		5.	Kire Dimanoski, Gordan Stojich, Gligorche Vrtanoski	Improving Quality of Railway Passanger Service in Republic of Macedonia
	11.	Supervision (mentorship) of undergraduate, master and doctoral studies students		
		11.1.	Undergraduate	Over 50
		11.2.	Master	15
		11.3.	Doctoral	3
	12.	For mentors of doctoral thesis, selected work for the last four / five years		
		12.1.	Proof of printed scientific papers in international scientific journals or international publications in the related field (up to 6) in the past five years	
			No.	Author
			Title	Publisher/Year
			1.	
			2.	
			3.	
			4.	

	5.				
	6.				
	12.2.	Proof of at least two printed scientific papers in international scientific journals that have impact factor in the related field in the past five years			
		No.	Author	Title	Publisher/Year
		1.			
		2.			
	12.3.	Proof of at least three international meetings' participation in the past four years			
	No.	Author	Title	International Meeting/ Conference	Year
	1.				
	2.				
	3.				

Add. 4		Information about the teachers that lecture at the first, second and third study program and are mentors on the doctoral thesis				
1.	Name (First, Last)	Radmil Polenakovikj				
2.	Date of birth	March 14, 1967				
3.	Scientific degree / Title	Ph.D.				
4.	Title of the scientific degree	Ph.D. in Technical Sciences				
5.	Year and institution of the scientific degree	Education	Year	Institution		
		Ph.D in Mechanical Engineering	2001	Faculty of Mechanical engineering - Skopje		
		M. Sc. in Mechanical Engineering	1994	Faculty of Mechanical engineering - Skopje		
		B. Sc. in Mechanical Engineering	1992	Faculty of Mechanical engineering - Skopje		
6.	Area, field and particular specialty of master of science degree	Area	Field	Specialty		
		Technical sciences	Mechanical engineering	Human Resources Management		
7.	Area, field and area of doctoral degree	Area	Field	Specialty		
		Technical sciences	Mechanical engineering	Management		
8.	If employed, state the institution where he/she works and the title and area in which is named	Institution		Title and area		
		UKIM, Faculty of Mechanical Engineering		Full time professor Industrial Engineering and Management		
9.	List of courses that the teacher is lecturing separately for first, second and third cycle					
	9.1.	List of courses that the teacher is lecturing in the first cycle				
		No.	Course	Study program/institution		
		1.	Entrepreneurship and small business	All majors / Mechanical Faculty, UKIM		
		2.	Human Resources management	IEM, MF, UKIM		
		3.	Logistics and Supply Chain Management	IEM, MF, UKIM		
		4.	Organizational Behavior	IEM, MF, UKIM		
	9.2.	List of courses that the teacher is lecturing in the second cycle				
		No.	Course	Study program/institution		
		1.	Methods and techniques in maintenance	IEM, MF, UKIM		
		2.	Project Cycle Management	IEM, MF, UKIM		
		3.	Human Resources Development	IEM, MF, UKIM		
		4.	Logistics and Supply Chain Management	IEM, MF, UKIM		
	9.3.	List of courses that the teacher is lecturing in the third cycle				
		No.	Course	Study program/institution		
1.		Human Resources Development	IEM, UKIM			
2.		Entrepreneurship and innovation Management	IEM, UKIM			
10.	Selected work in the past five years					
	10.1.	Relevant scientific printed paper (up to 5)				
		No.	Author	Title	Publisher/year	

		1.	Polenakovikj R., Sutevski D.	Entrepreneurial Learning Strategy of Republic of Macedonia 2014 – 2020	ETF & MON, 2014
		2.	<u>R. Polenakovik</u>	Building an Innovation Society – Case of the Republic of Macedonia	UNCTAD Multi-year Expert Meeting on Investment, Innovation and Entrepreneurship for Productive Capacity-building and Sustainable Development, 19 – 21 March 2014, Palais des Nations, Geneva
		3.	T. Fiti, R. polenakovikj (et al)	Proceedings from the Conference “How to increase employability rate among students and recent graduates?”	MANU and NCCDIEL print, Skopje 2014
		4.	Polenakovikj R, et al.	Development of National Cluster	NCDIEL print, Skopje 2017
				Strategy for Republic of Macedonia 2018 – 2025 with action plan	
		5.	Lazarevska T, Polenakovikj R, et al	Entrepreneurship in the Republic of Macedonia (GEM 2012 report for Macedonia)	MRFP, Skopje December 2018
	10.2.	Participation in scientific national and international projects (up to 5)			
		No.	Author	Title	Publisher/year
		1.	Polenakovikj R, et al.	“ECO-SystemApp: System Approaches for Entrepreneurial Ecosystem Training ” ERASMUS+ KA 2: Strategic Partnerships	2015 – 2017, EU funded
		2.	Polenakovikj R, et al.	CRAYON (Creativity in Action to promote Young Entrepreneurship)	2015 – 2017, EU funded
		3.	Polenakovikj R, et al.	Cross Border Cooperation project MK-AL “Innovation Eco-System in the CBC area (CBC INNOV8)	2018 - 2019
	10.3.	Printed books in the last five years (up to 5)			
		No.	Author	Title	Publisher/year
		1.	<u>Polenakovikj R.</u> , Markovska M	Innovation management	NCDIEL print, 2013
		2.	<u>Polenakovikj R.</u> , Sutevski D.	Business and Entrepreneurship (IV grade secondary schools)	NCDIEL print 2017
		3.	<u>Polenakovikj R.</u> , Sutevski D.	Innovation (9 th grade for primary schools)	MON, 2018
		4.	<u>Polenakovikj R.</u> , Penaluna A., et al	How to teach entrepreneurship	NCDIEL print 2015
	10.4.	Printed professional papers in the last 5 years (up to 5)			
		No.	Author	Title	Publisher/year
		1.	B. Jovanovski, I. Nikoloski, <u>R. Polenakovik</u> , T. Velkovski, E. Ivanovic	Reducing kills mismatch as a key for increasing the regional competitiveness of women entrepreneurship in Southeast Europe	Proceedings of 7 th International Conference for Entrepreneurship, Innovation and Regional Development, ICERID 2014, 5-6 June 2014, Nicosia, Cyprus

		2.	R. Polenakovik, A. Penaluna, K. Penaluna	Closing the gap between labour market needs and students/graduates competences and skills	T. Fiti, R. Polenakovik (editors): "How to increase employment of students and graduates? Conference Proceedings", MANU and NCDIEL print, Skopje, 14 March 2014
		3.	R. Polenakovik	Creativity killers and boosters - How to be more creative?(<u>Don't dream your life, live your dream</u>)	Paper prepared for the needs of the project: Project EU+PIK@ (EU + Entrepreneurship, Initiative, Creativity) (542642-LLP-1-2013-1-SI-AJM-ICS), MFDPS, Celje, Slovenia
		4.	Dimitrovska N., Polenakovikj R.:	Comparative Life Cycle Impact Assessment in Global Warming Potential for Pharmaceutical Packaging purpose	The International Journal of Engineering and Science (IJES), Volume, 6, Issue 4, pp. 24-30, September 2017
		5.	Jovanovski B., Polenakovik R., et al.	Innovative Approach for Facing Roma Exclusion with Social Entrepreneurship Trainings	Annals of Faculty of Engineering Hunedoara – International Journal of engineering, Tome XVI (2018), Fascicule 1 (February)
11.	Supervision (mentorship) of undergraduate, master and doctoral studies students				
	11.1.	Undergraduate		Over 150	
	11.2.	Master		Over 50	
	11.3.	Doctoral		6 finished and 4 in progress	
12.	For mentors of doctoral thesis, selected work for the last four / five years				
	12.1.	Proof of printed scientific papers in international scientific journals or international publications in the related field (up to 6) in the past five years			
		No.	Author	Title	Publisher/year
		1.	Naumovska B., J. Chaloska J., Polenakovik R., Gechevska V.	<i>Creation of Healthy and Safe Workplaces by Use of Software for Ergonomics and Human Actors – JACK</i>	1st International Conference for Safety Engineering in Function of Improvement of the Working Conditions, 10–12 May, 2013, Ohrid, Macedonia
		2.	Stamboliski V., Donev V., Polenakovik R.	Improving Organisational Structure in the After-sales of Vehicles by establishing and developing Effective Teams	IX International (May 2013) Conference for Strategic management, 24-26 May 2013, Hotel Albo, Bor, Serbia
		3.	Gecevska V., Donev V., Polenakovik R.	A Review of Environmental Tools Towards Sustainable Development	Annals of Faculty Engineering Hunedoara – International Journal of Engineering, Tome XIV (2016) – Fascicule 1 (February)
		4.	Polenakovik R., Gecevska V., Sutevski D., Jovanovski R. B.	Analysis of the Business Model's Impact to the Success of Macedonian SME's	Methods and Techniques for Industrial Development (Scientific Monograph - editors Franc Čuš, Valentina Gečevska, Fulvia Chiampo), Maribor: Faculty of Mechanical Engineering, 2015
	12.2.	Proof of at least two printed scientific papers in international scientific journals that have impact factor in the related field in the past five years			
		No.	Author	Title	Publisher/year
		1.	Polenakovik R., Pinto R	The National Innovation System and its Relation to Small Enterprises – the Case of the Republic of Macedonia	World Journal of Science, Technology and Sustainable Development

					(WJSTSD) Volume 7 Numbers 1/2 2010	
	2.	Gecevska V., Donev V., <u>Polenakovik R.</u>	Mass Customization as Aided Value Tool in New Product Development Process		International Journal of Innovative Research in Science, Engineering and Technology, Volume 4, Issue 11, November 2015	
	12.3.	Proof of at least three international meetings' participation in the past four years				
		No.	Author	Title	International meeting/conference	year
	1.	G. Stojkov, D. Janevska, R. <u>Polenakovik</u>	Should I stay or should I go: is the leadership style important for the sector where it is performed?	Proceedings of 7 th International Conference for Entrepreneurship, Innovation and Regional Development, ICERID 2014, 5-6 June 2014,		2014
	2.	Sutevski D., <u>Polenakovik R.</u>	32 sources of organizational changes	Proceedings of XI International Scientific Conference "Management and Engineering" 13', 23-26 June 2013, Sozopol, Bulgaria		2013
	3.	<u>Polenakovik R.</u> , Jovanovski B., Velkovski T.	Developing System of Entrepreneurial Education in Secondary Schools in the Republic of Macedonia	6th International Conference for Entrepreneurship, Innovation, and Regional Development ICEIRD 2013, 20-21 June, 2013, Istanbul, Turkey		2013
	4.	Stamboliski V., Donev V., <u>Polenakovik R.</u>	Improving Organisational Structure in the After-sales of Vehicles by Establishing and Developing Effective Teams	IX International (May 2013) Conference for Strategic management, 24-26 May 2013, Hotel Albo, Bor, Serbia		2013
	5.	Stojkov G., Janevska D., <u>Polenakovik R.:</u>	Facilitation of Transfer of Leaders by Addressing the Differences in Leadership Competences in Private and Public Sectors	15 th International Business & Economy Conference: Sustainability in Business and Economics, Nürtingen - Geislingen University, Nürtingen, January 6-9, 2016		2016

Add. 4		Information about the teachers that lecture at the first, second and third study program and are mentors on the doctoral thesis		
1.	Name (First, Last)	Valentina Gecevska		
2.	Date of birth	09.09.1965		
3.	Scientific degree / Title	Ph.D.		
4.	Title of the scientific degree	Ph.D. in Technical Sciences		
5.	Year and institution of the scientific degree	Education	Year	Institution
		Ph.D. in Mechanical Engineering	2002	Faculty of Mechanical engineering - Skopje
		M.Sc. in Mechanical Engineering	1995	Faculty of Mechanical engineering - Skopje
		B.Sc. in Mechanical Engineering	1989	Faculty of Mechanical engineering - Skopje

6.	Area, field and particular specialty of master of science degree	Area	Field	Specialty	
		Technical Sciences	Mechanical engineering	Automation process planning and design	
7.	Area, field and particular specialty of doctoral degree	Area	Field	Specialty	
		Technical Sciences	Mechanical engineering	Production processes and technologies	
8.	If employed, state the institution where he/she works and the title and area in which is named	Institution	Title and area		
		Ss. Cyril and Methodius University in Skopje, Faculty of Mechanical Engineering	Full time professor Production Engineering and Industrial Engineering		
9.	List of courses that the teacher is lecturing separately for first, second and third cycle				
	9.1.	List of courses that the teacher is lecturing in the first cycle			
		No.	Course	Study program/institution	
		1.	Process planning and design	Production Engineering	
		2.	Engineering economics	Industrial engineering and management	
		3.	Management of new product development	Industrial engineering and management	
	9.2.	List of courses that the teacher is lecturing in the second cycle			
		No.	Course	Study program/institution	
		1.	Advanced production processes and technologies	Production Engineering	
		2.	Intelligent production systems	Production Engineering Industrial Engineering and Management	
		3.	Automation process planning design	Production Engineering Industrial Engineering and Management	
		4.	Basic of Product Lifecycle Management	Product Lifecycle Management	
		5.	Economic of life cycle	Product Lifecycle Management	
		6.	Environmental sustainability	Product Lifecycle Management	
		7.	Innovation management	Product Lifecycle Management	
8.		Quality costs management	Quality Management		
9.		Processes management	Management of safety systems		
9.3.	List of courses that the teacher is lecturing in the third cycle				
	No.	Course	Study program/institution		
	1.	Engineering economics analysis	Industrial Engineering and Management		
10.	Selected work in the past five years				
	10.1.	Relevant scientific printed paper (up to 5)			
		No.	Author	Title	Publisher/year
		1.	Gecevska V., Anisic Z.	Lean Product Lifecycle Management Approach	Int. Journal of Industrial Engineering and Management, Vol.4 N.4, 2013, ISSN: 2217-2661, pp. 207-214. (Scimago SJR=0.2)
2.		Petkovic D., Gecevska V., Madic M., Radovanovic M.	Application of the performance selection index method for solving machining MCDM problems	Scientific Journal Facta Universitatis, series Mechanical Engineering, Vol.12, No.12, 2014, ISSN: 0354-2025.	
3.	Gecevska V., Polenakovik	Mass Customization as	Int. Journal of Innovative		

		R.	<u>Aided Value Tool in New Product Development Process</u>	Research in Science, Engineering and Technology, Vol.4, Issue 11, 2015, pp.346-355. ISSN 2319-8753. (Global <u>IF=0,544</u> for 2015)
	4.	Gecevska V., Kuzinovski M., Cus F., Tomov M.	Modelling of Cutting Tool Wear and Cutting Tool Life for Face Milling Operations	Journal of the Balkan Tribological Association, Vol.22, No.3A-I, 2016. ISSN: 1310-4772. (WoS SCI journals, <u>IF=0,32</u> for 2015)
	5.	Polenakovik R., Stankovska I., Jovanovski B., Gecevska V.	Innovativeness in Macedonian Companies: Evidence from the Community Innovation Survey	Journal of Technical Gazette, Vol.25, No.3, 2018, pp.910-915. (WoS SCI journals, <u>IF=0,5</u> for 2016)
10.2.	Participation in scientific national and international projects (up to 5)			
	No.	Author	Title	Publisher/year
	1.	Gecevska V. – project coordinator for Macedonia, Cus F. – project coordinator for Slovenia	„Development of the intelligent based tools for production processes management”	International Scientific Project financed by the Ministry of Education and Science - Macedonia and the Ministry of Science and Technology- Slovenia,2012-2014
	2.	Gecevska V.-project coordinator	„Current assistance and lessons learned from international multilateral and bilateral donors in Republic of Macedonia”	World Bank Group, 2014
	3.	Gecevska V. – member of team	„The International Virtual Laboratory for Enterprise Interoperability –Network of Excellence for Networked Enterprise Applications and Software”	FP7 ICT, Contractor: University Bordeaux, France, Oct.2011- Oct.2015
	4.	Gecevska V. – coordinator for Circular Economy Chapter	„ Strengthening capacities and mechanisms for supporting Chapter 20 reform processes”	IPA Project, 2015-2018
	5.	Gecevska V. – project coordinator	IoT (Interent of Things) with PLM Application in Agricultural Industry	Macedonian – China bilateral scientific project, 2018-2019
10.3.	Printed books in the last five years (up to 5)			
	No.	Author	Title	Publisher/year
	1.	Cus F., Gecevska V., Chiampo F.	METHOD AND TECHNIQUES FOR INDUSTRIAL DEVELOPMENT	Scientific Monograph, Publishers: Faculty of Mechanical Engineering, University of Maribor, Slovenia & Politecnico di Torino, Italy, September 2015, ISBN 978-961-248-493-4, 266 p.
	2.	Cus F., Chiampo F., Lombardi F., Gecevska V.	TOWARDS TECHNICAL EDUCATION ON RESOURCES SAVINGS FOR INDUSTRIAL	Scientific Monograph, Publishers: Faculty of Mechanical Engineering, University of Maribor, Slovenia

			DEVELOPMENT	& Politecnico di Torino, Italy, June 2015, ISBN 978-961-248-488-0, 224 p.	
	3.	Cus F., Gecevska V.	„Development of Intelligent and Innovative Tools for Production Process Engineering and Sustainable Management	Scientific Monograph, Publisher: University of Maribor, Slovenia, ISBN 978-961-248-418-7, June 2013, 275 p.	
	4.	Cus F., Gecevska V.	Advances in Production and Industrial Engineering	Scientific Monograph, Publisher: University of Maribor Press, Slovenia, ISBN 978-961-286-028-8, April 2017, COBISS.SI-ID 91546369, 252 p.	
	5.				
10.4	Printed professional papers in the last 5 years (up to 5)				
	No.	Author	Title	Publisher/year	
	1.	Gecevska V. member of team	„Western Balkan Regional R&D Strategy for Innovation”	Strategy Document: financed by the World Bank and European Commission, 2013, 105p.	
	2.	Gecevska V., etc.	„Value Stream Mapping analysis and improvement for the production process of electrical equipment	EuropeAid/127054/C/SER/Multi in third countries, Skopje, 2013, 75p.	
	3.	Gecevska V., etc.	„Factors for Economic Growth of Macedonian SMEs”	World Bank, 2014, 155p.	
	4.	Gecevska V.	„Economical Assessment and Cost Benefit Analysis for Production Plant based on Renewable Energy Sources”	Feasibility Study, FP7 CONCERTO - 239515 Project, 2014, 95p.	
	5.	Gecevska V. etc.	„BPM for software platform development of internal processes optimization in production company”	EuropeAid/127054/C/SER/Multi in third countries, Skopje, 2015, 75p.	
11.	Менторства на додипломски, магистерски и докторски студии				
	11.1.	Дипломски работи	65		
	11.2.	Магистерски работи	20		
	11.3.	Докторски дисертации	4		
12.	За ментори на докторски трудови селектирани резултати во последните четири/пет години				
	12.1.	Доказ за печатени научноистражувачки трудови во меѓународни научни списанија или меѓународни научни публикации во даденото поле (до шест) во последните пет години			
		No.	Author	Title	Publisher/year
		1.	Petkovic D., Gecevska V., Madic M., Radovanovic M.	Application of the performance selection index method for solving machining MCDM problems	Scientific Journal Facta Universitatis, series Mechanical Engineering, Vol.12, No.12, 2014, ISSN: 0354-2025.
		2.	Madic M., Gecevska V., Radovanovic M., Petkovic D.	Multi-Criteria Economic Analysis of Machining Processes Using the WASPAS Method	Journal of Production Engineering, Vol.17, No.2, 2014, ISSN: 1821-4932, 79-82.
		3.	Jovanovski R.B., Gecevska V., Polenakovik R., Sutevski D.,	Business Model as a Success Factor for the	ANNALS of Faculty Engineering Hunedoara –

		Stankovska I.	Companies Growth	International Journal of Engineering, Tome XIII [2015] – Fascicule 3, August 2015.
	4.	Gecevska V., Caloska J., Polenakovik R., Donev V., Jovanovski R. B.	Integration of Lean Principles and Safety Management System	Mechanical Engineering – Scientific Journal, Vol.33, No 3, 2015, ISSN 1857-5293, pp. 221-225.
	5.	Golcev V., Jovanoski B., Gecevska V., Minovski R.	KANBAN Simulation Model for Production Process Optimization	Journal of Engineering Management and Competitiveness, Vol.5, No.2, 2015, ISSN: 2217-8147, pp.55-60.
	6.	Gecevska V., Donev V., Polenakovik R.	<u>A Review of Environmental Tools towards Sustainable Development</u>	ANNALS of Faculty Engineering Hunedoara – International Journal of Engineering, Vol.14, No.1, 2016, ISSN: 1584-2665.
12.2.	Доказ за најмалку два печатени научноистражувачки трудови во меѓународни научни списанија со импакт фактор во даденото поле во последните пет години			
	v	Автори	Наслов	Издавач/година
	1.	Gecevska V., Kuzinovski M., Cus F., Tomov M.	Modelling of Cutting Tool Wear and Cutting Tool Life for Face Milling Operations	Journal of the Balkan Tribological Association, Vol.22, No.3A-I, 2016, pp.3013-3025. ISSN: 1310-4772, Publ. SciBulCom Ltd. [Indexed in WoS SCI journals, IF=0,735]
	2.	Gecevska V., Donev V., Polenakovik R.	<u>Mass Customization as Aided Value Tool in New Product Development Process</u>	Int. Journal of Innovative Research in Science, Engineering and Technology, Vol.4, Issue 11, 2015, pp.346-355. ISSN 2319-8753. [Global IF=1,762 for 2015]
12.3.	Доказ за најмалку три учества на меѓународни собири во последните четири години			
	No.	Author	Title	International meeting/conference year
	1.	Gecevska V.	Application of the Analytical Hierachy Process for Decision Making During Raw Material Selection Process	Proceedings of 7 th International Conference of Management of Technology Step to Sustainable Production (MOTSP'2015), June 2015.
	2.	Gecevska V.	Product Lifecycle Management Concept as a Data	International Scientific Conference Industry 4.0 (INDUSTRY 4.0 – 2016), December

			Management Tool for Industry 4.0	2016.	
	3.	Gecevska V.	Module Based Digital Structure of Management Information System	8th International Scientific Conference Mass Customization & Personalization - Community of Europe: Digitalization (MCP-CE 2018 Conference), September 2018.	2018

Add. 4	Information about the teachers that lecture at the first, second and third study program and are mentors on the doctoral thesis			
1.	Name (First, Last)	Atanas Kochov		
2.	Date of birth	March 8, 1966		
3.	Scientific degree /	Doctor of Philosophy; Ph.D.		
4.	Title of the scientific	Ph.D. in Technical Sciences		
5.	Year and institution of the scientific degree	Education	Year	Institution
		Ph.D. in Mechanical	2001	Faculty of Mechanical engineering - Skopje
		M. Sc. in Mechanica I	1994	Faculty of Mechanical engineering - Skopje
	B. Sc. in Mechanica I	1990	Faculty of Mechanical engineering - Skopje	
6.	Area, field and particular specialty of master of science degree	Area	Field	Specialty
		Technical & Technological sciences	Mechanical engineering	Production engineering, technologies and systems FEA in metal forming processes
7.	Area, field and area of doctoral degree	Area	Field	Specialty
		Technical & Technological sciences	Mechanical	Production engineering technologies and systems, organization of technological processes; Composite materials
8.	If employed, state the institution where he/she Works and the title and area in which is named	Institution		Title and area
		UKIM, Faculty of Mechanical Engineering		Full time professor Mechanical engineering
9.	List of courses that the teacher is lecturing separately for first, second and third cycle			
	9.1.	List of courses that the teacher is lecturing in the first cycle		
		No.	Course	Study program/institution
		1.	Management of technology	Industrial engineering and
		2.	Computer aided engineering	Production engineering
3.	Production processes	Mechanical engineering		

		4.	Technology of rapid prototyping	Mechanical engineering	
		5.	3D engineering	Production engineering	
		6.	Technology of composites	Production engineering	
		7.	Technology of metal forming	Production engineering	
		8.	Modeling of injection molding tools	Production engineering	
		9.	Computer aided design of metal	Production engineering	
	9.2.	List of courses that the teacher is lecturing in the second cycle			
		No.	Course	Study program/institution	
		1.	Management of technology	Industrial engineering and	
		2.	Sustainable development	Product life cycle management	
		3.	Cleaner production	Metrology	
		4.	Modeling and simulation of plastic injection molding	Production engineering	
		5.	Concurrent engineering	Industrial engineering and management	
		6.	Finite Element Analysis in engineering practices	Production engineering	
		7.	Sustainable production and consumption	Industrial engineering and management	
8.	Eco-innovation	Sustainable energy and environment			
9.3.	List of courses that the teacher is lecturing in the third cycle				
	No.	Course	Study program/institution		
	1.	Sustainable development	Industrial engineering and		
	2.	Management of Technology innovation	Industrial engineering and management		
	3.	Theory of plasticity and experimental analysis of metal forming processes	Production engineering		
4.	Advanced computer aided technics in production systems	Production engineering			
10.	Selected work in the past five years				
	10.1.	Relevant scientific printed paper (up to 5)			
	No	Author	Title	Publisher/year	
	1.	A. Kochov, O. Tuteski, etc	Expert system for mold quotation,	International Journal for Technology of plasticity, Vol 40, Number 1, 2015	
	2.	A. Kochov, O. Tuteski	Mold design and production by using additive manufacturing (AM) – present status and future perspectives	International scientific journal “Industry 4.0”, Sofia, Bulgaria, August 2018	
	3.	A. Kochov, D. Mladenovska	Identification of technical indicators for creating natural gas supply policies–WBC’s	An enlargement and Integration action, EU Commission JRC, Vienna, Austria, December 2015	
	4.	A.Kochov	Technology innovation for transition to low carbon economy: Path to sustainability	International conference on Energy, Renewables & Sustainability, Baku Azerbaijan, April, 2016	
	5.	A. Kochov, F. Osmani	Definition of indicators for decision-making to contribute to sustainable development through Cleaner Production and Resource efficiency by using AHP methodology	Journal Energetika, Lithuania, November 2018	
	6.	A.Kocov, Tuteski O., Spiroski Z	Analysis of the geometrical parameters and factors which define the complexity and the form of the mold	International Journal for Technology of plasticity, Vo. 39, Number 2, 2014	
	7.	S.Cvetkov, A.Kocov:	Production of complex parts by deep drawing – deformation analysis,	International Journal for Technology of plasticity, Vol. 37, Number 1, 2012	
8.	S.Cvetkov,	Stress state in the process of deep drawing	International Journal for		

		A.Kocov, Z. Spiroski:	of sheet metal cover as a part of a clutch cover for commercial motor vehicles,	Technology of plasticity, Vol. 37, Number 2, 2012
	9.	Cvetkov S., A.Kochov:	Experimental analysis for defining forming limit diagram for thick sheets	International Journal for Technology of plasticity, Vo. 39, Number 2, 2014
	10	S.Cvetkov, A.Kochov:	Experimental analysis for defining the curves of limit diagram for thick sheet metal	Journal for Technology of Plasticity, Vol. 40-2015/1, 2015
	11.	A.Kochov, L. Drakulevski	Challenges and opportunities for promoting technology transfer and Innovation in Western Balkan Countries	Book of Abstracts, published by: Ss Cyril and Methodius University, Faculty of Economics-Skopje, 2017
	12.	I.Lazarev, K.Kuzman, J.Mickovski, J.Lazarev, J.Chaloska, A.Kochov:	Metal matrix composites as tool material for deep drawing process,	Acta Technica Corviniensis, Tome V, Fascicule 3, September, 2012, ISSN 2067-3809
	Participation in scientific national and international projects			
	No	Authors	Title	Publisher/Year
	1.	A.Kochov, etc.:	PRODE, Rapid prototyping technologies for sustainable development	University Donja Gorica, Podgorica, Montenegro, World Bank project 2012-2017
	2.	A.Kochov, & others:	Low carbon technologies in SME's	UNIDO, 2012-2015, UEMCD
10.2.	3.	A.Kochov	LC economy in agro bussiness sector	2010-2013
	4.	A.Kocov (coordinator), P.Schwager	National Cleaner Production Technologies; UNIDO project	2007-2012
	5.	A.Kochov, etc	Chemical leasing – business model for WB	UNIDO, 2015-2018
	6.	A.Kochov etc.	Smart Specialization Strategy	EU & Macedonian Ministry for Education and Science, 2018
	Printed books in past 5 years			
	No	Authors	Title	Publisher/Year
	1.	Атанас Кочов Atanas Kochov	Технологија на брзи прототипови, модели и алати Rapid prototyping, models and tools	УКИМ, 2015 UKIM, 2015
10.3.	2.	C. Kefol, M. Tekavcic, Lj.Drakulevski, A.Kochov:	Comparison of Telecommunications development patterns in China and the Republic of Macedonia, China- Central and Eastern Europe, Cross-Cultural Dialogue, Society, Business and Education in Transition,	Jagiellonian University Press, 2015
	3.	A.Кочов A.Kochov	Производни технологии, интерна скрипта Production technologies, internal script	МФС, 2012 MFS, 2012
	4.	Daniela Mladenovska & Atanas Kochov	Chapter 12: Assessment of Alternatives for Natural Gas 171 Supply in Macedonia versus Technical Indicators	© University of Maribor Press Advances in Production and Industrial Engineering: Scientific Monograph
	5.	Ognen Tuteski & Atanas Kochov	Chapter 9: Design Guidelines in Developing a Prototype 135 using Additive Manufacturing Methods	© University of Maribor Press Advances in Production and Industrial Engineering: Scientific Monograph
	6.	Atanas Kochov, Daniela	Energy Scenarios for SE Europe: A close look into the Western Balkans.	Proceedings of the Enlargement and Integration Action Workshop, JRC, Vienna, 2016 (pp.38-39). Editor JRC EU

		Mladenovska	
10.4.	Printed papers		
	No	Authors	Title
	1.	A. Kochov etc.	National Cleaner Production Center Macedonia, Assesment for ceaner production technologies in Macedonian SME's
	2.	A. Kochov	Creating markets for research results
	3.	A. Kochov	Low Carbon technologies in Macedonian SME's from agro bussiness sector
	4.	A. Kochov	Technology transfer princlples, case of Macedonia, WIPO Inter regional TTO meeting, Working together on Academic IP Commercialization in the region,
	5.	A. Kochov	Indicators for sustainable development of the company TeTo Skopje, feasibility study
	6.	A. Kochov	Proof of concept in Macedonian SME's
			Ispira, Italy, JRC, 2017
11.	Supervision (mentorship) of undergraduate, master and doctoral studies students		
11.1.	Undergraduate	Over 25 candidates	
11.2.	Master	Over 30 candidates	
11.3.	Dotoral	7 candidates	
12.	For mentors of doctoral thesis, selected work for the last four / five years		
	12.1.	Proof of printed scientific papers in international scientific journals or international publications in the related field (up to 6) in the past five years	
	No	Authors	Title
	1.	D.Gechevski, A.Kochov	Reverse logistics and green logistics way to improving the environmental sustainability
	2.	F.Osmani, A.Kochov	The importance of the teamwork in managing engineering projects with energy profiles
	3.	F.Osmani, A.Kochov	The Sustainable supply of thermal energy, planning and decision making by using analytic hierarchy process
	4.	Kocov A, Tuteski O., Spiroski Z	Expert system for mold quotation,
	5.	Ognen Tuteski, Atanas Kočov, Taško Rizov	New product design development based on additive manufacturing & rapid Prototyping methodology
	6.	Atanas Kochov Ognen Tuteski Zoran Spiroski	Analysis of the geometrical parameters and factors which define the complexity and the form of the mold
	7.	S.Cvetkov, A. Kochov	Experimental analysis for defining the curves of limit diagram for thick sheet metal, part 2,
8.	Slavco Cvetkov, Atanas Kochov, Zoran Spiroski	Stress state in the process of deep drawing of sheet metal cover as a part of a clutch cover for commercial	
			Acta Technica Corviniensis, Tome IX, Fascicule 1, January, 2016, ISSN 2067-3809
			International Multidisciplinary Scientific Geo Conference SGEM 2016, DOI:10.5593/SGEM2016/B42/S19.082, Book 4 Vol 2, 639-646 pg, July 2016
			17 th International Multidisciplinary scientific Geo Conference SGEM 2017, proceedings, Vol 17 th ; Ecology, economics, education and legislation, issue 53, 2017
			International Journal for Technology of plasticity, Vol 40, Number 1, 2015
			International Journal for Technology of plasticity, Vol 40, Number 2, 2015
			Journal for Technology of Plasticity, Vol. 39-2014/2
			Journal for Technology of Plasticity, Vol. 39-2014/2
			Journal for Technology of Plasticity, Vol. 37-2012/2

			motor vehicles		
	9.	S.Cvetkov A.Kochov	Production of complex parts by deep drawing - deformation analysis	Journal for Technology of Plasticity, Vol. 37-2012/1	
	10.	N.Kormushska, A.Kochov etc.	Complementary and Overlapping among Energy Performance Indicators as Part of the Sustainable Development and RECP Indicators in Cement Industry	International Journal of Contemporary ENERGY, Vol. 1, No. 1 , pp 20 – 26, ISSN 2363-6440, 2015.	
	12.2.	Proof of at least two printed scientific papers in international scientific journals that have impact factor in the related field in the past five years			
		No	Authors	Title	
		1.		Publisher/Year	
		2.			
	12.3.	Proof of at least three international meetings' participation in the past four years			
	No.	Authors	Title	International conference	Year
	1.	Kochov A., Mladenovska D.,	Identification of technical indicators for creating natural gas supply policies – Balkan case	Invited lecture for the European Commission JRC & the Energy Community Secretariat Joint Workshop on Energy Scenarios for South Eastern Europe, Vienna	15 Dec, 2015
	2.	D. Mladenovska, A. Kochov:	Identification of technical indicators for creating natural gas supply policies – Macedonian case	Industrial Energy and Environmental Protection in Southeast Europe, IEEP, Zlatibor, Serbia,	June, 2015
	3.	F.Osmani, A.Kochov:	Case study – the importance and the impact of the cogeneration project in reducing atmospheric emissions in the city of Prishtina,	XII-371, ISSN 1822-7554, the 13 th International conference of young scientists on energy issues, Kaunas, Lithuania,	May 26-27, 2016
	4.	A.M.Lazarevska, N.Bakreska-Kormushoska, A.Kochov:	Complementarity and overlapping among energy performance indicators as part of the sustainable development and RECP indicators in cement industry,	5 th International conference REMOO 2015, Budva, Montenegro,	Sep 2015
	5.	A.M.Lazarevska, D.Mladenovska, A.Kochov:	Multi Criteria Assessment of natural gas supply options – the Macedonian case,	5 th International conference REMOO 2015, Budva, Montenegro, September 2015	Sep 2015
	6.	A. Kochov:	Challenges for food processing industry: New innovations & Ecosystems”,	International Conference on Technology innovation in food processing industry, IQS & DNV.GL- Croatia, Skopje, Macedonia,	Dec 6, 2016
	7.	S.Kjosevski, A.Kochov etc.	Determination of indicators for sustainable introduction of electric vehicles based on transportation system structure	JUMV the 26 th International Automotive Conference SCIENCE AND MOTOR VEHICLES in Belgrade	19-20 April 2017
	8.	S. Kjosevski, A. Kochov etc.	Risks and safety issues related to use of electric and hybrid vehicles	MTM_Borovets_Bulgaria_2017	May 2017

9.	S. Kjosevski, A. Kochov	Sustainable development of road transport through Introduction of electric vehicles – initial study for Developing regions	1st International Conference towards sustainable development (TSD 2017) Sustainable development in Western Balkans: approaches, shortcomings and challenges; Book of abstracts 1st Conference	SKOPJE, UMT, 2018
10.	S. Kjosevski, A. Kochov	MCDM for defining indicators for implementing e-vehicles in WBC's for environmental sustainability	Humboldt Kollege, Belgrade, Serbia	Sep 2018

Add. 4		Information about the teachers that lecture at the first, second and third study program and are mentors on the doctoral thesis		
1.	Name (First, Last)	Jasmina Chaloska		
2.	Date of birth	September 3, 1963		
3.	Scientific degree / Title	Ph.D.		
4.	Title of the scientific degree	Ph.D. in Technical Sciences		
5.	Year and institution of the scientific degree	Education	Year	Institution
		Ph.D. in Technical Sciences	2002	Faculty of Mechanical engineering – Skopje
		M. Sc. in Mechanical Engineering	1993	Faculty of Mechanical engineering – Skopje
		B. Sc. in Mechanical Engineering	1987	Faculty of Mechanical engineering – Skopje
6.	Area, field and particular specialty of master of science degree	Area	Field	Specialty
		Technical sciences -	Mechanical engineering	Production engineering, technologies and systems
7.	Area, field and particular specialty of Doctoral degree	Area	Field	Specialty
		Technical sciences	Mechanical engineering	Production engineering, technologies and systems
8.	If employed, state the institution where he/she works and the title and area in which is named	Institution		Title and area
		UKIM, Faculty of Mechanical Engineering		Full time professor Mechanical engineering
9.	List of courses that the teacher is lecturing separately for first, second and third cycle			
	9.1.	List of courses that the teacher is lecturing in the first cycle		
		No.	Course	Study program/institution
		1.	Ergonomics	Industrial engineering and management
		2.	Business informatics	Production informatics
		3.	Unconventional manufacturing processes	Production engineering

	4.	Modeling of plastic deformation tools	Production engineering	
9.2.	List of courses that the teacher is lecturing in the second cycle			
	No.	Course	Study program/institution	
	1.	Modern technologies of plasticity and tools	Production engineering	
	2.	Safety and health systems	Product life cycle management	
	3.	Professional risk management	Management of safety and health systems	
	4.	Modeling and simulation of plastic deformation technologies	Production engineering	
9.3.	List of courses that the teacher is lecturing in the third cycle			
	No.	Course	Study program/institution	
	1.	New materials and modern manufacturing processes	Mechanical engineering	
	2.	Safety and risks at work	Industrial engineering and management	
10.	Selected work in the past five years			
10.1.	Relevant scientific printed paper (up to 5)			
	No.	Author	Title	
	1.	T. Pepeljak, J. Chaloska	<i>Process Parameteres Influencing Deformation Work of Deep Drawing of a Squared Box</i>	International Conference on Innovative Technologies IN-TECH 2014, Leiria, Portugal, 10-13.09.2014
	2.	I. Ajdari, J. Chaloska	<i>Impact of sustainable global prevention strategy for high-risk industrial sectors-Vision Zero</i>	XX World Congress on Safety and Health at Work, 24-27 August, Frankfurt, Germany, 2014
	3.	J. Chaloska, Lj. Dudeski, T. Velkovski	<i>The occupational safety expert as a basis for implementation and sustainability of OHS system</i>	International Conference for Regional Collaboration, Bled, Slovenia, 10-11.11.2016
	4.	B. Matevska, J. Chaloska	<i>Model for safety increasing and risk assessment while working with hazardous chemicals</i>	International Conference on Innovative Technologies, IN-TECH 2017, Ljubljana, Slovenia 13-15.09.2017
	5.	I. Catik, J.Chaloska, D. Godec, M.Kovacik. A. Pilipovik, K. Skala	<i>Fluid-deposition of rocks is natural model for additive production</i>	Interdisciplinary Description of Complex Systems 15(3), 180-189, 2017 (Web of Science) SCI (Science Citation Index) journals <u>IF=0,16</u>
10.2.	Participation in scientific national and international projects (up to 5)			
	No.	Author	Title	
			Publisher/year	

	1.	J Caloska (project coordinator) Plazma, SolarTubes- Macedonia, Gorenje-Slovenia, AiTiip-Spain	Systems for assessment of surface integrity	EUREKA project, E!4133, 2007-2010
	2.	J Caloska (project coordinator), Arcelor Mittal, Rade Koncar TEP-Macedonia,Gorenje, LIV-Slovenia	Innovative eco-friendly processing of volumetric sheet metal components	EUREKA project, E!5783, 2010-2013
	3.	J. Chaloska... member of Macedonian team from University Ss.Cyril and Methodius	Increasing capacities and strengthening the role of regional CSOs for improving labor conditions and labor dialogue with public institutions	International project financed by EU 2016-2019
10.3.	Printed books in the last five years (up to 5)			
	No.	Author	Title	Publisher/year
	1.	R. Polenakovikj, J. Chaloska, B. Naumovska	Ergonomics	National Center for Development of Innovation and Entrepreneurship, 2012
10.4.	Printed professional papers in the last 5 years (up to 5)			
	No.	Author	Title	Publisher/year
	1.	T. Velkovski, P. Spasov, J. Chaloska, Lj. Dudeski	<i>Analysis of the Occupational safety system in opencast mines</i>	11 International Conference for Improvement of Safety and Health Systems, Prolom Banja, R. Serbia, 2014
	2.	A. Angelovska. J. Chaloska, V. Gecevska	<i>Exploring the impact of economic instruments in the field of OSH</i>	International Conference for Regional Collaboration OSH BON TON, Ohrid, R. Macedonia, 29-31.10. 2015
	3.	G. Zivcevski, J. Chaloska, A. Angelovska	<i>Methodologies for risk assessment of the workplace and proper selection criteria</i>	International Conference for Regional Collaboration OSH BON TON, Ohrid, R. Macedonia, 29-31.10. 2015
	4.	J. Chaloska	<i>Profile of the experts for safety at work - experiences from RM</i>	Center for Safety and Health at Work, Sofia, R.Bulgaria, 26.02.2016

	5.	J. Chaloska, T. Velkovski, M. Ivanov	<i>Records as a basis for sustainability of the systems for OSH</i>	Second Macedonian Congress on Occupational Health with international participation, Skopje, 12-14.10.2016	
11.	Supervision (mentorship) of undergraduate, master and doctoral studies students				
	11.1.	Undergraduate	42		
	11.2.	Master	18		
	11.3.	Doctoral	2 in progress		
12.	For mentors of doctoral thesis, selected work for the last four / five years				
	12.1.	Proof of printed scientific papers in international scientific journals or international publications in the related field (up to 6) in the past five years			
		No.	Author	Title	Publisher/year
		1.	M. Mitrevska, J. Chaloska, D. Gechevski	<i>Corporate Social Responsibility Approach for Sustainable Business Model</i>	Towards Technical Education on Resource Savings for Industrial Development University of Maribor, Maribor, Slovenia, 2015 Politecnico di Torino, Turin, Italy, 2015
		2.	V. Filiposki, J. Chaloska	<i>Analysis of Injection Molding Cooling Systems and Effects on the Ejection Time of the Part at Thermoplastic Injection Molding</i>	Journal for Technology of Plasticity, vol.40, Novi Sad, R. Serbia, 2015
		3.	T. Velkovski, J. Chaloska, Lj. Dudeski	<i>Model of Semi-Quantitative Risk Assessment for Safety at Work in Manufacturing Industry</i>	Mechanical Engineering Scientific Journal, Vol.33, No.1, Skopje, R. Macedonia, 2015
		4.	J. Chaloska, Lj. Dudeski, T. Velkovski	<i>Overview of the Macedonian Situation in the Field of OHS and Future Recommendations</i>	International Journal of Engineering, ISSN:1584-2673, Tome XIII, Hunedoara, Romania, august, 2015
		5.	I. Catik, J.Chaloska, D. Godec, M.Kovacik. A. Pilipovik, K. Skala	<i>Fluid-deposition of rocks is natural model for additive production</i>	Interdisciplinary Description of Complex Systems 15(3), 180-189, 2017 (Web of Science) SCI (Science Citation Index) journals [F=0,16]
		6.	V. Mucenski, I.Pesko, T. Velkovski, J. Chaloska, A. Vujkov, D. Bibic	<i>Impact of Construction Machinery and Tools on Non-Fatal Injuries in the Building Processes</i>	Tehnicki Vjesnik, ISSN 1330-3651, 2019 Slavonski brod, Croatia IF=0,686
	12.2.	Proof of at least two printed scientific papers in international scientific journals that have impact factor in the related field in the past five years			
		No.	Author	Title	Publisher/year
		1.	I. Catik, J.Chaloska, D. Godec, M.Kovacik. A. Pilipovik, K. Skala	<i>Fluid-deposition of rocks is natural model for additive production</i>	Interdisciplinary Description of Complex Systems 15(3), 180-189, 2017 (Web of

					Science) SCI (Science Citation Index) journals <u>[F=0,16]</u>
	2.	V. Mucenski, I.Pesko, T. Velkovski, J. Chaloska, A. Vujkov, D. Bibic		<i>Impact of Construction Machinery and Tools on Non-Fatal Injuries in the Building Processes</i>	Tehnicki Vjesnik, ISSN 1330-3651, 2019 Slavonski brod, Croatia IF=0,686
	12.3.	Proof of at least three international meetings' participation in the past four years			
	No.	Author	Title	International meeting/conference	year
	1.	J. Chaloska, Lj. Dudeski, T. Velkovski	<i>The occupational safety expert as a basis for implementation and sustainability of OHS system</i>	International Conference for Regional Collaboration, Bled, Slovenia	10-11.11.2016
	2.	J. Chaloska, T. Velkovski, M. Petkovski, M. Aleksevka		International Conference for Regional Collaboration, BUILDING OSH IN 21st CENTURY, Budva, Montenegro	26-31.10.2017
	3.	J. Chaloska, M. Petkovski, T. Velkovski, S. J. Petkovska	<i>How to make functional osh system?</i>	Continuous Education- the Basis of Improving of Occupational Safety 15 th International Conference, Kladovo, R. Serbia	18-22.09.2018

Add. 4		Information about the teachers that lecture at the first, second and third study program and are mentors on the doctoral thesis		
1.	Name (First, Last)	Bojan Jovanoski		
2.	Date of birth	13 th December, 1982		
3.	Scientific degree / Title	Ph.D.		
4.	Title of the scientific degree	Ph.D. in Technical Sciences		
5.	Year and institution of the scientific degree	Education	Year	Institution
		Ph.D. in Mechanical	2014	Faculty of Mechanical engineering - Skopje
		M. Sc. in Mechanical Engineering	2009	Faculty of Mechanical engineering - Skopje
		B. Sc. in Mechanical Engineering	2006	Faculty of Mechanical engineering - Skopje
6.	Area, field and particular specialty of master of science degree	Area	Field	Specialty
		Technical sciences	Mechanical engineering	
7.	Area, field and area of doctoral degree	Area	Field	Specialty
		Technical sciences	Mechanical engineering	Industrial Dynamics
8.	If employed, state the	Institution	Title and area	

	institution where he/she works and the title and area in which is named	UKIM, Faculty of Mechanical Engineering	Assistant professor Mechanical engineering	
9.	List of courses that the teacher is lecturing separately for first, second and third cycle			
9.1.	List of courses that the teacher is lecturing in the first cycle			
	No.	Course	Study program/institution	
	1.	Operations research 1	Industrial engineering and management/ Faculty of Mechanical Engineering - Skopje	
	2.	Production Planning and control	Industrial engineering and management/ Faculty of Mechanical Engineering - Skopje	
	3.	Modelling and simulation of business processes	Industrial engineering and management/ Faculty of Mechanical Engineering - Skopje	
	4.	Technology management	Industrial engineering and management/ Faculty of Mechanical Engineering - Skopje	
		Operations research 2	Industrial engineering and management/ Faculty of Mechanical Engineering - Skopje	
9.2.	List of courses that the teacher is lecturing in the second cycle			
	No.	Course	Study program/institution	
	1.	Lean tools 1	Lean Management/Faculty of Mechanical Engineering - Skopje	
	2.	Lean tools 2	Lean Management/Faculty of Mechanical Engineering - Skopje	
	3.	Lean project	Lean Management/Faculty of Mechanical Engineering - Skopje	
	4.	Применето моделирање и симулација во деловните системи	Industrial engineering and management/ Faculty of Mechanical Engineering - Skopje	
	5.	Планирање и управување на производството	Industrial engineering and management/ Faculty of Mechanical Engineering - Skopje	
	6.	Моделирање на вредносниот синџир	Project Lifecycle management/ Faculty of Mechanical Engineering - Skopje	
	7.	Технолошки менаџмент и иновации	Industrial engineering and management/ Faculty of Mechanical Engineering - Skopje	
	8.	Моделирање и симулација на ризик	Management of security and safety systems/ Faculty of Mechanical Engineering - Skopje	
9.3.	List of courses that the teacher is lecturing in the third cycle			
	No.	Course	Study program/institution	
	1.	Managerial production philosophies	Industrial engineering and management/ Faculty of Mechanical Engineering – Skopje	
	2.	Modelling and simulation approaches of business processes	Industrial engineering and management/ Faculty of Mechanical Engineering - Skopje	
10.	Selected work in the past five years			
10.1.	Relevant scientific printed paper (up to 5)			
	No.	Author	Title	Publisher/year
	1.	Mucha, A., B. Jovanoski, R. Minovski and V. Gechevska	Simulation module for production planning and control	International scientific journal Science. Business. Society (2017)
	2.	Stanojevska, M., R. Minovski, B. Jovanoski, Z. Sajfer, D. Čočkalo and S. Stanisavljev	Employees motivation and transition of iso 9001 QMS towards TQM	Journal of Applied Engineering Science 14(2): 260-270 (2015)
	3.	Golchev, R., Jovanoski, B., Gechevska, V., Minovski, R.	KANBAN simulation model for production process optimization	Journal of Engineering Management and Competitiveness, 5(2), 55-60, (2015)
	4.	Kotevski, Z., Jovanoski, B. &	Simulation Model for Improved	Journal of Engineering

		Minovski, R.	Production Planning and Control Through Quality, Cycle Time and Batch Size Management	Management and Competitiveness (JEMC), 5(1), 40-45, (2015)
	5.	B. Jovanoski, R. Minovski, S. Voessner and G. Lichtenegger	Managing strategy and production through hybrid simulation	Journal of Industrial Management & Data Systems 113(8): 1110-1132/2013. (IF: 1,674)
10.2.	Participation in scientific national and international projects (up to 5)			
	No.	Author	Title	Publisher/year
	1.	R. Minovski, B. Jovanovski, et al.	Adaptation of different simulations models for certain functional needs	University of Ss. Cyril and Methodius in Skopje/2012-2013
	2.	M. Klarin, R. Minovski, B. Jovanovski et al.	Development of Stochastic Model for Determination of the Elements of the Working Time of the Production Cycle and their Optimization for Batch Production in the Metalworking Industry and Recycling Processes	Ministry of Science and Technological Development of Serbia / 2011- 2014
	3.			
10.3.	Printed books in the last five years (up to 5)			
	No.	Author	Title	Publisher/year
	1.			
10.4.	Printed professional papers in the last 5 years (up to 5)			
	No.	Author	Title	Publisher/year
	1.	R. Minovski, B. Jovanoski	PLM Information systems	Faculty of Mechanical Engineering - Skopje
	2.			
	3.			
11.	Supervision (mentorship) of undergraduate, master and doctoral studies students			
	11.1.	Undergraduate	32	
	11.2.	Master	1 (in process)	
	11.3.	Doctoral		
12.	For mentors of doctoral thesis, selected work for the last four / five years			
	12.1.	Proof of printed scientific papers in international scientific journals or international publications in the related field (up to 6) in the past five years		
		No.	Author	Title
		1.		
	12.2.	Proof of at least two printed scientific papers in international scientific journals that have impact factor in the related field in the past five years		
		No.	Author	Title
		1.		
	12.3.	Proof of at least three international meetings' participation in the past four years		
		No.	Author	Title
				International meeting/conference
		1.		year

Add. 4	Information about the teachers that lecture at the first, second and third study program and are mentors on the doctoral thesis		
1.	Name (First, Last)	Igor Shesho	
2.	Date of birth	July 18, 1982	

3.	Scientific degree / Title	Ph.D.		
4.	Title of the scientific degree	Ph.D. in Technical Sciences		
5.	Year and institution of the scientific degree	Education	Year	Institution
		Ph.D in Mechanical Engineering	2015	Faculty of Mechanical
		M. Sc. in Mechanical Engineering	2009	Faculty of Mechanical engineering - Skopje
		B. Sc. in Mechanical Engineering	2006	Faculty of Mechanical engineering - Skopje
6.	Area, field and particular specialty of master of science degree	Area	Field	Specialty
		Technical sciences	Mechanical engineering	Energy efficiency of HVAC systems
7.	Area, field and area of doctoral degree	Area	Field	Specialty
8.	If employed, state the institution where he/she works and the title and area in which is named	Institution	Title and area	
		UKIM, Faculty of Mechanical Engineering	Assistant professor Mechanical engineering	
9.	List of courses that the teacher is lecturing separately for first, second and third cycle			
	9.1.	List of courses that the teacher is lecturing in the first cycle		
		No.	Course	Study program/institution
		1.	Renewable Energy Sources	TE,EE / Faculty of Mechanical Engineering
		2.	Computer Thermal Engineering	TE / Faculty of Mechanical Engineering
		3.	Thermal machines and devices	HEWM/Faculty of Mechanical Engineering
	4.			
	9.2.	List of courses that the teacher is lecturing in the second cycle		
		No.	Course	Study program/institution
		1.	Renewable energy sources – Advanced level	TE,EE/ Faculty of Mechanical Engineering
		2.	Nonconventional Thermal Power Plants –Advanced level	TE,EE/ Faculty of Mechanical Engineering
		3.	Energy Economics	TE,EE/ Faculty of Mechanical Engineering
		4.	Modeling and simulation of thermal processes and systems	TE / Faculty of Mechanical Engineering
		5.	Energy conversion processes	EE/ Faculty of Mechanical Engineering
		6.	Green Lean	IEM/ Faculty of Mechanical Engineering
	7.	Experts in Team Work	SEE/ Faculty of Mechanical Engineering	
	9.3.	List of courses that the teacher is lecturing in the third cycle		
No.		Course	Study program/institution	
1.				
2.				
10.	Selected work in the past five years			
	10.1.	Relevant scientific printed paper (up to 5)		
		No.	Author	Title

	1.	I. Shesho, D. Tashevski	Developing simulation application using graphical programming language for optimization of solar collector	Mechanical engineering scientific journal, Vol. 31, No. 1, pp. 63-75, Skopje, 2013.
	2.	I. Shesho, S. Armenski, D. Tashevski, D. Dimitrovski.	Performance assessment of solar heating and cooling systems.	Mechanical engineering scientific journal, Vol. 32, No. 2, pp. 143-156, Skopje, 2014.
	3.	I. Shesho, D. Tashevski	Simulation Application for Optimization of Solar Collector Array.	International Journal of Engineering Research and Applications (IJERA), Volume 4, Issue 1, pp. 10-19, (ISSN: 2248-9622),
	4.	D. Tashevski, R. Filkoski, D. Dimitrovski, I. Shesho	Analysis of Parameters Affecting the Efficiency Optimization of Binary SOFC Co-generation Power Plants.	International Journal of Mechanical Engineering and Technology (IJMET), (ISSN 0976-6359 Online), Volume 5, Issue 10, pp. 180-190, India,
	5.	D. Tashevski, I. Shesho, D. Dimitrovski	Binary Co-generation Power Plant with SOFC – environmental aspects.	Journal of Environmental Protection and Ecology 17, No 3, 1152-1159, 2016.
10.2.	Participation in scientific national and international projects (up to 5)			
	No.	Author	Title	Publisher/year
	1.	Group of authors	The programme in higher education, research and development in the western balkans. Herd energy project quality improvement of master programs in sustainable energy	Sub-activity 2.3 - Master courses development: Climate Change and Carbon Footprint Challenges.
	2.			
	3.			
10.3.	Printed books in the last five years (up to 5)			
	No.	Author	Title	Publisher/year
	1.			
10.4.	Printed professional papers in the last 5 years (up to 5)			
	No.	Author	Title	Publisher/year
	1.	D. Tashevski R. Filkoski, I. Shesho	Expert analysis of the accuracy for the measurement of heat energy with a technological measure - calorimeter that TE-TO AD Skopje exports to the distribution system for district heating	Faculty of Mechanical Engineering, March 2015

		2.	S.Armenski D.Tashevski I.Shesho	Revision of the study for analysis of the possibility of supplying TPP Oslomej with natural gas, prepared by Energy Platform Living Lab Zagreb and Faculty of Engineering and Computing Zagreb (consultants),	Faculty of Mechanical Engineering, August-September 2016
		3.	S.Armenski D.Tashevski, I.Shesho	Revision of the study for qualitative and quantitative analysis of options for fuel supply " TPP Oslomej " prepared by the ELEM Investments Sector	Faculty of Mechanical Engineering, August-September 2016
		4.	D.Tashevski, S.Armenski, R.Filkoski, D.Dimitrovski, I.Shesho	Defining techno-economic optimal and environmentally sustainable structure for heating and implementation of the centralized supply of sanitary hot water to the city of Skopje	Faculty of Mechanical Engineering, January 2017
		5.	D.Tashevski R.Filkoski, I.Shesho	Study: modeling and calculation of heat transfer between heaters and unheated residential units	Faculty of Mechanical Engineering, December 2017
11.	Supervision (mentorship) of undergraduate, master and doctoral studies students				
	11.1.	Undergraduate		7	
	11.2.	Master			
	11.3.	Doctoral			
12.	For mentors of doctoral thesis, selected work for the last four / five years				
	12.1.	Proof of printed scientific papers in international scientific journals or international publications in the related field (up to 6) in the past five years			
		No.	Author	Title	Publisher/year
		1.			
	12.2.	Proof of at least two printed scientific papers in international scientific journals that have impact factor in the related field in the past five years			
		No.	Author	Title	Publisher/year
		1.			
	12.3.	Proof of at least three international meetings' participation in the past four years			
		No.	Author	Title	International meeting/conference year
		1.			

Add. 4	Information about the teachers that lecture at the first, second and third study program and are mentors on the doctoral thesis				
1.	Name (First, Last)	Mirko Petrushevski			
2.	Date of birth	October 7, 1978			
3.	Scientific degree / Title	Ph.D.			
4.	Title of the scientific degree	Ph.D. in Mathematical Sciences			
5.	Year and institution of the	Education	Year	Institution	

	scientific degree	Ph.D in Mathematical Sciences	2015	Faculty of Natural Sciences and Mathematics - Skopje
		M. Sc. in Mathematical Sciences	2012	Faculty of Natural Sciences and Mathematics - Skopje
		B. Sc. in Mathematics	2006	Faculty of Natural Sciences and Mathematics - Skopje
6.	Area, field and particular specialty of master of science degree	Area	Field	Specialty
		Natural and Mathematical sciences	Mathematics	Analysis and Functional Analysis
7.	Area, field and area of doctoral degree	Area	Field	Specialty
		Mathematical sciences	Mathematics	Graph Theory
8.	If employed, state the institution where he/she works and the title and area in which is named	Institution	Title and area	
		UKIM, Faculty of Mechanical Engineering	Assistant Professor Mathematics	
9.	List of courses that the teacher is lecturing separately for first, second and third cycle			
9.1.	List of courses that the teacher is lecturing in the first cycle			
	No.	Course	Study program/institution	
	1.	Mathematics 1	All	
	2.	Mathematics 2	All	
9.2.	List of courses that the teacher is lecturing in the second cycle			
	No.	Course	Study program/institution	
	1.	Probability Models and Simulations	Mechatronics	
	2.	Selected Topics in Probability and Statistics	Menagement of Product Life Cycle	
	3.	Probability and Statistics	Sustainable Energy and Environment	
9.3.	List of courses that the teacher is lecturing in the third cycle			
	No.	Course	Study program/institution	
	1.			
10.	Selected work in the past five years			
10.1.	Relevant scientific printed paper (up to 5)			
	No.	Author	Title	Publisher/year
	1.	M. Petruševski	Odd 4-edge-colorability of graphs	J. Graph Theory Vol. 87 (4) pp . 460-474, (2018)
	2.	B. Lužar, M. Petruševski , R. Škrekovski	On vertex-parity edge-colorings	J. Comb. Optim. Vol. 35 (2) pp . 373-388, (2018)
	3.	M. Petruševski , R. Škrekovski	A note on acyclic number of planar graphs	Ars Math. Contemp. Vol. 13, pp . 317-322, (2017)
	4.	R. Atanasov, M. Petruševski , R. Škrekovski	Odd edge-colorability of subcubic graphs	Ars Math. Contemp. Vol. 10 (2), pp . 359-370, (2016)
	5.	A. Harutyunyan, R. Naserasr, M. Petruševski .	Mapping planar graphs into the Coxeter graph	Disc. Math. Vol. 339 (2), pp. 839-849, (2016).
10.2.	Participation in scientific national and international projects (up to 5)			
	No.	Author	Title	Publisher/year
	1.			
	2.			
10.3.	Printed books in the last five years (up to 5)			
	No.	Author	Title	Publisher/year
	1.			

10.4.	Printed professional papers in the last 5 years (up to 5)					
	No.	Author	Title	Publisher/year		
	1.					
	2.					
11.	Supervision (mentorship) of undergraduate, master and doctoral studies students					
	11.1.	Undergraduate				
	11.2.	Master				
11.3.	Doctoral					
12.	For mentors of doctoral thesis, selected work for the last four / five years					
	12.1.	Proof of printed scientific papers in international scientific journals or international publications in the related field (up to 6) in the past five years				
		No.	Author	Title	Publisher/year	
		1.				
	12.2.	Proof of at least two printed scientific papers in international scientific journals that have impact factor in the related field in the past five years				
		No.	Author	Title	Publisher/year	
		1.				
	12.3.	Proof of at least three international meetings' participation in the past four years				
		No.	Author	Title	International meeting/conference	year
		1.				

18. Statement by the teaching staff members on providing consent to participate in the instruction in the frames of certain courses of the study programme

The Statements submitted by the teaching staff members with which they confirm that they agree to participate in teaching of certain courses from the study programme are provided in Annex 4, near the end of the Elaborate.

19. Approval from the higher education institution for the participation of the teaching staff member in the realisation of the study programme

The Approvals from the higher education institution for the participation in the realisation of the study programme of the teaching staff members who are not employed at the Faculty of Mechanical Engineering in Skopje are provided as Annex 5, near the end of the Elaborate.

20. Information on the number of students to be enrolled in the first year of the study programme

Regarding the assessment of the spacial capabilities, the equipment available, and teaching staff potential for the **Lean Management** study programme, the maximum number of students to enroll yearly is planned to be 30.

21. Information on the provided compulsory and additional literature

The foreseen compulsory and additional literature (listed in the course programmes – Annex 3) is provided by the course professors, and one part of the literature is at disposal at the Library of the Faculty of Mechanical Engineering in Skopje. Professional literature translated and distributed by the Government of the Republic of Macedonia shall also be used for course programmes where stated.

22. Information on the web-site

All the information regarding the study programmes of the Faculty of Mechanical Engineering – Skopje are publicly available on the web-site of Faculty of Mechanical Engineering – Skopje: www.mf.edu.mk.

23. Professional or scientific title awarded to students upon completion of the study programme

A student who shall successfully complete the university studies of second cycle, one-year studies, **LEAN MANAGEMENT** study programme, shall be awarded the title:

In Macedonian:

Магистер по индустриското инженерство и менаџмент - *LEAN менаџмент*

In English:

Master of science in industrial engineering and management - *LEAN management*

The students shall receive Diploma and Diploma Supplement pursuant to the Rulebook on the Content and the Form of the Diploma, Guidelines for Preparation of the Diploma Supplement and Other Public Documents (“Official Gazette of the Republic of Macedonia” No. 102/2018).

Data on the name of the study programme and the scientific and research area, field, and branch shall be stated in the Diploma and in the Diploma Supplement.

24. Activities and mechanisms for developing and maintaining teaching quality

24.1. Study programme teaching methods

The study programmes shall be realized as full-time studies with the following forms of teaching: lectures, auditory, laboratory, and computer exercises and seminars. Regular classes shall be organised for the courses with 5 and more than 5 registered students. In case the number of students is lower than 5, mentoring will be organised.

The student load shall also be realized through special forms of activities, as individual work on seminal papers and projects intended for studying practical cases from the relevant fields of research to the studies, teamwork, research work, self-study and participation in workshops. Particular attention shall be paid to individual work with students in the form of mentoring and consulting.

The scope and organisation of the studies shall be made pursuant to Article 153 of the Law on Higher Education of the Republic of Macedonia and Article 23 of the Rulebook on the first and second cycle of studies of Ss. Cyril and Methodius University in Skopje in accordance with the ECTS methodology (the Rulebook on the Requirements, Criteria and Regulations for Enrolment and Studying at the First and Second Cycle of University Studies , “University Herald” No. 254/2013), i.e. the total workload of the students is expressed through the volume of 60 credits per year , with 30 hours of work engagement per credit, which is equal to 1,800 hours of annual workload. The number of hours of annual workload allocated to the number of weeks in both semesters, a total of 30 weeks, expresses the total weekly load of students (instruction and activities of special types).

24.2. Methods of evaluation

Evaluation of the acquired knowledge shall be performed by continuous assessment or by final examination. In the course programmes enclosed in item 13 of this document, for each course the manner of evaluation of knowledge and the ratio of evaluation of the continuous assessment activities is determined individually, i.e. the points the student acquires by realizing individual activities defined in the course programme are defined.

The final grade for each of the courses of this study programme shall be formed on the basis of the continuous or final assessment of the results achieved by the student. The final grade shall be formed on the basis of the total number of points from the continuous or final assessment the student has won, with the maximum number of possible points won being 100. The evaluation shall be performed in accordance with Article 35 of the Rulebook on the first and second cycle of studies of Ss. Cyril and Methodius University in Skopje (the Rulebook on the Requirements, Criteria and Regulations for Enrolment and Studying at the First and Second Cycle of University Studies , “University Herald” No. 254/2013), with application of the numerical assessment system and following the equivalences with the alphabetical grading system of the ECTS.

The student masters the study programme by passing the exams, thus earning a certain number of ECTS credits, in accordance with the structure of the study programme.

24.3. Activities and mechanisms for developing and maintaining the quality of the study programme

In order to develop and maintain the quality and the quality control, methods of continuous evaluation, self-evaluation and system for assessing the quality of the teaching staff will be implemented in the frames of the study programmes, in accordance with the provisions of the Law on Higher Education of the Republic of Macedonia and Articles 50 to 57, as well as in line with the already established mechanisms for evaluation within the Ss. Cyril and Methodius University in Skopje.

Quality assurance and quality control will be implemented in accordance with the activities and mechanisms that are implemented for all study programmes and apply to all participants in the teaching process at the Faculty of Mechanical Engineering in Skopje. The stated activities and mechanisms of self-evaluation refer to:

- Development of contents for the courses,
- Realization of the teaching process,
- Evaluation of students,
- Preparation of the final paper,
- Evaluation of the quality of teaching process by students using surveys at the end of each semester for each course,
- Evaluation of the quality of the study programme by the students on the occasion of diploma awarding and other procedures related to the resources and teaching process logistics.

Evaluation of the quality of the courses and the study programmes performed by the students shall be made permanently and shall be taken into consideration in evaluation and development of all the study programmes.

Monitoring the students' success and the realization of the programme by the Educational and Scientific Council of the Faculty of Mechanical Engineering shall be applied as activities for development and maintenance of quality and quality control of the study programme. The Council

will conduct an internal evaluation of the content of the study programme in the direction of improvement and development in accordance with the contemporary trends in the field.

24.4 Results of the performed self-evaluation according to the Guidelines on the Common Basis for Evaluation and Evaluation Procedures of Universities adopted by the Agency for Evaluation of Higher Education in the Republic of Macedonia and the Inter-University Conference of the Republic of Macedonia (Skopje-Bitola, September 2002).

The results have been published in the Self-evaluation Report of the Faculty of Mechanical Engineering - Skopje for the reporting period 2013-2016, No. 02-1991/2 of November 27, 2017, in accordance with the Guidelines for self-evaluation and assurance and evaluation of the quality of the units of the University, passed by the University Senate (9th Session/April 30, 2013):

<https://www.mf.ukim.edu.mk/mk/content/резултати-од-анкетисамоевалуација>

24.5 Results of the performed external evaluation of the Ss. Cyril and Methodius University in Skopje

The results of the external evaluation of the Ss. Cyril and Methodius University in Skopje can be found at the following link:

[http://ukim.edu.mk/dokumenti_m/297_nadvoresna%202018%20-%20prevod%20\(002\).docx](http://ukim.edu.mk/dokumenti_m/297_nadvoresna%202018%20-%20prevod%20(002).docx)

ANNEX 1

Decision for adopting the study program by the Academic Council of Scientific unit
(Faculty of Mechanical engineering – Skopje)

Машински факултет
Број 02-228/14
31.01.2019 год.
Скопје

Врз основа на член 110 став 1 точка 6 и член 145 став 1 од Законот за високото образование (“Службен весник на РМ” број 82/2018), како и член 2 и 3 од Правилникот за донесување студиски програми (Универзитетски гласник број 140/2009), Наставно-научниот совет на Машинскиот факултет во Скопје, на 30-та редовна седница, одржана на 31 јануари 2019 година, ја донесе следнава

О Д Л У К А

за основање студиска програма на втор циклус студии на англиски јазик
на Машински факултет во Скопје

1. Се основа студиска програма на англиски јазик **Lean management (LM) – LEAN Менаџмент (LM)** на втор циклус студии на Машинскиот факултет во Скопје во состав на Универзитетот “Св. Кирил и Методиј” во Скопје, за акредитација.

2. Студиската програма е од видот втор циклус на академски студии (постдипломски студии) во траење од една година (2 семестри), се организира како редовни студии за стекнување 60 ЕКТС кредити по моделот 4+1 и научен назив магистер или Master of Science (MSc) на англиски јазик.

3. Проектот/Елаборатот за основање – акредитација на студиската програма усвоен од Наставно-научниот совет и оваа одлука се упатуваат на Универзитетот “Св. Кирил и Методиј” во Скопје на натамошна постапка за усвојување.

4. Студиите по новата студиска програма на англиски јазик ќе отпочнат од учебната 2019/2020 година.

5. Составен дел на оваа одлука е Проектот/Елаборатот за основање - акредитација на студиската програма.

Одлуката да се достави до: Универзитетот, наставно-научен совет, продекан за МСНР, ОАЕВО, за елаборатот и архивата на Факултетот.

Универзитет “Св. Кирил и Методиј” во Скопје
Машински факултет - Скопје

Декан



Проф. д-р Дарко Данев

Handwritten signature in blue ink, likely of the Dean, located in the bottom left corner of the page.

ANNEX 2

Decision for adopting the study program from Rector's Office or the University Senate
Council or the Council of scientific institution



Бр. 02-314
28.2.2019
Скопје

Врз основа на член 94, став 1, алинеја 3 од Законот за високото образование, (Службен весник на Република Македонија бр.82/2018), по предлог на Наставно-научниот совет на Машинскиот факултет, Универзитетскиот сенат на Универзитетот „Св. Кирил и Методиј“ во Скопје, на 29. седница одржана на 28 февруари 2019 година, донесе

ОДЛУКА

за усвојување на предлог-проектите за акредитација на студиските програми од втор циклус студии на Машинскиот факултет во Скопје

Член 1

Универзитетскиот сенат ги усвојува предлог-проектите за акредитација на студиските програми од втор циклус студии на Машинскиот факултет во Скопје, и тоа:

- едногодишната студиска програма **Напредни производни системи и технологии**
- едногодишната студиска програма **Механика и машински системи**
- едногодишната студиска програма **Индустриски дизајн**
- едногодишната студиска програма **Modeling and Stimulation of Plastic Deformation Technologies and Processes**
- едногодишната студиска програма **Lean Management**
- едногодишната студиска програма **Virtual Manufacturing Engineering**

Член 2

Универзитетскиот сенат ги упатува проектите од член 1 на оваа Одлука до Одборот за акредитација и евалуација на високото образование на натамошна постапка за акредитација. Проектите, во печатена и во електронска форма до Одборот за акредитација и евалуација на високото образование се доставуваат од страна на единицата на Универзитетот - предлагач и организатор на студиската програма.

Член 3

Оваа Одлука стапува во сила со нејзиното донесување и ќе се објави во *Универзитетски гласник*.



РЕКТОР

Проф. д-р Никола Јанкуловски

Доставено до:

- Машинскиот факултет во Скопје
- Одборот за акредитација и евалуација на високото образование

ANNEX 3

Opinion of the Board on Public Cooperation and Trust

Машински факултет
Број 02-230/16
11.02.2019 год.
Скопје

Врз основа на член 3 став 1 алинеја 1 од Правилникот за поблиските критериуми и надлежности на одборите за соработка и доверба со јавноста (“Сл. весник на РМ” број 148/2013), во согласност со член 4 од Упатството за начинот и постапката на кој Одборот за соработка и доверба со јавноста дава мислење по студиските програми (Универзитетски гласник број 255/2013), Одборот за соработка и доверба со јавноста на Машински факултет во Скопје, на 12-та седница одржана на 11 февруари 2019 година, го донесе следново

МИСЛЕЊЕ
за студиска програма од втор циклус на студии

1. Се дава позитивно мислење за општествена оправданост за основање на студиската програма на англиски јазик **Lean management (LM) – LEAN Менаџмент (LM)** од втор циклус на академски студии (постдипломски студии) на Машинскиот факултет во Скопје во состав на Универзитетот “Св. Кирил и Методиј” во Скопје.

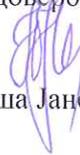
2. Основањето на студиската програма, по содржина и обем, како и по општите и специфичните дескриптори на квалификацијата, е во согласност со законските одредби и со општествените потреби.

3. Мислењето се дава до Сенатот на Универзитетот “Св. Кирил и Методиј” во Скопје, за натамошно постапување по однос на студиската програма.

Примерок од мислењето да се достави до: универзитет x2, одборот и архивата на Факултетот.

Претседател на Одборот за
соработка и доверба со јавноста

Наташа Јаневска



ANNEX 4

Teachers statement of consent for participation in teaching specific subjects of the study program

Врз основа на членот 2 од Правилникот за задолжителни компоненти кои треба да ги поседуваат студиските програми од првиот, вториот и третиот циклус студии ја давам следната

ИЗЈАВА

Од Бојан Јованоски, во звање доцент, вработен/а на Машински факултет - Скопје при Универзитетот „Св. Кирил и Методиј“ во Скопје.

ИЗЈАВУВАМ ДЕКА СУМ СОГЛАСЕН да учествувам во изведување на наставата на студиската програма Lean management на втор циклус студии при Машински факултет – Скопје на предметот:

1. Lean tools 1
2. Lean tools 2
3. Applied modelling and simulation in business processes
4. Lean project

Своерачен потпис



доц. д-р Бојан Јованоски

Врз основа на членот 2 од Правилникот за задолжителни компоненти кои треба да ги поседуваат студиските програми од првиот, вториот и третиот циклус студии ја давам следната

ИЗЈАВА

Од Миновски Роберт, во звање професор,
вработен/а на Машински факултет - Скопје при Универзитетот „Св. Кирил и Методиј“ во Скопје.

ИЗЈАВУВАМ ДЕКА СУМ СОГЛАСНА/ЕН да учествувам во изведување на наставата на студиската програма Lean Management на втор циклус студии при Машински факултет – Скопје на предметот:

1. Lean thinking
2. Design of Quality Management Systems
3. Lean Tools 2
4. Lean Project

Своерачен потпис



Проф. д-р

Врз основа на членот 2 од Правилникот за задолжителни компоненти кои треба да ги поседуваат студиските програми од првиот, вториот и третиот циклус студии ја давам следната

ИЗЈАВА

Од **проф. д-р Радмил Поленаковиќ**, во звање **редовен професор**, вработен на Машински факултет - Скопје при Универзитетот „Св. Кирил и Методиј“ во Скопје.

ИЗЈАВУВАМ ДЕКА СУМ СОГЛАСНА/ЕН да учествувам во изведување на наставата на студиската програма **LEAN Management (LEAN)** на втор циклус студии при Машински факултет – Скопје на предметот:

1. **Motivation and Creative Teams**
2. **Organisational Design – Lean principles**
3. **Total Productivity Maintenance**
4. **Project Cycle Management**

Своерачен потпис



Проф. д-р Радмил Поленаковиќ

Врз основа на членот 2 од Правилникот за задолжителни компоненти кои треба да ги поседуваат студиските програми од првиот, вториот и третиот циклус студии ја давам следната

ИЗЈАВА

Од Игор Шешо, во звање доцент, вработен на Машински факултет - Скопје при Универзитетот „Св. Кирил и Методиј“ во Скопје.

ИЗЈАВУВАМ ДЕКА СУМ СОГЛАСНА/ЕН да учествувам во изведување на наставата на студиската програма Lean Management на втор циклус студии при Машински факултет – Скопје на предметот:

1. Green Lean

Своерачен потпис



доц. д-р Игор Шешо

Врз основа на членот 2 од Правилникот за задолжителни компоненти кои треба да ги поседуваат студиските програми од првиот, вториот и третиот циклус студии ја давам следната

ИЗЈАВА

Од Јасмина Чалоска, во звање редовен професор, вработен/а на Машински факултет - Скопје при Универзитетот „Св. Кирил и Методиј“ во Скопје.

ИЗЈАВУВАМ ДЕКА СУМ СОГЛАСНА/ЕН да учествувам во изведување на наставата на студиската програма **LEAN MANAGEMENT** на втор циклус студии при Машински факултет – Скопје на предметите:

1. Workplace safety management
2. Ergonomic systems

Своерачен потпис



Проф. д-р Јасмина Чалоска

Врз основа на членот 2 од Правилникот за задолжителни компоненти кои треба да ги поседуваат студиските програми од првиот, вториот и третиот циклус студии ја давам следната

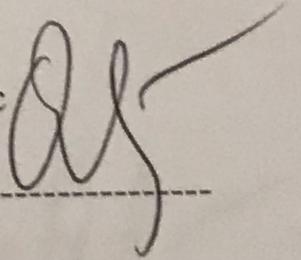
ИЗЈАВА

Од Атанас Кочов , во звање редовен професор, вработен на Машински факултет - Скопје при Универзитетот „Св. Кирил и Методиј“ во Скопје.

ИЗЈАВУВАМ ДЕКА СУМ СОГЛАСЕН да учествувам во изведување на наставата на студиската програма **LEAN MANAGEMENT** на втор циклус студии при Машински факултет – Скопје на предметот:

1. LEAN AND OTHER APPROACHES

Своерачен потпис



Проф. д-р Атанас Кочов

Врз основа на членот 2 од Правилникот за задолжителни компоненти кои треба да ги поседуваат студиските програми од првиот, вториот и третиот циклус студии ја давам следната

ИЗЈАВА

Од Мирко Петрушевски во звање доцент, вработен/а на Машински факултет - Скопје при Универзитетот „Св. Кирил и Методиј“ во Скопје.

ИЗЈАВУВАМ ДЕКА СУМ СОГЛАСНА/ЕН да учествувам во изведување на наставата на студиската програма Lean Management на втор циклус студии при Машински факултет – Скопје на предметот:

1. Applied Statistics

Своерачен потпис



A handwritten signature in blue ink, appearing to be 'MP', is written over a horizontal dashed line.

Доц. д-р Мирко Петрушевски

Врз основа на членот 2 од Правилникот за задолжителни компоненти кои треба да ги поседуваат студиските програми од првиот, вториот и третиот циклус студии ја давам следната

ИЗЈАВА

Од Никола Тунески во звање редовен професор, вработен/а на Машински факултет - Скопје при Универзитетот „Св. Кирил и Методиј“ во Скопје.

ИЗЈАВУВАМ ДЕКА СУМ СОГЛАСНА/ЕН да учествувам во изведување на наставата на студиската програма Lean Management на втор циклус студии при Машински факултет – Скопје на предметот:

1. Applied Statistics

Своерачен потпис



Проф. д-р Никола Тунески

Врз основа на членот 2 од Правилникот за задолжителни компоненти кои треба да ги поседуваат студиските програми од првиот, вториот и третиот циклус студии ја давам следната

ИЗЈАВА

Од д-р Валентина Гечевска, во звање редовен професор, вработен/а на Машински факултет - Скопје при Универзитетот „Св. Кирил и Методиј“ во Скопје.

ИЗЈАВУВАМ ДЕКА СУМ СОГЛАСНА/ЕН да учествувам во изведување на наставата на студиската програма Lean management на втор циклус студии при Машински факултет – Скопје на предметот:

1. Economical aspect of Lean

Своерачен потпис



Проф. д-р Валентина Гечевска

Врз основа на членот 2 од Правилникот за задолжителни компоненти кои треба да ги поседуваат студиските програми од првиот, вториот и третиот циклус студии ја давам следната

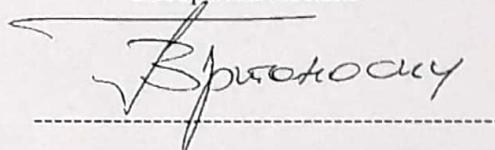
ИЗЈАВА

Од д-р Глигорче Вртаноски, во звање редовен професор, вработен на Машински факултет - Скопје при Универзитетот „Св. Кирил и Методиј“ во Скопје.

ИЗЈАВУВАМ ДЕКА СУМ СОГЛАСЕН да учествувам во изведување на наставата на студиската програма „Lean Management“ на втор циклус студии при Машински факултет – Скопје на предметот:

1. TQM

Своерачен потпис

Handwritten signature of Gligorche Vrtanoski in black ink, written over a horizontal dashed line.

Проф. д-р Глигорче Вртаноски

ANNEX 5

Consent from the higher educational institution for teacher participation in the realization of the study program

In this study program only lecturers from the Faculty of Mechanical Engineering will be involved.



Бр. 02-314
28.2.2019
Скопје

Врз основа на член 94, став 1, алинеја 3 од Законот за високото образование, (Службен весник на Република Македонија бр.82/2018), по предлог на Наставно-научниот совет на Машинскиот факултет, Универзитетскиот сенат на Универзитетот „Св. Кирил и Методиј“ во Скопје, на 29. седница одржана на 28 февруари 2019 година, донесе

О Д Л У К А
за усвојување на предлог-проектите за акредитација на студиските програми од втор циклус студии на Машинскиот факултет во Скопје

Член 1

Универзитетскиот сенат ги усвојува предлог-проектите за акредитација на студиските програми од втор циклус студии на Машинскиот факултет во Скопје, и тоа:

- едногодишната студиска програма **Напредни производни системи и технологии**
- едногодишната студиска програма **Механика и машински системи**
- едногодишната студиска програма **Индустриски дизајн**
- едногодишната студиска програма **Modeling and Stimulation of Plastic Deformation Technologies and Processes**
- едногодишната студиска програма **Lean Management**
- едногодишната студиска програма **Virtual Manufacturing Engineering**

Член 2

Универзитетскиот сенат ги упатува проектите од член 1 на оваа Одлука до Одборот за акредитација и евалуација на високото образование на натамошна постапка за акредитација. Проектите, во печатена и во електронска форма до Одборот за акредитација и евалуација на високото образование се доставуваат од страна на единицата на Универзитетот - предлагач и организатор на студиската програма.

Член 3

Оваа Одлука стапува во сила со нејзиното донесување и ќе се објави во *Универзитетски гласник*.

РЕКТОР
Проф. д-р Никола Јанкуловски



Доставено до:
- Машинскиот факултет во Скопје
- Одборот за акредитација и евалуација на високото образование

ANNEX 6

Diploma supplement



Faculty of Mechanical Engineering - Skopje

1. Information identifying the holder of the qualification	
1.1. Name	
1.2. Surname	
1.3. Date, place, and country of birth	
1.4. Unique Master Citizen Number	
2. Information identifying the qualification	
2.1. Date of issuance	
2.2. Name of qualification	Master of Sciences in Industrial Engineering and Management - <i>LEAN Management</i>
2.3. Name of study programme, main area, field, and branch of study	Lean Management study programme, Scientific area - Technical and technological sciences, Field - 211 Industrial Engineering and Management Branch – all the domains listed in the relevant scientific field and other.
2.4. Name and status of awarding institution	Ss. Cyril and Methodius University in Skopje – Faculty of Mechanical Engineering
2.5. Name and status of higher education institution administering the studies (if different)	
2.6. Language of instruction	English / Macedonian
3. Information on the level (cycle) of the qualification	
3.1. Type of qualification (academic/vocational studies)	Academic studies
3.2. Level (cycle) of qualification	Second cycle of studies (graduate studies)
3.3. Official length of programme: years and ECTS credits	2 semesters, 1 year, 60 credits
3.4. Study programme enrollment requirements	Completed undergraduate studies, 240 credits

4. Information on the contents and results gained	
4.1. Mode of study (full-time, part-time)	Full-time
4.2. Programme requirements and results	Knowledge, skills, and competencies in the field of Mechanical Engineering with a specialty in the field of Industrial Engineering and Management (Lean Management)
4.3. Programme details (orientation, module, grades, ECTS credits) ¹	The Results Certificate containing the courses completed and credits won is attached.
4.4. Evaluation scheme (grading scheme and criteria)	The number of points represents the overall workload of the student (lecture attendance, laboratory work, tests, seminal papers, examinations, individual tasks). For earning up to 50% of the total points, grade 5 is awarded, for earning from 51% to 64% of the total points grade 6 is awarded, for earning from 65% to 74% of the total points grade 7 is awarded, for earning from 75% to 84% of the total points grade 8 is awarded, for earning from 85% to 94% of the total points grade 9 is awarded, and for earning from 95% to 100% grade 10 is awarded. (10=A/A+, 9=A-/B+, 8=B-, 7=C, 6=D, 5=F)
4.5. Grade point average (GPA)	
5. Data on the function of the qualification	
5.1. Access to further study	Third cycle of studies
5.2. Professional status (if applicable)	
6. Additional information	
6.1. Additional information on the student	
6.2. Additional information on the higher education institution	Faculty of Mechanical Engineering – Skopje Address: Rugjer Boshkovikj no. 18, P.Box 464, 1000 Skopje Telephone: +389 2 3063 374 e-mail: mf@mf.edu.mk web-site: www.mf.edu.mk
7. Certification of the supplement	
7.1. Date and place	
7.2. Name and signature	Professor Darko Danev, PhD Professor Nikola Jankulovski, PhD
7.3. Capacity of the signee	Dean Rector
7.4. Seal	Seal of the Unit Seal of the University

¹ The Appendix mentioned in 4.3 is the Results Certificate