REPUBLIC OF NORTH 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

„SUSTAINABLE ENERGY AND ENVIRONMENT“

„ОДРЖЛИВА ЕНЕРГЕТИКА И ЕКОЛОГИЈА“

NOMINATING INSTITUTION

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

SKOPJE, AUGUST 2019

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ANNEX 4 Consent from the higher educational institution for teacher participation in the realization of the study program **at the end of the Elaborate**

ANNEX 5 Diploma supplement **at the end of the Elaborate**

Proposed by: Faculty's Board **Adopted by: Educational-scientific Council**

REFERENCED LEGAL PROVISIONS

The Accreditation Elaborate for Sustainable Energy and Environment 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	**P.O.Box 464, 1000 Skopje**
Web page	**http://www.mf.ukim.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 North Macedonia**
Data for the last accreditation	**First cycle – year 2017** **Second cycle – year 2018** **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)**
Study programs that are realized in the unit who requires extension of the activity by introducing new study program	**First cycle:** **Four years academic study programs (240 ECTS):** Production Engineering Transport, Mechanization and Logistics Hydraulic Energy Engineering Thermal Engineering 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:** Automation and fluid engineering Solid mechanics and mechanical systems Energy and ecology Modeling and simulation of plastic deformation technologies and processes Industrial design and marketing Motor vehicles Industrial engineering and management LEAN management Industrial design Materials, welding and structural engineering Thermal engineering Transport, mechanisation and logistics Advanced manufacturing systems and technologies Virtual manufacturing engineering

Mechatronics
Work Safety
Sustainable energy and environment
Product lifecycle management
Management and Quality Control

b) Name of the study program for two year Master studies:
Industrial design and marketing
Management and Quality Control

Third cycle:
Study program in Mechanical Engineering
Study program in Industrial engineering and Management

Data for international cooperation in the field of teaching, research and student mobility

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.

Information about area for teaching and research

1. Total area (gross area)
(space for teaching and yard)
9918 m^2
2. Total teaching area (net space)
4840 m^2
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

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
	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
450

Number of students (enrolled for the first time)

Number of regular students on postgraduate studies
209

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	36
Associate professor	9
Assistant professor	10

Number of staff with assistant positions

Structure of associates after teaching science, research, teaching and associate titles

Teaching Assistant	12
Research assistant	7

Teacher:students ratio (number of students per teacher) for each unit separately

209/55 ≈ 4
450/55 ≈ 8

Internal mechanisms that ensure quality control for the studies

- 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. • Report for the monitoring of the educational process of the Faculty of Mechanical Engineering in Skopje, academic year 2013/2014 (http://www.mf.edu.mk/sites/default/files/files/IZVESHTAJ%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 for the 2006-07 period to the 2009-10 year. Issued by the European University Association, 2011 and 2014.**
Other information that the institution wants to specify as an argument for its success	

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
VIIA	Second cycle of university, academic Master studies, one-year studies, 60 ECTS	7
Knowledge and understanding	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. 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.	

Applying knowledge and understanding	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. Demonstrates competencies for identification, analysis, and problem solving in the scientific subject areas from the second cycle of studies. Is capable of finding and supporting arguments within the study field of the second cycle of studies.
Making judgments	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. Is able to make appropriate assessments taking into account personal, social, scientific and research, developmental, and ethical aspects. 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.
Communication skills	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. Takes over a divided, separate responsibility for issues arising from teamwork and related to collective results. Is capable to participate independently in specific, scientific, and interdisciplinary discussions while demonstrating a professional and comprehensive approach.
Learning skills	Takes initiative to identify the needs for acquiring further knowledge and learning with a high degree of autonomy.

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

Knowledge and understanding	Shows the thorough knowledge and understanding in scientific research fields and areas acquired in the second cycle and relate to: • Knowledge of energy sources, ways of transformation and its efficient use • Operation and maintenance of power plants • Regulations and testing of machines and power plants • Technical control, supervision and inspection during the construction of power plants and systems • Development of expert reports on energy machinery and equipment • Knowledge of techniques, rules and measures to protect the environment

Applying knowledge and understanding	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. Demonstrates competencies for identification, analysis, and problem solving in the relevant scientific areas studied in the second cycle of studies. Is capable of finding and supporting arguments within the field and areas of study.
Making judgments	Possesses the ability to collect, analyse, evaluate, and present information, ideas, and concepts using relevant data. Makes appropriate assessments taking into account personal, social, scientific and ethical aspects. Is able to evaluate theoretical and practical issues from the area of Sustainable Energy and Environment, to provide well-supported explanations of the causes of certain phenomena, to explain the laws behind them, and to choose an appropriate solution.
Communication skills	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. Takes a divided, separate responsibility for collective results. Is capable to participate independently, taking a professional approach, in specific, scientific, and interdisciplinary discussions.
Learning skills	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.

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: Sustainable Energy and Environment

Scientific and research area	Technical and technological sciences
Scientific and research field	Mechanical Engineering, Energy, Environment

Scientific and research branch	Branches of the stated 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)

Sustainable Energy and Environment study programme, organised by the Faculty of Mechanical Engineering - Skopje is an academic university study programme.

6. Degree of education (first or second cycle)

Sustainable Energy and Environment study programme at the Faculty of Mechanical Engineering - Skopje is an academic university study programme of second cycle, organised as a year-long programmeof 60 ECTS.

7. Objectives and rationale for the Sustainable Energy and Environment study programme

The Faculty of Mechanical Engineering of the Ss. Cyril and Methodius University in Skopje is the leading institution in educating mechanical engineers in this country. In order to satisfy the requirements deriving from foreign investors, but also from domestic manufacturing companies, it is needed constantly educating personnel who have new interdisciplinary knowledge, and successfully responding to global trends. The Institute of Thermal technology and thermal power and the Institute for Hydraulic Engineering and Automation at the Faculty of Mechanical Engineering in Skopje, suggests study program which results from the previously derived comprehensive analysis and identification of needs and employment opportunities for university graduates in: Research and optimization of energy systems and installations, management of energy facilities and systems, energy management systems and systems design, construction and operation of power plants, design and construction of thermal machines and plants, technical inspection and control of the design and construction of energy plants and systems, protection of environment. Recognizing the basic profile competencies and acquired qualifications, this study program justifies expectations for analysis, exploration of energy sources, ways of transformation and its efficient use, design and construction of thermal machines and facilities, design and construction of hydropower and hydro-technical installations and machinery, management and exploitation of thermal and hydraulic plants and systems, regulations and testing of thermal and hydraulic machines and plants, technical control and inspection during construction of thermal and hydraulic plants and systems, expertise in the field of thermal and hydraulic machines and plants, regulations and measures to protect the environment.
Another very important fact of such a study program in English are the provisions of the Law for Higher education which stipulates the minimum necessary study programs at higher education institution.

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 Sustainable Energy and Environment 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 Sustainable Energy and Environment study programme organised by the Faculty of Mechanical Engineering – Skopje, the student acquires 60 ECTS credits.

10. 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 **Sustainable Energy and Environment** 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.

The expenses for conducting the graduate studies for students who are not citizens of Republic of North Macedonia is dubled then the expenses for the students who are citizens of Republic of North Macedonia,

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 compatibility of the previous education with the study programme.

Students who are not citizens of Republic of North Macedonia should submit documents for nostrification of their diploma for undergraduate studies from the Ministry of education and science of Republic of North Macedonia.

12. Information on continuation of education

After completing university studies of second cycle, **Sustainable Energy and Environment** 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

Sustainable Energy and Environment 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 **Sustainable Energy and Environment** 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.	Selected Topics in Mathematics and Informatics	**6**	**6**	
2.	Modeling and Simulations of Energy Systems	**6**	**6**	
3.	Advanced Course in Energy Transformation	**6**	**6**	
4.	Basic Elective Course	**6**	**6**	
5.	Basic Elective Course	**6**	**6**	
6.	Experts in Teamwork	**6**		**6**
7.	Specific Elective Course	**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 the compulsory courses in ECTS	Number/ Percentage of elective courses in ECTS
1	**Sustainable Energy and Environment**	1 year/ 60 ECTS	60 /100%	42 / 70%	18 / 30%

The programme subjects for the compulsory courses, basic elective courses and specific elective courses are presented in Table 3, Table 4 and Table 5, respectively.

Table 3. Compulsory Courses

Ord. no.	Code	Course	ECTS	Year / Semester
1.	2OMI01	Selected Topics in Mathematics and Informatics	**6**	I/winter
2.	2EE05	Modeling and Simulations of Energy Systems	**6**	I/winter
3.	2SEE01	Advanced Course in Energy Transformation	**6**	I/winter
4.	2SEE02	Experts in Teamwork	**6**	I/ summer

Table 4. Basic Elective Courses

Ord. no.	Code	Course	ECTS	Year / Semester
1.	2SEE03	Modern Thermal Plants	**6**	I/winter
2.	2SEE04	Advanced thermodynamics – selected chapters	**6**	I/winter
3.	2SEE05	Transport and the environment	**6**	I/winter
4.	2SEE06	Fluid mechanics in environmental engineering	**6**	I/winter
5.	2SEE07	Environmental measurement methods and monitoring systems	**6**	I/winter
6.	2SEE08	Environmental systems analysis	**6**	I/winter
7.	2SEE09	An introduction to eco-innovations	**6**	I/winter

Table 5. Specific Elective Courses

Ord. no.	**Code**	**Course**	**ECTS**	**Year / Semester**
1.	2SEE10	Non-conventional power plants	**6**	I/summer
2.	2SEE11	Water and waste water treatment	**6**	I/summer
3.	2SEE12	Energy efficiency	**6**	I/summer
4.	2SEE13	Eco-engines	**6**	I/summer
5.	2SEE14	Design of fluid conveying and hydro power system	**6**	I/summer
6.	2SEE15	Waste management	**6**	I/summer
7.	2SEE16	Energy vs. sustainable development: Concepts and aspects	**6**	I/summer
8.	2SEE17	Automation of environmental processes	**6**	I/summer
9.	2SEE18	Clean fossil and alternative fuels energy	**6**	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.

Compliant to the provision of Article 139 Paragraph 10 of the Law on Higher Education courses are 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 practical part of teaching is mostly performed in the laboratories of the Faculty of Mechanical Engineering, which are also listed in the Map of Higher Education Institution.
The course program envisages clinical teaching as well as recommended in the legislation, which is carried out in the workplace, the economy or the faculty by hiring prominent experts from practice.

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 RIKADENKI 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, lubricantion olis, 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 resourse 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;
- XSensors - pressure mapping system;
- NextEngine - 3D Scanner;
- Styrocut thermo cutter.

• Control block, Mitutoyo, type: 515 - 500 , No. 009400	Measuring range: 0 - 300 mm, Accuracy: 2.5 μm
• Control block, Mitutoyo, type: 515 - 742, No. 022036	Measuring range: 0 - 600 mm, Accuracy: 3.5 μm
• Control ring Ø 10 mm, Mitutoyo, Tip: 177 - 126, No. 881078	Nominal diameter: 10 mm, Cylindricity: 1 μm,
• Control ring Ø 14 mm, Einst, Kp-01	Nominal diameter: 14 mm, Cylindricity: 1 μm
• Control stick L= 25 mm, Mitutoyo, No. 167 - 101	Nominal length: 25 mm, Tolerance: (1+L/50), L in mm
• 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	Selected topics in Mathematics and Informatics			
2.	Code	2OMI01			
3.	Study group(s)	SEE			
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(s)	Prof. dr. Dushan Chakmakov Prof. dr. Aleksa Malcheski Prof. dr. Nikola Tuneski Assoc. prof. dr. Emilija Celakoska			

			Assoc. prof. dr. Bojan Prangoski		
9.	Prerequisites for enrolling the course		None		
10.	Course objectives (competences): Introduction to selected topics in applied mathematics, probability and statistics and selected software for solving engineering problems.				
11.	Course content: Selected topics in linear algebra, numerical methods, optimization methods, complex analysis, probability and statistics with emphasis on solving technical problems. Using specific programming techniques, software and basics of organizing data and intelligent systems.				
12.	Study methods: lectures, lab, project assignments, individual assignments, self-study.				
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
	17.2.	Projects			40
	17.3.	Attendance			10
18.	Grading scale		Under 50		5 (five) (F)
			51 - 64 points		6 (six) (E)
			65 - 74 points		7 (seven) (D)
			75 - 84 points		8 (eight) (C)
			85 - 94 points		9 (nine) (B)
			95 - 100 points		10 (ten) (A)
19.	Prerequisites for taking the final exam		Activity 16.1, 16.2, 16.3		
20.	Language		English		
21.	Course evaluation		Student questionnaire		
22.	Textbooks				

22.1 Instruction materials				
No.	Author	Title	Publisher	Year
1.	Mendenhal W., Sincich T.	Statistics for Engineering and the Sciences	Maxwell Macmillan Int. Ed., New York	1992
2.	R. Fletcher	Practical methods of optimization	John Willey and Sons	2000

22.2 Supplemental Instruction Materials				
No.	Author	Title	Publisher	Year
1.	Connolly T., Begg C.	Database systems	Ars Lamina	2010
2.	Hari V., Rogina M., Singer S.	Numerical analysis	University of Zagreb	2003

Add. 3	**Course program for the second level (second cycle - postgraduate) of studies**	
1.	Course title	Modeling and Simulations of Energy Systems
2.	Code	2EE05
3.	Study group(s)	SEE
4.	The organizer of the study program (unit,	“Ss. Cyril and Methodius” University in Skopje,

	institute, department)	Faculty of Mechanical Engineering - Skopje			
5.	Level (first, second, third degree)	Second			
6.	Academic year / semester	I / winter	7.	ECTS credits	6
8.	Professor(s)	Prof. dr. Done Tashevski Prof. dr. Risto Filkoski Prof. dr. Laze Trajkovski Prof. dr. Atanasko Tuneski Prof. dr. Valentino Stojkovski Prof. dr. Zoran Markov Assoc. prof. dr. Dame Dimitrovski Assoc. prof. dr. Ana Lazarevska Assoc. prof. dr. Darko Babunski Assoc. prof. dr. Emil Zaev			
9.	Prerequisites for enrolling the course	None			
10.	Course objectives (competences): Advanced knowledge of methods for energy planning and modeling energy systems. Advanced level of numerical modeling, engineering approach towards modern techniques of modeling and simulations. training for creating and using software applications for design, analysis and solving steady, unsteady and dynamic systems in the field thermal engineering and energetics. Training for making a mathematical model of a thermal power plant, object or process. applying suitable techniques for numerical modeling and simulations, analysis and interpretation of results, accuracy, stability and reliability of the model.				
11.	Course content: Introduction to modeling energy systems. Numerical thermal analysis. Mathematical modeling of thermal processes - in general. Approach in modeling. Basic equations of dynamic processes and fluid flow. Basic equations for heat transfer and defyning boundary conditions and types of boundary conditions. Method of finite volumes, solving discrete equations. Computational domain, geometry and numerical mesh. Validating mathematical models and solutions. Methods for modeling unsteady processes. Modeling, simulations and optimization of thermal processes and systems using computer tools. Using software tools for improving energy efficiency. Modeling processes related to emission and concentration of harmful substances from thermal processes. Specific functions and models for modeling thermal processes.				
12.	Study methods: lectures, lab, project assignments, individual assignments, self-study.				
13.	Total hours	6 ECTS x 30 = 180 hours			
14.	Hours allocation per activity:	30+30+10+10+100 = 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		10 hours
		16.2.	Individual assignments		10 hours
		16.3.	Self-study		100 hours
17.	Points/Marks:				
	17.1.	Exams			80
	17.2.	Projects			10
	17.3.	Attendance			10
18.	Grading scale		Under 50		5 (five) (F)
			51 - 64 points		6 (six) (E)
			65 - 74 points		7 (seven) (D)
			75 - 84 points		8 (eight) (C)
			85 - 94 points		9 (nine) (B)
			95 - 100 points		10 (ten) (A)
19.	Prerequisites for taking the final exam	Activity 17.2 and 17.3			
20.	Language	English			
21.	Course evaluation	Student questionnaire			

22.	Textbooks					
	22.1	Instruction materials				
		No.	Author	Title	Publisher	Year
		1.	Kitto J. B., Stultz S. C., editors	Steam, its generation and use, 41st Edition	Babcock&Wilcox, a McDermott comp.	2005
		2.	Baukal C. E. et al.	CFD in Industrial Combustion	CRC Press	2001
			C. Pozrikidis	Numerical Computation in Science and Engineering	Oxford University Press	1998
	22.2	Supplemental Instruction Materials				
		No.	Author	Title	Publisher	Year
		1.	Doty S., Turner W. C.	Energy Management Handbook, 7th Edition	Fairmont press Inc., CRC Press	2009
		2.	Shepherd W., Shepherd D. W.,	Energy Studies, Second Edition	Imperial College press, London	2005
		3.	Patankar S. V.	Numerical Heat Transfer and Fluid Flow	Hemisphere Publ. Corp.	1980

Add. 3	**Course program for the second level (second cycle - postgraduate) of studies**			
1.	Course title	Advanced Course in Energy Transformation		
2.	Code	2SEE01		
3.	Study group(s)	SEE		
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. dr. Done Tashevski Prof. dr. Risto Filkoski Prof. dr. Atanasko Tuneski Prof. dr. Valentino Stojkovski Prof. dr. Zoran Markov Assoc. prof. dr. Dame Dimitrovski Ass. prof. Igor Shesho Ass. prof. Viktor Iliev		
9.	Prerequisites for enrolling the course	None		
10.	Course objectives (competences): Learning advanced methods for renewable energy usage. Specific knowedge of small hydro, wind, tidal, wave, solar, geothermal and biomass energy transformation			
11.	Course content: Overview of advanced renewable energy resources. Energy of inland water bodies. Tidal energy development. Methods and parameters for selection and design of wind turbines. Numerical modeling. State-of-the-art trends and designs in renewable energy. Production price. Solar energy panels with and without radiation concentration. Types of geothermal energy sources, Technologies and drilling equipment. Low temperature energy sources. Biomass sources. Forests, agriculture, municipal and industrial waste. Energy potential. Biogas fuels.			

12.	Study methods: team work on project assignments, selfrunning assignments				
13.	Total hours		10 ECTS x 30 hours = 300 hours		
14.	Hours allocation per activity:		45+45+45+45+120=300		
15.	Lectures/Lab	15.1.	Lectures		45 hours
		15.2.	Lab (student work)		45 hours
16.	Project Work/Assignments	16.1.	Project assignments		45 hours
		16.2.	Individual assignments		45 hours
		16.3.	Self-study		120 hours
17.	Points/Marks:				
	17.1.	Exams			40
	17.2.	Projects			50
	17.3.	Attendance			10
18.	Grading scale		Under 50		5 (five) (F)
			51 - 60 points		6 (six) (E)
			61 - 70 points		7 (seven) (D)
			71 - 80 points		8 (eight) (C)
			81 - 90 points		9 (nine) (B)
			91 - 100 points		10 (ten) (A)
19.	Prerequisites for taking the final exam				
20.	Language of Instruction		English		
21.	Course evaluation		Student questionnaire		
22.	Textbooks				

22.1	Instruction materials				
	No.	Author	Title	Publisher	Year
	1.	Aubrecht G. J.	Energy: Physical, Environmental and Social Impact	Pearson	2006
	2.		Renewable Energy	OECD/IEA	2004
	3.				
22.2	Supplemental Instruction Materials				
	No.	Author	Title	Publisher	Year
	1.	Pilic-Rabadan L.	Vodne turbine, pumpe i vjetroturbine	Sveuciliste u Splitu	2000
	2.				

Add. 3	**Course program for the second level (second cycle - postgraduate) of studies**			
1.	Course title	Experts in Teamwork (EiT)		
2.	Code	2SEE02		
3.	Study group(s)	SEE		
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	10
8.	Professor	Assoc. prof. dr. Dame Dimitrovski Assoc. prof. dr. Ana Frichand Ass. prof. dr. Igor Shesho		
9.	Prerequisites for enrolling the course	None		

10.	Course objectives (competences): Experts in Teamwork is a course in which students apply their academic competence in interdisciplinary project work to learn cooperative skills that can be transferred to the workplace. Relevant issues from society and working life form the basis for the project work, and the student teams should work together with external partners. The student team must adapt the project that the team members choose, to suit their combined competence and the theme of the group. Students develop teamwork skills by reflecting on and learning from specific cooperative situations in their project work. Reflections are shared by the team and are stimulated by facilitation, reflection writings, interaction exercises, and feedback to each other.			
11.	Course content: Students in EiT are divided into groups of students, and each group is divided into interdisciplinary teams of five to six students. Each group is headed by a professor, called the group supervisor. Each group has a broad overall academic theme related to societal issues or challenges from working life. This theme forms the basis for the student team's project work. The group may have external partners that represent the theme, and that may be advisers and recipients of the students' work. The desired combination of academic competencies in the group is specified as a guide to help students choose a group.			
12.	Study methods: team work on project assignments, selfrunning assignments			
13.	Total hours		10 ECTS x 30 hours = 300 hours	
14.	Hours allocation per activity:		45+45+45+45+120=300	
15.	Lectures/Lab	15.1.	Lectures	45 hours
		15.2.	Lab (student work)	45 hours
16.	Project Work/Assignments	16.1.	Project assignments	45 hours
		16.2.	Individual assignments	45 hours
		16.3.	Self-study	120 hours

17.	Points/Marks:		
	17.1.	Exams	40
	17.2.	Projects	50
	17.3.	Attendance	10

18.	Grading scale	Under 50	5 (five) (F)
		51 - 60 points	6 (six) (E)
		61 - 70 points	7 (seven) (D)
		71 - 80 points	8 (eight) (C)
		81 - 90 points	9 (nine) (B)
		91 - 100 points	10 (ten) (A)
19.	Prerequisites for taking the final exam	Activity 16.1 and 16.2	
20.	Language of Instruction	English	
21.	Course evaluation	Student questionnaire	

22. Textbooks

22.1 Instruction materials

No.	Author	Title	Publisher	Year
1.	Bjørn Sortland, http://www.ntnu.edu/eit	Course materials 2014, NTNU, Norway	NTNU	2014
2.				
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	Modern thermal power plants			
2.	Code	2SEE03			
3.	Study group(s)	SEE			
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.	Professor	Prof. dr. Done Tashevski			
9.	Prerequisites	None			
10.	Course objectives (competences): Profound knowledge of modern facilities that analyze, design, analysis and selection of advanced equipment, technical control, supervision and inspection during construction, exploitation and maintenance, environmental protection				
11.	Course content: Modernization of plants with increased energy efficiency; combined cycle cogeneration plants; plants with triple loop-three generation; plants MHDG; hydrogen as fuel; thermal balances; efficiency coefficient; equipment; economic and environmental aspects				
12.	Study methods:				
13.	Total hours	6 ECTS x 30 = 180 hours			
14.	Hours allocation per activity:	30+45+40+30+35= 180 hours			
15.	Lectures/Lab	15.1.	Lectures (15 week x 2)	30 hours	
		15.2.	Lab (student work)	45 hours	
16.	Project Work/Assignments	16.1.	Project assignments	40 hours	
		16.2.	Individual assignments	30 hours	
		16.3.	Self-study	35 hours	
17.	Points/Marks:				
	17.1.	Tests	50 points		
	17.2.	Projects	50 points		
	17.3.	Attendance	-		
18.	Grading scale	Under 50	5 (five) (F)		
		51 - 60 points	6 (six) (E)		
		61 - 70 points	7 (seven) (D)		
		71 - 80 points	8 (eight) (C)		
		81 - 90 points	9 (nine) (B)		
		91 - 100 points	10 (ten) (A)		
19.	Prerequisites for taking the final exam	Accomplished 16.1 and 16.2			
20.	Language	English			
21.	Course evaluation	Student questionnaire			
22.	Textbooks				

	Instruction materials				
	No.	Author	Title	Publisher	Year
22.1.	1.	L. Drbal et al.	Power Plant Engineering	Black&Veatch, Chapman&Haal, New York	1996
	2.	Klas Jonhagen:	,,Modern Thermal Power Plant-Aspects on Modelling and Evaluation"	Lund University	January, 2011, Sweden

	22.2.	Supplemental Instruction Materials				
		No.	Author	Title	Publisher	Year
		1.	B.W.Wilkinson, R.W.Barnes	Cogeneration of Electricity and Useful Heat	CRC Press, Inc, Boca Raton, Florida	

Add. 3	**Course program for the second level (second cycle - postgraduate) of studies**				
1.	Course title	Advanced thermodynamics - selected chapters			
2.	Code	2SEE04			
3.	Study group(s)	SEE			
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. d-r Risto Filkoski			
9.	Prerequisites for enrolling the course	None			
10.	Course objectives (competences): To obtain knowledge of the advanced topics in applied thermodynamics and heat transfer related to mechanical engineering, with emphasize to thermal power engineering and environmental protection. The course includes additional thermodynamics relations, including advanced thermodynamic cycles, two- and three-component systems and their applications. The course also covers advanced topics in conduction, convection and radiation heat transfer and related industrial applications. Advanced methods of modelling techniques of fluid flow, turbulence, combustion and heat transfer in engineering applications, with emphasize on numerical modelling. Engineering and scientific approach to the advanced techniques of modelling and simulation of thermal processes. Ability to create and use software applications for design, energy efficiency analysis and operating problems solution of steady-state and dynamic systems in the field of thermal and power engineering.				
11.	Course content: Thermodynamics of irreversible processes. Second law of the classical thermodynamics and irreversible processes. Entropy. Thermodynamic potentials, Helmholtz energy, Gibbs energy, chemical potential, Maxwell relations. Multi-phase systems, phase changes. Chemical equilibrium. Energy and exergy analysis of thermal engineering systems Real gases, Van der Waals equation of state of real gases, equation of corresponding states and other equations. Liquid state. Internal pressure, surface stress and capillary phenomenon. Third law of classical thermodynamics, extensivity, entropy.Flow of compressible fluids. Mixtures and mixing. Binary solutions. Thermodynamics of two- and three component systems. Thermo-mechanical transformations. Thermodynamic processes in thermal machines, facilities and plants. Advanced thermodynamic cycles. Thermodynamic efficiency of the processes, maximal work, maximal technical work - exergy, exergy balance, energy analysis, Grassmann diagram for exergy flow Mass and energy balance of combustion process. Kinetics and dynamics of the combustion process of solid, liquid and gaseous fuels. Heat transfer topics and efficiency. Theory of similarity. Heat transfer in different applications in power engineering and process industry. Selected chapters on fluid flow, turbulence, combustion and heat transfer processes. Computational fluid dynamics (CFD) and computational thermal analysis (CTA). The finite volume method. Discretisation of the governing equations and numerical solution. Numerical domain, object geometry, numerical grid and its evaluation. Modelling of flow processes with chemical reactions. Modelling of combustion. Modelling of heat transfer with CFD/CTA. Convection. Radiation energy transfer. Equation for radiation energy transfer. Modelling of thermal radiation heat transfer by different methods. Time-dependant flow modelling, modelling of transitional processes. CFD technique as a tool for modelling operation of burners, combustors, combustion chambers, boiler plants, industrial furnaces (ovens), other industrial facilities and devices. Modelling of the formation and reduction of air pollutants (CO, NO_x, SO_2, 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 hours = 180 hours	
14.	Hours allocation per activity:		30+30+35+15+60 = 180 hours	
15.	Lectures/Lab	15.1.	Lectures (15 week x 2)	30 hours
		15.2.	Lab (student work)	30 hours
16.	Project Work/Assignments	16.1.	Project assignments	35 hours
		16.2.	Individual assignments	15 hours
		16.3.	Self-study	60 hours

17.	Points/Marks:		
	17.1.	Exams	50 points
	17.2.	Projects	45 points
	17.3.	Attendance	5 points

18.	Grading scale	Under 50	5 (five) (F)
		51 - 60 points	6 (six) (E)
		61 - 70 points	7 (seven) (D)
		71 - 80 points	8 (eight) (C)
		81 - 90 points	9 (nine) (B)
		91 - 100 points	10 (ten) (A)
19.	Prerequisites for taking the final exam	Activities 15.2 and 16.1	
20.	Language	English	
21.	Course evaluation	Student questionnaire	

22. Textbooks

22.1 Instruction materials

No.	Author	Title	Publisher	Year
1.	K. Annamalai, I. K. Puri, M. A. Jog,	Advanced Thermodynamics Engineering	CRC Press, 2nd edition	2011
2.	I. D. Holclajtner Antunovic	General course of physical chemistry	ZUNS, University in Belgrade	2000
3.	Baukal C.E. et al.	CFD in Industrial Combustion	CRC Press	2001

22.2 Supplemental Instruction Materials

No.	Author	Title	Publisher	Year
1.	Baukal C.E. et al.	Heat Transfer in Industrial Combustion	CRC Press	2000
2.	Filkoski R.	Modelling of energy conversion processes	Faculty of Mechanical Eng., Skopje	2011
3.	Petrovski K.	Termodinamics, 3rd edition		1999

Add. 3	**Course program for the second level (second cycle - postgraduate) of studies**	
1.	Course title	Transport and the environment
2.	Code	2SEE05
3.	Study group(s)	SEE
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		Assoc. prof. d-r Dame Dimitrovski			
9.	Prerequisites for enrolling the course		None			
10.	Course objectives (competences): Analytical approach to combustion in IC engines, modeling IC engines and technologies for reduction of exhaust emissions. Calculation of real cycles, measuring performance and pollution.					
11.	Course content: Learning the real processes in IC engines, forming pollutants in the chamber of the engine, pollutant behavior after combustion, technologies for pollution reduction in vehicles 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 (15week 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
	17.2.	Projects				45
	17.3.	Attendance				5
18.	Grading scale		Under 50			5 (five) (F)
			51 - 60 points			6 (six) (E)
			61 - 70 points			7 (seven) (D)
			71 - 80 points			8 (eight) (C)
			81 - 90 points			9 (nine) (B)
			91 - 100 points			10 (ten) (A)
19.	Prerequisites for taking the final exam		Presented projects			
20.	Language of Instruction		English			
21.	Course evaluation		Student questionnaire			
22.	Textbooks					

22.1	Instruction materials				
	No.	Author	Title	Publisher	Year
	1.	Mile Dimitrovski, Dame Dimitrovski	ECOGAS software	Internal issue	2010
	2.	Jeremy Colls	Air polution	ISBN 0203-4762-6	2007
22.2	Supplemental Instruction Materials				
	No.	Author	Title	Publisher	Year
	1.	Handbook of Air Pollution from Internal Combustion Engines: Pollutant Formation and Control	Eran Sher	Academic Press	1998
	2.	Transport and the environment	R. E. Hester, R. M. Harrison	RS.C advanced chenical science	2006

Add. 3	**Course program for the second level (second cycle - postgraduate) of studies**					
1.	Course title	Fluid Mechanics in Environmental Engineering				
2.	Code	2SEE06				
3.	Study group(s)	SEE				
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.	Professor(s)	Prof. dr. Valentino Stojkovski Prof. dr. Zoran Markov				
9.	Prerequisites	None				
10.	Course objectives (competences): Learn how to analyze fluid flows in environmental engineering, Simulate flows and investigate turbulence and boundary layer problems					
11.	Course content: Concepts of fluid properties, viscous flow analysis, turbulence, boundary layers, computational fluid dynamics					
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 + 15 + 40 + 30 + 65 = 180 hours				
15.	Lectures/Lab	15.1.	Lectures (15weeks x 2)	30 hours		
		15.2.	Lab (student work)	15 hours		
16.	Project Work/Assignments	16.1.	Project assignments	40 hours		
		16.2.	Individual assignments	30 hours		
		16.3.	Self-study	65 hours		
17.	Points/Marks:					
	17.1.	Exams	40			
	17.2.	Projects	50			
	17.3.	Attendance	10			
18.	Grading scale	Under 50	5 (five) (F)			
		51 - 60 points	6 (six) (E)			
		61 - 70 points	7 (seven) (D)			
		71 - 80 points	8 (eight) (C)			
		81 - 90 points	9 (nine) (B)			
		91 - 100 points	10 (ten) (A)			
19.	Prerequisites for taking the final exam	Activity 16.1				
20.	Language	English				
21.	Course evaluation	Student questionnaire				
22.	Textbooks					

22.1. Instruction materials

No.	Author	Title	Publisher	Year
1.	Rubin H., Atkinson J.	Environmental Fluid Mechanics	Marcel Dekker Inc.	2001
2.	Hirsch C.	Numerical Computation of Internal and External Flows: The Fundamentals of Computational Fluid Dynamics	Butterworth-Heinemann	2007

22.2. Supplemental Instruction Materials

No.	Author	Title	Publisher	Year
1.	White F. M.	Fluid Mechanics	Mc-Graw Hill	2008

Add. 3	**Course program for the second level (second cycle - postgraduate) of studies**					
1.	Course title	Environmental Measurement methods and Monitoring Systems				
2.	Code	2SEE07				
3.	Study group(s)	SEE				
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.	Professor(s)	Prof. dr. Valentino Stojkovski Assoc. prof dr. Darko Babunski				
9.	Prerequisites	None				
10.	Course objectives (competences): Learn to implement of the dimensional analysis and theory of similarity, to implement of the measurement instrumentation, accuracy of measurements, presentation of the results, Methods and instrumentation for the pressure, flow direction and velocity, discharge, temperature, movement, force and power. Data acquisition hardware & software systems in environmental engineering Software packages for monitoring and control of environmental engineering processes.					
11.	Course content: Implementation dimensional analysis. Implementation the theory of similarity. Implementation of the measurement instrumentation. Accuracy of the measurements and presentation of the results. Pressure measurement. Measurement of the fluid flow direction and flow velocity. Discharge measurement. Temperature measurement. Measurement of concentration and particle size distribution of granular materials, force and power. Analysis of the advantages and disadvantages of continuous environmental monitoring. Comparison of sensors and instruments for continuous monitoring and field measurement. Analysis of the systems for continuous monitoring and control of environmental pollution. Monitoring of municipal and industrial wastewater. Measurement data analysis and techniques. Automatic monitoring stations for municipal and industrial wastewater. Air monitoring: air pollution monitoring and testing equipment, ambient air monitoring, and automatic air pollution monitoring systems.					
12.	Study methods: lectures, lab, project assignments, individual assignments, self-study.					
13.	Total hours	6 ECTS x 30 = 180 hours				
14.	Hours allocation per activity:	30+15+40+30+65= 180 hours				
15.	Lectures/Lab	15.1.	Lectures (15 weeks x 2)	30 hours		
		15.2.	Lab (student work)	15 hours		
16.	Project Work/Assignments	16.1.	Project assignments	40 hours		
		16.2.	Individual assignments	30 hours		
		16.3.	Self-study	65 hours		
17.	Points/Marks:					
	17.1.	Exams	40			
	17.2.	Projects	50			
	17.3.	Attendance	10			
18.	Grading scale	Under 50	5 (five) (F)			
		51 - 60 points	6 (six) (E)			
		61 - 70 points	7 (seven) (D)			
		71 - 80 points	8 (eight) (C)			
		81 - 90 points	9 (nine) (B)			
		91 - 100 points	10 (ten) (A)			
19.	Prerequisites for taking the final exam	Activity 16.1				

20.	Language			English	
21.	Course evaluation			Student questionnaire	
22.	Textbooks				
	22.1.	Instruction materials			
		No.	Author	Title	Publisher	Year
		1.	Randy D. Down, Jay H. Lehr	Environmental Instrumentation and Analysis Handbook	Wiley Interscience, Hoboken, NJ	2005
		2.	Doebelin E. O.:	Measurement Systems - Application and Design	McGraw-Hill, NY	2002
		3.	F. R. Bourden, D. Donnert, T. Godish, I. McKelvie	Environmental Monitoring Handbook	McGraw Hill	2004
	22.2.	Supplemental Instruction Materials			
		No.	Author	Title	Publisher	Year
		1.	G. Bruce Wiersma	Environmental Monitoring	CRC Press	2004
		2.	Janick Artiola, Ian Pepper, Mark Brusseau	Environmental Monitoring and Characterization	Elsevier Academic Press	2004

Add. 3	**Course program for the second level (second cycle - postgraduate) of studies**				
1.	Course title	Environmental Systems Analysis			
2.	Code	2SEE08			
3.	Study group(s)	SEE			
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.	Professor	Prof. dr. Atanasko Tuneski			
9.	Prerequisites	None			
10.	Course objectives (competences): Acquire knowledge of: - Eleven environmental systems analysis tools: environmental impact assessment (EIA), strategic environmental assessment (SEA), life cycle assessment (LCA), positional analysis (PA), cost-benefit analysis (CBA), material intensity per unit service (MIPS) analysis, total material requirement (TMR) analysis, ecological footprint (EF), exergy analysis, emergy analysis and risk assessment (RA) for chemicals. - Case study where different environmental systems analysis tools are implemented.				
11.	Course content: DESCRIPTION OF THE ENVIRONMENTAL SYSTEMS ANALYSIS TOOLS. Selecting questions and tools. Environmental Impact Assessment (EIA). Strategic Environmental Assessment (SEA).Life Cycle Assessment (LCA). Positional Analysis (PA). Cost-Benefit Analysis (CBA).Material Intensity per Unit Service (MIPS). Total Material Requirement (TMR). Ecological Footprint (EF).Exergy analysis. Emergy analysis. Risk Assessment (RA) CASE STUDY. Introduction to the case study. Inventory data .Environmental systems analysis (Choice of tools,LCA calculations.MIPS calculations.Ecological footprint calculations. Exergy calculations. Discussion of the case study results DISCUSSION AND CONCLUSION. Natural resource use. Environmental impacts.Natural resource use				

	and environmental impacts.Usability. Integration .Conclusions				
12.	Study methods: lectures, lab, project assignments, individual assignments, self-study.				
13.	Total hours		6 ECTS x 30 = 180 hours		
14.	Hours allocation per activity:		30 + 15 + 40 + 30 + 65 = 180 hours		
15.	Lectures/Lab	15.1.	Lectures (15 weeks x 2)		30 hours
		15.2.	Lab (student work)		15 hours
16.	Project Work/Assignments	16.1.	Project assignments		40 hours
		16.2.	Individual assignments		30 hours
		16.3.	Self-study		65 hours
17.	Points/Marks:				
	17.1.	Exams			40
	17.2.	Projects			50
	17.3.	Attendance			10
18.	Grading scale		Under 50		5 (five) (F)
			51 - 60 points		6 (six) (E)
			61 - 70 points		7 (seven) (D)
			71 - 80 points		8 (eight) (C)
			81 - 90 points		9 (nine) (B)
			91 - 100 points		10 (ten) (A)
19.	Prerequisites for taking the final exam		Activity 16.1		
20.	Language		English		
21.	Course evaluation		Student questionnaire		
22.	Textbooks				

22.1 Instruction materials

No.	Author	Title	Publisher	Year
1.	Charles H. Eclleston	Environmental Impact Assessment: A Guide to Best Professional Practices	CRC Press	2011
2.	John Glasson, Riki Therivel, Andrew Chadwick	Introduction To Environmental Impact Assessment (Natural and Built Environment Series)	Routledge	2012
3.	Walter Klopffer, Birgit Grahl	Life Cycle Assessment (LCA)	Wiley-VCH	2014

22.2 Supplemental Instruction Materials

No.	Author	Title	Publisher	Year
1.	Glasson J., Therivel R. and Chadwick A.	Introduction to Environmental Impact Assessment. Principles and procedures, process, practice and prospects.	The Natural and Built Environment Series. T.J. International Ltd, Padstow, UK	1999
2.	Odum, H.T.	Environmental Accounting - Emergy and environmental decision making	John Wiley & Sons, Inc., New York.	1996

Add. 3	**Course program for the second level (second cycle - postgraduate) of studies**				
1.	Course title	An Introduction to Eco-innovation			
2.	Code	2SEE09			
3.	Study group(s)	SEE			
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. dr Atanas Kochov			
9.	Prerequisites for enrolling the course	None			
10.	Course objectives (competences): This course will contribute toward retains the invaluable core message that eco-innovation and technologies which will contribute toward the sustainable development, have become central to debates about environment and economic development. Containing a substantial number of new boxed case studies, learning outcomes, chapter summaries, discussion questions, further reading and websites, studying and analyzing models of clean technologies, resource efficiency, business models for implementation, this course will provide an essential introduction for students and their competences for developing projects and case studies for sustainable development.				
11.	Course content: This course places stronger emphasis on the global challenges of eco-innovation, clean technologies, resource efficiency and proper usage of resources. The models and tools for eco-innovation approach, business models that should apply will be presented. The course provoke students toward new consideration to the challenge of achieving sustainable development by introducing eco-innovation technologies in to the production processes, and contribute toward the lower carbon growth, climate adaptation and development of rapidly expanding economies.				
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 - 60 points	6 (six) (E)		
		61 - 70 points	7 (seven) (D)		
		71 - 80 points	8 (eight) (C)		
		81 - 90 points	9 (nine) (B)		
		91 - 100 points	10 (ten) (A)		
19.	Prerequisites for taking the final exam	Seminar work delivered and approved			
20.	Language	English			
21.	Course evaluation	Student questionnaire			
22.	Textbooks				
	22.1	Instruction materials			

		No.	Author	Title	Publisher	Year
		1.	Sperber B.	Environmental Sound Technologies for Sustainable Development	Springer-Verlag	2008
		2.	Luken R., Rompaey F.	Environment and Industry in Developing Countries: Assessing the Adoption of Environmentally Sound Technology	Unido Press	2007
		3.	Hermiosilla J., Gonzales P.	Eco-innovation: Sustainability and Competitiveness	MacMillan Bubl.	2009
	22.2	Supplemental Instruction Materials				
		No.	Author	Title	Publisher	Year
		1.	David R. Godschalk	Sustainable Development Projects: Integrating Design, Development, and Regulation	APA Planners Press;	1 edition (April 7, 2014)

Add. 3	**Course program for the first, second and third level (cycle) of studies**				
1.	Course title	Non-conventional power plants			
2.	Code	2SEE10			
3.	Study group(s)	SEE			
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 / Summer	7.	ECTS credits	6
8.	Professor	Ass. prof. Igor Shesho			
9.	Prerequisites	None			
10.	Course objectives (competences): Profound knowledge about unconventional - modern plants to analyze, design, analysis and selection of advanced equipment, technical control, supervision and inspection during construction, exploitation and maintenance, environmental protection				
11.	Course content: Introducing the unconventional modern plants for electricity (solar, geothermal, biomass, solid municipal waste); gaseous fuel plants: thermal cycling: heat balance and heat processes: efficiency coefficient: Equipment: economic and environmental aspects				
12.	Study methods:				
13.	Total hours	6 ECTS x 30 hours = 180 hours			
14.	Hours allocation per activity:	30+45+40+30+35 = 180 hours			
15.	Lectures/Lab	15.1.	Lectures (15 weeks x 2)	30 hours	
		15.2.	Lab (student work)	45 hours	
16.	Project Work/Assignments	16.1.	Project assignments	40 hours	
		16.2.	Individual assignments	30 hours	
		16.3.	Self study	35 hours	
17.	Points/Marks:				
	17.1.	Tests	50 points		
	17.2.	Projects	50 points		
	17.3.	Attendance			

18.	Grading scale			Under 50		5 (five) (F)
				51 - 60 points		6 (six) (E)
				61 - 70 points		7 (seven) (D)
				71 - 80 points		8 (eight) (C)
				81 - 90 points		9 (nine) (B)
				91 - 100 points		10 (ten) (A)
19.	Prerequisites for taking the final exam			Accomplished 16.1 and 16.2		
20.	Language			English		
21.	Course evaluation			Student questionnaire		
22.	Textbooks					
	22.1.	No.	Author	Title	Publisher	Year
		1.	B.W.Wilkinson, R.W.Barnes	Cogeneration of Electricity and Useful Heat”	CRC Press, Inc, Boca Raton, Florida	
	22.2.	Supplemental Instruction Materials				
		No.	Author	Title	Publisher	Year
		1.	P.K.Nag	"Power Plant Engineering", Third Edition	Tata McGray-Hill Publishing Company Limited, New Delhi	2008

Add. 3	**Course program for the second level (second cycle - postgraduate) of studies**				
1.	Course title	Water and Waste Water Treatment			
2.	Code	2SEE11			
3.	Study group(s)	SEE			
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 / summer	7.	ECTS credits	6
8.	Professor	Prof. dr. Zoran Markov			
9.	Prerequisites	None			
10.	Course objectives (competences): Learn how to water treatment works, operation in municipal and industrial treatment plant				
11.	Course content: Water treatment technologies, water quality parameters, waste water treatment, activated sludge processes, water quality laws and regulations				
12.	Study methods: lectures, lab, project assignments, individual assignments, self-study.				
13.	Total hours	6 ECTS x 30 = 180 hours			
14.	Hours allocation per activity:	30 + 15 + 40 + 30 + 65 = 180 hours			
15.	Lectures/Lab	15.1.	Lectures (15 weeks x 2)		30 hours
		15.2.	Lab (student work)		15 hours
16.	Project Work/Assignments	16.1.	Project assignments		40 hours
		16.2.	Individual assignments		30 hours
		16.3.	Self-study		65 hours
17.	Points/Marks:				
	17.1.	Exams			40
	17.2.	Projects			50
	17.3.	Attendance			10
18.	Grading scale	Under 50			5 (five) (F)
		51 - 60 points			6 (six) (E)
		61 - 70 points			7 (seven) (D)

		71 - 80 points	8 (eight) (C)
		81 - 90 points	9 (nine) (B)
		91 - 100 points	10 (ten) (A)
19.	Prerequisites for taking the final exam	Activity 16.1	
20.	Language	English	
21.	Course evaluation	Student questionnaire	

22. Textbooks

22.1. Instruction materials

No.	Author	Title	Publisher	Year
1.	Lee C.C.	Handbook of Environmental Engineering Calculations	Mc-Graw Hill	2007
2.	Kemer F.N.	The Nalco Water Handbook	Mc-Graw Hill	

22.2. Supplemental Instruction Materials

No.	Author	Title	Publisher	Year
1.	WEF Manual of Practice No. FD-3	Industrial waste water managment, treatment and disposal	WEF Press	2008

Add. 3	**Course program for the second level (second cycle - postgraduate) of studies**				
1.	Course title	Energy efficiency			
2.	Code	2SEE12			
3.	Study group(s)	SEE			
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.	Professor	Prof. dr. Done Tashevski			
9.	Prerequisites	None			
10.	Course objectives (competences): Candidates are competent for analysis, modeling, optimization and implementation of different systems for energy efficiency in different areas such as buildings, industry, agriculture and forestry, and transport with introducing a complete energy management in these areas.				
11.	Course content: Methods for analyzing modern systems for energy efficiency. Introdusing the existing models for the calculation of processes and systems for energy efficiency. Ways for optimization and selection of parameters in which optimizes the system in order to meet the energy efficiency criteria. Implementation of analyzed, modeled and optimized systems to specific examples.				
12.	Study methods: lectures, lab, project assignments, individual assignments, self-study.				
13.	Total hours	6 ECTS x 30 = 180 hours			
14.	Hours allocation per activity:	30 + 15 + 40 + 30 + 65 = 180 hours			
15.	Lectures/Lab	15.1.	Lectures (15 weeks x 2)	30 hours	
		15.2.	Lab (student work)	15 hours	
16.	Project Work/Assignments	16.1.	Project assignments	40 hours	
		16.2.	Individual assignments	30 hours	

		16.3.	Self-study	65 hours

17.	Points/Marks:		
	17.1.	Exams	40
	17.2.	Projects	50
	17.3.	Attendance	10

18.	Grading scale	Under 50	5 (five) (F)
		51 - 60 points	6 (six) (E)
		61 - 70 points	7 (seven) (D)
		71 - 80 points	8 (eight) (C)
		81 - 90 points	9 (nine) (B)
		91 - 100 points	10 (ten) (A)

19.	Prerequisites for taking the final exam	Activity 16.1
20.	Language	English
21.	Course evaluation	Student questionnaire

22. Textbooks

22.1 Instruction materials

No.	Author	Title	Publisher	Year
1.	D. Tashevski	Energy efficiency	Selected lectures and handouts	2014
2.	D.R. Wulfinghoff	Energy efficiency	Energy institute press	1999
3.	P. Bertoldi	Energy efficiency	Springer	2007

22.2 Supplemental Instruction Materials

No.	Author	Title	Publisher	Year
1.	D.R. Wulfinghoff	Energy Efficiency Manual	Energy institute press	2000

Add. 3	**Course program for the second level (second cycle - postgraduate) of studies**				
1.	Course title	Eco-engines			
2.	Code	2SEE13			
3.	Study group(s)	SEE			
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	Assoc. prof. d-r Dame Dimitrovski			
9.	Prerequisites for enrolling the course	None			
10.	Course objectives (competences): Analytical approach to combustion in IC engines improving performances of engines, measuring in engines. Understanding hybrid technologies, alternative fuels for IC engines end characteristics.				
11.	Course content: Learning the contemporary models of eco engines, hybrid motor system, engines on gaseous fuels, bio fuels and new fuels. Interaction between engine construction and alternative fuels.				
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
		15.2.	Lab (student work)		30
16.	Project Work/Assignments	16.1.	Project assignments		30

		16.2.	Individual assignments	30
		16.3.	Self-study	60

17.	Points/Marks:		
	17.1.	Exams	50
	17.2.	Projects	45
	17.3.	Attendance	5

18.	Grading scale	Under 50	5 (five) (F)
		51 - 60 points	6 (six) (E)
		61 - 70 points	7 (seven) (D)
		71 - 80 points	8 (eight) (C)
		81 - 90 points	9 (nine) (B)
		91 - 100 points	10 (ten) (A)

19.	Prerequisites for taking the final exam	Presented projects
20.	Language	English
21.	Course evaluation	Student questionnaire

22. Textbooks

22.1 Instruction materials

No.	Author	Title	Publisher	Year
1.	Mile Dimitrovski	ECO Engines	Internal issue	2008
2.	Handbook of Air Pollution from Internal Combustion Engines: Pollutant Formation and Control	Eran Sher	Academic Press	1998
3.	Transport and the environment	R. E. Hester, R. M. Harrison	RS.C advanced chenical science	2006

22.2 Supplemental Instruction Materials

No.	Author	Title	Publisher	Year
1.	The biodiesel handbook	Van Gerpen, Knothe and others	AOCS Press, Illinois	2005

Add. 3	**Course program for the second level (second cycle - postgraduate) of studies**			
1.	Course title	Design of fluid conveying and hydro power system		
2.	Code	2SEE14		
3.	Study group(s)	SEE		
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 / summer	7. ECTS credits	6
8.	Professor(s)	Prof. dr. Valentino Stojkovski Prof. dr. Zoran Markov		
9.	Prerequisites	None		
10.	Course objectives (competences): Introduction to systems for hydraulic and pneumatic convey of fluids. Developing mathematical models for hydraulic calculation of the systems and their components. Introduction to systems for hydro power. Developing mathematical models for hydraulic calculation of the systems and their components. □			
11.	Course content: Physical properties of fluids, water, oil, gas and mixtures of fluid - solid particles. Hydraulic and Pneumatic Conveying: calculation, devices and equipment, Hydro power systems: pump stations and hydro power plants: calculation, devices and equipment			

	Techno-economical calculation and economic parameterisation			
12.	Study methods: lectures, lab, project assignments, individual assignments, self-study.			
13.	Total hours		6 ECTS x 30 = 180 hours	
14.	Hours allocation per activity:		30 + 15 + 40 + 30 + 65 = 180 hours	
15.	Lectures/Lab	15.1.	Lectures (15 weeks x 2)	30 hours
		15.2.	Lab (student work)	15 hours
16.	Project Work/Assignments	16.1.	Project assignments	40 hours
		16.2.	Individual assignments	30 hours
		16.3.	Self-study	65 hours

17.	Points/Marks:		
	17.1.	Exams	40
	17.2.	Projects	50
	17.3.	Attendance	10

18.	Grading scale	Under 50	5 (five) (F)
		51 - 60 points	6 (six) (E)
		61 - 70 points	7 (seven) (D)
		71 - 80 points	8 (eight) (C)
		81 - 90 points	9 (nine) (B)
		91 - 100 points	10 (ten) (A)
19.	Prerequisites for taking the final exam	Activity 16.1	
20.	Language	English	
21.	Course evaluation	Student questionnaire	

22. Textbooks

22.1 Instruction materials

No.	Author	Title	Publisher	Year
1.	Speight J.G.	Natural Gas – A Basic Handbook	Gulf Publishing Company, Houston	2007
2.	Oneil A. Williams	Pneumatic and Hydraulic Conveying of Solids	CRC Press	1983
3.	G.I.Krivcenko	Hydraulic machines-turbiner and pumps	Lewis publisher	1994

22.2 Supplemental Instruction Materials

No.	Author	Title	Publisher	Year
1.	Wang X., Economides M.	Advanced Natural Gas Engineering	Gulf Publishing Company, Houston, Texas	2009
2.	David Mills,	Pneumatic Conveying Design Guide	ELSEVIER	2004
3.	Frank Yeaple	Fluid Power Design Handbook	CRC Press	1995

Add. 3	**Course program for the second level (second cycle - postgraduate) of studies**	
1.	Course title	Waste management
2.	Code	2SEE15
3.	Study group(s)	SEE
4.	The organizer of the study program (unit,	“Ss. Cyril and Methodius” University in Skopje,

	institute, department)		Faculty of Mechanical Engineering - Skopje			
5.	Level (first, second, third degree)		Second			
6.	Academic year / semester		I / summer	7.	ECTS credits	6
8.	Professor		Assoc. prof. d-r Dame Dimitrovski			
9.	Prerequisites for enrolling the course		None			
10.	Course objectives (competences): Able to organize and run efficient (environmental, energy and economically) system for waste management in industry. Understanding the chain of actions for waste management system of a product or a solution for the industry or community. Understanding the applicable technologies for reducing waste, reusing waste or turning waste in to a raw material for further processes.					
11.	Course content: Exploring technical models, equipment and units, regulations for efficient waste management. Systems for waste management in communities and industry. Cain of actions in waste management. Examples for waste reduction. Examples for reusing waste, turning waste in to energy 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 + 15 + 45 + 45 + 45=180 hours			
15.	Lectures/Lab	15.1.	Lectures (15 weeks x 2)			30
		15.2.	Lab (student work)			15
16.	Project Work/Assignments	16.1.	Project assignments			45
		16.2.	Individual assignments			45
		16.3.	Self-study			45
17.	Points/Marks:					
	17.1.	Exams				30
	17.2.	Projects				60
	17.3.	Attendance				10
18.	Grading scale		Under 50			5 (five) (F)
			51 - 60 points			6 (six) (E)
			61 - 70 points			7 (seven) (D)
			71 - 80 points			8 (eight) (C)
			81 - 90 points			9 (nine) (B)
			91 - 100 points			10 (ten) (A)
19.	Prerequisites for taking the final exam		Presented projects			
20.	Language		English			
21.	Course evaluation		Student questionnaire			
22.	Textbooks					

22.1 Instruction materials

No.	Author	Title	Publisher	Year
1.	European commission	Waste management options	EC	2001
2.	Nicholas P. Chermisinoff	Handbook of solid waste management and waste minimization technologies	Butterworth Heinemann	2003

22.2 Supplemental Instruction Materials

No.	Author	Title	Publisher	Year
1.	George Tchobanoglous, Frank Kraith	Handbook of solid waste management	McGraw Hill	2002

Add. 3	**Course program for the second level (second cycle - postgraduate) of studies**					
1.	Course title	Energy vs. Sustainable Development: Concepts and Aspects				
2.	Code	2SEE16				
3.	Study group(s)	SEE				
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	Assoc. prof. dr. Ana M. Lazarevska				
9.	Prerequisites for enrolling the course	None				
10.	Course objectives (competences): Introduction to the sustainability concept and aspects implemented on energy systems, both on the demand and the supply side.					
11.	Course content: Introduction to the concept of Sustainable Development (SD), Indicators of SD Implementing the SD concept to energy systems. Modeling and assessment.					
12.	Study methods: Interactive lectures, guest lecturers, auditory practice, work on project assignments/case studies (team work), selfrunning assignments					
13.	Total hours	6 ECTS x 30 = 180 hours				
14.	Hours allocation per activity:	30 +15 +40 + 30 + 65 =180 hours				
15.	Lectures/Lab	15.1.	Lectures (15 weeks x 2)	30		
		15.2.	Lab (student work)	15		
16.	Project Work/Assignments	16.1.	Project assignments	40		
		16.2.	Individual assignments	30		
		16.3.	Self-study	65		
17.	Points/Marks:					
	17.1.	Exams	40			
	17.2.	Projects	50			
	17.3.	Attendance	10			
18.	Grading scale	Under 50	5 (five) (F)			
		51 - 60 points	6 (six) (E)			
		61 - 70 points	7 (seven) (D)			
		71 - 80 points	8 (eight) (C)			
		81 - 90 points	9 (nine) (B)			
		91 - 100 points	10 (ten) (A)			
19.	Prerequisites for taking the final exam	Completed activity 15.2, 16.1. and 16.2 (17.2 & 17.3)				
20.	Language of Instruction	English				
21.	Course evaluation	Student questionnaire				
22.	Textbooks					

22.1 Instruction materials

No.	Author	Title	Publisher	Year
1.	S. Bell, S. Morse	Sustainability Indicators: Measuring the immeasurable	EarthScan Publications. Ltd.	2000
2.	T.E. Graedel, B. R. Allenby	Industrial Ecology	Pearson Education Inc.	2003

22.2 Supplemental Instruction Materials

No.	Author	Title	Publisher	Year
1.	UN CSD	Sustainable Development Knowledge platform	UN	

		2	Organisation of Economic Co–operation and Development (OECD)	"Core Set of Indicators for Environmental Performance Reviews". A synthesis report by the Group on the State of the Environment.	Paris: 39	1993
		3	Golay, M., Field, R., Green, Jr. W., Wright, J.C.	Introduction to Sustainable Energy (Online open course-materials)	MIT (http://ocw.mit.edu/courses/nuclear-engineering/22-081j-introduction-to-sustainable-energy-fall-2010/)	2010
		4	D. A. Vallero, P. A. Vesilind	Socially Responsible Engineering: Justice in Risk Management	John Wiley & Sons Inc.,	2007

Add. 3	**Course program for the second level (second cycle - postgraduate) of studies**				
1.	Course title	Automation of environmental processes			
2.	Code	2SEE17			
3.	Study group(s)	SEE			
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 / summer	7.	ECTS credits	6
8.	Professor(s)	Assoc. prof. dr. Emil Zaev Assoc. prof. dr. Darko Babunski			
9.	Prerequisites	None			
10.	Course objectives (competences): Acquire knowledge of: Analysis and design of automation systems for river monitoring and water and wastewater treatment processes. Acquire programming skills in the Matlab platform. Analysis, design and implementation of SCADA systems – Supervisory Control and Data Acquisition and Programmable Logic Controllers (PLC). Functionality and characteristics of environmental measurement systems to monitor and control environmental processes;				
11.	Course content: Introduction to the most commonly used types of control algorithms (sequential, continuous, On-Off and Feedforward control, feedback (P, PI and PID Control) Advanced control algorithms: adaptive, nonlinear, model control) - Examples of implementation of control algorithms in facilities for treatment of drinking water (Basic plant model: Control of pumps, coagulation dosing, pH, purification and sedimentation, filtration and chlorination) plants for wastewater treatment (Control of dissolved oxygen, depth of the sludge refiner) and general control algorithms in the plant, - Control system architecture. Supervisory Control and Data Acquisition (SCADA) and DCS systems (Introduction, SCADA / DCS software, hardware management system (PLC, RTU, Networks), OPC), - Programming and configure the Programmable Logic Controllers (PLC) control subsystem (PLC programming) - Basic instrumentation (instrumentation for measuring flow, temperature, level, pressure and analytical instrumentation).				
12.	Study methods: lectures, lab, project assignments, individual assignments, self-study.				
13.	Total hours	6 ECTS x 30 = 180 hours			
14.	Hours allocation per activity:	30 + 15 + 40 + 30 + 65 = 180 hours			
15.	Lectures/Lab	15.1.	Lectures (15 weeks x 2)	30 hours	
		15.2.	Lab (student work)	15 hours	
16.	Project Work/Assignments	16.1.	Project assignments	40 hours	

		16.2.	Individual assignments	30 hours
		16.3.	Self-study	65 hours

17.	Points/Marks:		
	17.1.	Exams	40
	17.2.	Projects	50
	17.3.	Attendance	10

18.	Grading scale	Under 50	5 (five) (F)
		51 - 60 points	6 (six) (E)
		61 - 70 points	7 (seven) (D)
		71 - 80 points	8 (eight) (C)
		81 - 90 points	9 (nine) (B)
		91 - 100 points	10 (ten) (A)

19.	Prerequisites for taking the final exam	Activity 16.1
20.	Language	English
21.	Course evaluation	Student questionnaire
22.	Textbooks	

22.1 Instruction materials

No.	Author	Title	Publisher	Year
1.	AWWA	Water treatment plant design	McGraw-Hill	1990
2.	G. Tchobanoblous	Wastewater Engineering Treatment and Reuse	McGraw-Hill	2003
3.	M.L. Davis	Water and Wastewater Engineering	McGraw Hill	2010.

22.2 Supplemental Instruction Materials

No.	Author	Title	Publisher	Year
1.	S.A.Boyer	SCADA: Supervisory Control and Data Acquisition	ISA - The Instrumentation, Systems, and Automation Society	1999
2.	W. Bolton	Programmable Logic Controllers	Elsevier	2009

Add. 3	**Course program for the second level (second cycle - postgraduate) of studies**			
1.	Course title	Clean fossil and alternative fuels energy		
2.	Code	2SEE18		
3.	Study group(s)	SEE		
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. dr. Risto Filkoski		
9.	Prerequisites for enrolling the course	None		
10.	Course objectives (competences): Acquiring knowledge about the methods and techniques for efficient utilisation of fossil and alternative fuels. Acquiring knowledge regarding energy technologies for environmental protection that apply to			

	combustion plants. Analysis, calculation and optimal performance of combustion systems. Modelling and simulation techniques of aerodynamics, combustion and heat transfer in thermal energy systems (boilers, combustors, furnaces, heat exchangers etc.).				
11.	Course content: Properties of fossil and alternative fuels. Energy transformations of fuels: combustion, pyrolysis, gasification, liquefaction. Mass and energy balance of combustion process. Kinetics and dynamics of fuels combustion. Processing and handling of solid fuels. Methods and techniques for combustion of solid fuels, examples of application. Processing and handling of liquid and gaseous fuels. Methods and techniques for combustion of solid fuels, examples of application. Environmental considerations. Classification of pollutants, sources of plant emissions and discharges. Air pollution control. Techniques for reduction of solid particles emission. Thermodynamics and kinetics of SO_2 formation. Methods and techniques for SO_2 emission reduction. Thermodynamics and kinetics of NO_x formation. Methods and techniques for NO_x emission reduction. Methods and techniques for combined deSO_2/deNO_x. Methods for CO emission reduction. Greenhouse gases emission. Methods and techniques for reduction of GHG emission. Modelling, simulation and optimisation techniques of burners, combustion chambers, boiler plants, furnaces, thermal energy facilities. Modelling of the pollutants formation and reduction.				
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 hours = 180 hours		
14.	Hours allocation per activity:		30+ 30 + 40 + 30 + 50 = 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	40 hours	
		16.2.	Individual assignments	30 hours	
		16.3.	Self-study	50 hours	
17.	Points/Marks:				
	17.1.	Exams	50 points		
	17.2.	Projects	45 points		
	17.3.	Attendance	5 points		
18.	Grading scale	Under 50	5 (five) (F)		
		51 - 60 points	6 (six) (E)		
		61 - 70 points	7 (seven) (D)		
		71 - 80 points	8 (eight) (C)		
		81 - 90 points	9 (nine) (B)		
		91 - 100 points	10 (ten) (A)		
19.	Prerequisites for taking the final exam	Activities 15.2 and 16.1			
20.	Language	English			
21.	Course evaluation	Student questionnaire			
22.	Textbooks				
	22.1	Instruction materials			
		No.	Author	Title	Publisher	Year
		1.	Edited by J.B. Kitto and S.C. Stultz	Steam, It's generation and use, Ed. 41	The Babcock & Wilcox Compaany	2005
		2.	Baukal C.E. et al.	CFD in Industrial Combustion	CRC Press	2001

		3.	Group of authors	IPPC, Ref. Document on BAT for Large Combustion Plants	European Commission, Seville	2006
	22.2	Supplemental Instruction Materials				
		No.	Author	Title	Publisher	Year
		1.	Warner, Davis and Wark	Air Pollution: Its Origin and Control, 3rd Edition	Addison-Wesley-Longman	2003
		2.	Petrovski I. J.	Steam Boilers, 2nd ed.	UKIM	2009
		3.	Baukal C.E. et al.	Heat Transfer in Industrial Combustion	CRC Press	2000

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 Sustainable Energy and Environment study programme:

1. Professor Dusan Chakmakov, PhD
2. Professor Atanasko Tuneski, PhD
3. Professor Aleksa Malcheski, PhD
4. Professor Valentino Stojkovski, PhD
5. Professor Nikola Tuneski, PhD
6. Professor Atanas Kochov, PhD
7. Professor Done Tashevski, PhD
8. Professor Risto Filkoski, PhD
9. Professor Zoran Markov, PhD
10. Prof. dr. Laze Trajkovski
11. Associate Professor Ana Lazarevska, PhD
12. Associate Professor Emilija Celakoska, PhD
13. Associate Professor Ana Frichand, PhD, Faculty of Phylosophy-Skopje
14. Associate Professor Dame Dimitrovski, PhD
15. Associate Professor Darko Babunski, PhD
16. Associate Professor Emil Zaev, PhD
17. Associate Professor Bojan Prangoski, PhD
18. Assistant Professor Igor Shesho, PhD
19. Assistant Professor Viktor Iliev, 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)	Dushan Chakmakov			
2.	Date of birth	18.02.1959			
3.	Scientific degree / Title	Ph.D.			
4.	Title of the scientific degree	Ph.D. in Technical Sciences/Computer Science			
5.	Year and institution of the scientific degree	Education	Year	Institution	
		B.S. in Mathematics and Informatics	1982	Faculty of Mathematics, University Ss. Cyril and Methodius, Skopje	
		M.S. in Computer Science	1988	Faculty of Electrical Engineering and Computer Science, Skopje	
		Ph.D. in Computer Science	1992	Faculty of Electrical Engineering and Computer Science, Skopje	
6.	Area, field and particular specialty of master of science degree	Area	Field	Specialty	
		Informatics	Programming Languages	Compilers	
7.	Area, field and area of doctoral degree	Area	Field	Specialty	
		Informatics	Information Systems	Searching in Multimedia Information	
8.	If employed, state the institution where he/she works and the title and area in which is named	Institution		Title and area	
		Faculty of Mechanical Engineering, Dept. of Mathematics and Informatics, University “Ss. Cyril and Methodius"		Professor	
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.	Data Bases	Production Informatics/Fac. of Mechanical Eng.	
		2.	Probability and Statistics	Industrial Engineering and Management/ Fac. of Mechanical Eng.	
		3.	Programming Languages	Production Informatics/Fac. of Mechanical Eng.	
	9.2.	List of courses that the teacher is lecturing in the second cycle			
		No.	Course	Study program/institution	
		1.	Selected Topics in Informatics	All/ Fac. of Mechanical Eng.	
		2.	System Software	Mechatronics/ Fac. of Mechanical Eng.	
	9.3.	List of courses that the teacher is lecturing in the third cycle			
		No.	Course	Study program/institution	
		1.	Advanced Computer Programming	All/ Fac. of Mechanical Eng.	
		2.	Artificial Intelligence and	All/ Fac. of Mechanical Eng.	
10.	Selected work in the past five years				
	10.1.	Relevant scientific printed paper (up to 5)			
		No.	Author	Title	Publisher/year
		1.	Celakoska E., Cakmakov D.	Lorentz Link Problem and Solutions	*Proceedings of the Fourth Int. Scientific Conference FMNS, Blagoevgrad*, Vol.1, 2011, 16-21.
	10.2.	Participation in scientific national and international projects (up to 5)			
		No.	Author	Title	Publisher/year

		1.			
	10.3.	Printed books in the last five years (up to 5)			
		No.	Author	Title	Publisher/year
		1.	Chakmakov D.	Probability and Statistics for Engineers	University Ss. Cyril and Methodius, Skopje, (in Print)
	10.4.	Printed professional papers in the last 5 years (up to 5)			
		No.	Author	Title	Publisher/year
		1.			
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.			

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)	Atanasko Tuneski		
2.	Date of birth	22.01.1965		
3.	Scientific degree / Title	Ph.D./ Professor		
4.	Title of the scientific degree	Ph.D. in Technical Sciences		
5.	Year and institution of the scientific degree	Education	Year	Institution
		Ph.D	1997	Faculty of Mechanical Engineering - Skopje
		M.Sc	1993	Faculty of Mechanical Engineering - Skopje
		B.Sc	1989	Faculty of Mechanical Engineering - Skopje
6.	Area, field and particular specialty of master of science degree	Area	Field	Specialty
		Technical Sciences	Mechanical Engineering	Control Systems
7.	Area, field and area of doctoral degree	Area	Field	Specialty
		Technical Sciences	Mechanical Engineering	Control Systems
8.	If employed, state the institution where he/she works and the title and area in which is named	Institution		Title and area
		Faculty of Mechanical Engineering – Skopje		Full Professor, Automation
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.	Systems and Control	All programs at the Faculty of Mechanical Engineering – Skopje

		2.	Optimal Energetic Systems	Energetics and Ecology/ Faculty of Mechanical Engineering – Skopje
		3.	Environmental Monitoring and Control	Environmental and Resources Engineering Studies
		4.	Automatic Control Systems	Automatics and Control Systems, Faculty of Mechanical Engineering – Skopje
		5.	Digital Control Systems	Automatics and Control Systems, 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.	Control of Dynamic Systems	Automatics and Control Systems, Faculty of Mechanical Engineering – Skopje
		2.	Environmental Systems Analysis	Environmental and Resources Engineering Studies
	9.3.	List of courses that the teacher is lecturing in the third cycle		
		No.	Course	Study program/institution
		1.	Advanced Control of Dynamic Systems	Mechanical engineering/Faculty of Mechanical Engineering
		2.	Advanced Computer Control of Systems and Processes	Mechanical engineering/Faculty of 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.	Babunski D, Tuneski A., Zaev E.	Simulation of load rejection on a nonlinear Hydro Power Plant model with mixed mode nonlinear controller	IEEE Conference on Embedded Computing (MECO), June 2012, Bar, Monte Negro
		2.	A.Tuneski et al.	Development of an Environmental and Resources Engineering Learning	SEFI 42nd Annual Conference, September 2014, Birmingham, United Kingdom
		3.	A.Tuneski et al.	Environmental engineering curricula development	SEFI 41st Annual Conference, September 2013, Leuven, Belgium
		4.	Emil Zaev, Gerhard Rath, Atanasko Tuneski et al.	HPP Simulator for Real-Time Simulation and SCADA Software Testing	6th Annual SEE Conference: Infusing Research and Knowledge in South-East Europe, September, 2011, Thessaloniki, Greece
		5.	A.Tuneski et al.	Development of an Environmental and Resources Engineering Education Framework	SEFI 40th Annual Conference, September 2012, Thessaloniki, Greece

	10.2.	Participation in scientific national and international projects (up to 5)				
		No.	Author	Title	Publisher/year	
		1.	A.Tuneski (Coordinator)	Development of Environmental and Resources Engineering Learning	EU Directorate for Education and Science, TEMPUS IV	
		2.	A.Tuneski (Coordinator)	Monitoring and Improving Rivers in Vardar/Axios Watershed	NATO Science for Peace Project, 2006-2010, SfP 981877	
	10.3.	Printed books in the last five years (up to 5)				
		No.	Author	Title	Publisher/year	
		1.	A. Tuneski, E. Caporali	Towards a New Curriculum: The DEREC Experience	Firenze University Press, 2009	
	10.4.	Printed professional papers in the last 5 years (up to 5)				
		No.	Author	Title	Publisher/year	
		1.				
11.	Supervision (mentorship) of undergraduate, master and doctoral studies students					
	11.1.	Undergraduate		more than 20		
	11.2.	Master		3 (three)		
	11.3.	Doctoral		2 (two)		
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.	A.Tuneski et al.	Design of Robust Control Law for Hydroturbine and SCADA Simulation	Journal of Energetics, Journal of Association of Energy Sector, No.2, year XIII, March 2011, ISSN 0354-8651, UDC: 621.224.011:62-5, pp.85-89.	
		2.	A.Tuneski	Adaptive Control of Multiple Robots Manipulation on Dynamic Environment	ROBOMAC publication, published by IEEE Branch Macedonia and BEST – Board of Students of Technology, 2009	
	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.	Babunski D, Tuneski A., Zaev E.	Simulation of load rejection on a nonlinear Hydro Power Plant model with mixed mode nonlinear controller	IEEE Conference on Embedded Computing (MECO), June 2012,Monte Negro	2012
		2.	A.Tuneski et al.	Development of an Environmental and Resources Engineering Learning	SEFI 42nd Annual Conference, September 2014, Birmingham, United Kingdom	2014
		3.	A.Tuneski et al.	Environmental engineering curricula development	SEFI 41st Annual Conference, September 2013, Leuven, Belgium	2013
		4.	Emil Zaev, Gerhard Rath, Atanasko Tuneski	HPP Simulator for Real-Time Simulation and SCADA Software Testing	6th Annual SEE Conference: Infusing Research and	2011

			et al.		Knowledge in South-East Europe, 2011, Thessaloniki, Greece	

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)	Aleksa Malcheski			
2.	Date of birth	12.03.1964			
3.	Scientific degree / Title	Ph.D.			
4.	Title of the scientific degree	Ph.D. in mathematical sciences			
5.	Year and institution of the scientific degree	Education	Year	Institution	
		B.S. in Mathematics	1988	Faculty of Science, University Ss. Cyril and Methodius, Skopje	
		M.Sc. in Theoretical Mathematics	1996	Faculty of Science, University Ss. Cyril and Methodius, Skopje	
		Ph.D. in Theoretical Mathematics	2002	Faculty of Science, University of Novi Sad, Novi Sad, Serbia	
6.	Area, field and particular specialty of master of science degree	Area	Field	Specialty	
		Mathematics	Complex Analysis	Bounded analytic functions	
7.	Area, field and area of doctoral degree	Area	Field	Specialty	
		Mathematics	Functional analysis	Banal spaces, n-normed spaces	
8.	If employed, state the institution where he/she works and the title and area in which is named	Institution		Title and area	
		Faculty of Mechanical Engineering, Dept. of Mathematics and Informatics, University “Ss. Cyril and Methodius"		Full 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 on MFS
		2.	Mathematics 2	All on MFS
	9.2.	List of courses that the teacher is lecturing in the second cycle		
		No.	Course	Study program/institution
		1.	Numerical mathematics	All on MFS
		2.	Methods of optimization	All on MFS
	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.	Aleksa Malcheski, Vesna Manova Erakovik	A characterization of n-semi norm	Mathematica Balkanica,New series, Vol.25,2011, Fasc.4, Bulgaria
		2.	Aleksa Malcheski, Vesna Manova Erakovik	Some 2-subspaces of 2-space	Mathematicki Bilten, Математички Билтен, 35 (LXI),

					Македонија, 2011
		3.	Aleksa Malcheski, Vesna Manova Erakovik	An extend of the type of Hanh-Banach for skew-symmetric linear forms	Математички Билтен, 35 (LXI), Македонија, 2011
		4.	Aleksa Malcheski	Hahn Banach Theorem for branch 2-subspaces	Proceedings of the 5 congres of mathmaticinas of Macedonia, 23-27.09.2014
		5.	Aleksa Malcheski, Vesna Manova Erakovik	Hahn Banach Theorem for cyclic 2-subspaces	Proceedings of the 5 congres of mathmaticinas of Macedonia, 23-27.09.2014
	10.2.	Participation in scientific national and international projects (up to 5)			
		No.	Author	Title	Publisher/year
		1.	Aleksa Malcheski, Donco Dimoski, Gjorgji Markoski, Jasmina Markoska, Marija Mihova	Students' Institute of Mathematics and Informatics	2013, (MANU)
		2.	Vesna Manova Erakovik, Aleksa Malcheski and other	**"**The boundary values of the analytic functions and distributions and approximations in the sense of distributions"	2006-2009, Institute of mathematics, Faculty of Natural sciences and Mathematics
	10.3.	Printed books in the last five years (up to 5)			
		No.	Author	Title	Publisher/year
		1.	Aleksa Malcehski and other	Competitions in mathematics in primary education 2006-2013	SMM, 2014
		2.	Aleksa Malcheski, Risto Malcheski, Vesna Manova Erakovic,Gjorgji Markoski	Sigma-Mails, Preparatory tasks for mathematical competitions	SMM, 2012
		3.	Aleksa Malcheski, Risto Malcheski, Vesna Manova Erakovic, Gjorgji Markoski	Sigma-Mails, Box competition tasks 1006-1260	SMM, 2012
		4.	Aleksa Malcheski, Risto Malcheski, Vesna Manova Erakovic, Gjorgji Markoski	Sigma-Mails, Box competition tasks, 1-192	SMM, 2012
		5.	Aleksa Malcheski	Sigma-Mails, regional competitions in mathematics in secondary education, 1978-2012	SMM, 2012
	10.4.	Printed professional papers in the last 5 years (up to 5)			
		No.	Author	Title	Publisher/year
		1.			
11.	Supervision (mentorship) of undergraduate, master and doctoral studies students				
	11.1.	Undergraduate		/	
	11.2.	Master		1	
	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)	Valentino Stojkovski		
2.	Date of birth	14.10.1964		
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
		Ph.D in Mechanical Engineering	2001	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-technological sciences	Mechanical	Fluid mechanic and fluid flow systems
7.	Area, field and area of doctoral degree	Area	Field	Specialty
		Technical-technological sciences	Mechanical	Fluid mechanic and fluid flow systems
8.	If employed, state the institution where he/she works and the title and area in which is named	Institution	Title and area	
		University of Ss Cyril and Methodius, faculty of Mechanical engineering	Professor, Fluid flow and hydraulic machines	

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.	Fluid mechanics	PI,HIMV,MSKI,IIM,MHT,AUS/ FME
		2.	Fluid dynamics and CFD	HIMV / FME
		3.	Fluid flow measurement	HIMV,AUS / FME
		4.	Gas systems	EE/FME
		5.	Design of hydraulic machines and systems	HIMV/FME
	9.2.	List of courses that the teacher is lecturing in the second cycle		
		No.	Course	Study program/institution
		1.	Modeling and simulation in automation and fluid engineering	AFI /FME
		2.	Measuring, monitoring and data base	AFI / FME
		3.	Selected chapters of fluid mechanics	AFI /FME
		4.	Fluid conveying	AFI/FME
		5.	Pumps and pumps stations	AFI/FME
		6.	Engineering experimentation	EE/FME
		7.	Design of hydro power plant	EE/FME
		8.	Protection and safety in hydropower plants and systems	BZR/FME
	9.3.	List of courses that the teacher is lecturing in the third cycle		
		No.	Course	Study program/institution
		1.	Experimental research in fluid mechanics and hydraulic systems	HIA / FME
		2.	Modeling and simulation in fluid dynamic	HIA / FME

		3.	Advance topics of fluid mechanics	HIA / FME	
		4.	Norms for protection of environmental	HIA / FME	
10.	Selected work in the past five years				
	10.1.	Relevant scientific printed paper (up to 5)			
		No.	Author	Title	Publisher/year
		1.	Valentino Stojkovski, Zvonimir Kostic	Empirilical correlation for prediction of the elutriation rate constant	Thermal Science, Vol.7, No.2, pp.43-58, 2003
		2.	V.Stojkovski, Z.Kostic, A.Nospal	Dependence of the total entrainment flux upon the apparent and the total fluidization number	Thermal Science, Vol.4, No.1, pp.65-73, 2008
	10.2.	Participation in scientific national and international projects (up to 5)			
		No.	Author	Title	Publisher/year
		1.	Noshpal A., Stojkovski V., Markov Z.	Application of CAD and CAX technologies in electrical technique processes in energy and ecology	Ministry of education and science of Republic Macedonia 2006-2009
		2.	M. Kosevski (Project coord.), V.Stojkovski et al.	Numerical Simulation Program in Mechanical Engineering,	Tempus CARDS JEP-19017, 2006-2009
		3.	I.Petrovski, R.Filkovski, A.Nospal, V.Stojkovski et at.	Research and optimization of thermal processes in thermo energetic equipment with numerical analyses	Ministry of education and science of Republic Macedonia 2006-2009
	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.Filkovski, I.Petrovski, A.Nospal, V.Stojkovski	Energy eficiencyand energy saving in industry and services	14 THERMAL SYMPOSIUM SERBIA, 2009
		2.	V.Stojkovski, Z.Kostic, A.Nospal, D.Tanurkov:	Criteria for assessing the feasibility of small hydro power plant	INTERNATIONAL CONFERENCE: ENERGY,2008
		3.	V.Fustic, V.Stojkovski et.al.	EXPERTS' ANALYSIS OF THE EQUIPMENT IN THE SMALL HYDRO POWER PLANTS IN THE "TRANSFER" PHASE OF THE ROT PROJECT	International council on large electric systems Macedonian national committee-Conference 2013
		4.	R.Filkovski, F.Stojkovski, V.Stojkovski	A CFD study of a solar chimney power plant operation	6th International conference on sustainable energy & environmental protection SEEP 2013, Maribor, Slovenia
		5.	P.Popovski, V.Stojkovski, K.Najdenkovski	Method for measuring the guaranteed energy performance of small hydro power plant	Macedonian energy association International symposium Energetics 2014
11.	Supervision (mentorship) of undergraduate, master and doctoral studies students				
	11.1.	Undergraduate		37	
	11.2.	Master		4	
	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)	Nikola Tuneski			
2.	Date of birth	16.07.1971			
3.	Scientific degree / Title	Ph.D.			
4.	Title of the scientific degree	Ph.D. in mathematical sciences			
5.	Year and institution of the scientific degree	Education	Year	Institution	
		Ph.D. in mathematics	1994	University of Belgrade, Serbia	
		M. Sc. in mathematics	1997	UKIM, Macedonia	
		B. Sc. In Engineering	1999	UKIM, Macedonia	
6.	Area, field and particular specialty of master of science degree	Area	Field	Specialty	
		Mathematics	Probability	Random processes	
7.	Area, field and area of doctoral degree	Area	Field	Specialty	
		Mathematics	Complex analysis	Geometric function theory	
8.	If employed, state the institution where he/she works and the title and area in which is named	Institution		Title and area	
		Faculty of Mechanical Engineering Ss. Cyril and Methodius University in Skopje		Full Professor, Mathematics and informatics	

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.	Engineering Mathematics	all on MFS
	9.2.	List of courses that the teacher is lecturing in the second cycle		
		No.	Course	Study program/institution
		1.	Probability and Statistics	all on MFS
		2.	Complex Analysis for Engineers	all on MFS
	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.	E. Aliaga N. Tuneski	Some connections between class $\mathcal{U}$ and α-convex functions, *Abstract and Applied Analysis*, Volume 2014, Article ID 692327, 4 pages.	Hindawi Publishing Corporation 2014 (2013 IMPACT FACTOR 1.102)
		2.	N. Tuneski, M. Darus	On functions that are Janowski starlike with respect to N–symmetric points, *Hacettepe Journal of Mathematics and Statistics*, Vol. 41 (2) (2012), 271 – 275.	Hacettepe University 2012 (2010 IMPACT FACTOR 0.385)
		3.	Obradovic M., Ponnusamy S., Tuneski N.	Radius of univalence of certain combination of univalent and analytic functions, *Bulletin of the Malaysian Mathematical Sciences Society*, (2) 35(2) (2012), 325–334.	*Malaysian Mathematical Sciences Society* 2012 (2010 IMPACT FACTOR 0.696)
		4.	Tuneski N., Obradovic M.	Some properties of certain expression of analytic functions, *Computers and Mathematics with Applications*, 62 (2011), 3438–3445.	Elsevier 2011 (IMPACT FACTOR 2.069)
		5.	Irmak H., Bulboaca T., Tuneski N.	Certain relations between α–convex type functions and Bazilevič type functions, *Applied Mathematics Letters*, Vol. 24 (12) (2011), 2010–2014.	Elsevier 2011 (2010 IMPACT FACTOR 1.155)
	10.2.	Participation in scientific national and international projects (up to 5)			
		No.	Author	Title	Publisher/year
		1.			
	10.3.	Printed books in the last five years (up to 5)			
		No.	Author	Title	Publisher/year
		1.	Tuneski, N., Jolevska-Tuneska B.	Differential calculus	UKIM, 2011
		2.	Tuneski, N., Jolevska-Tuneska B.	Integral calculus	UKIM, 2011
		3.	Tuneski, N., Georgieva-Celakoska E.	Introduction to MATLAB	the authors, 2010
	10.4.	Printed professional papers in the last 5 years (up to 5)			
		No.	Author	Title	Publisher/year
		1.			
11.	Supervision (mentorship) of undergraduate, master and doctoral studies students				
	11.1.	Undergraduate		/	
	11.2.	Master		1	
	11.3.	Doctoral		2 students 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.	Obradovic M., Ponnusamy S., Tuneski N.	Radius of univalence of certain combination of univalent and analytic functions, *Bulletin of the Malaysian Mathematical Sciences Society*, (2) 35(2) (2012), 325–334. (2010 IMPACT FACTOR 0.696) http://www.emis.de/journals/BMMSS/vol35_2.htm	2012

		2.	Irmak H., Bulboaca T., Tuneski N.	Certain relations between α–convex type functions and Bazilevič type functions, *Applied Mathematics Letters*, Vol. 24 (12) (2011), 2010–2014. (2010 IMPACT FACTOR 1.155) http://www.sciencedirect.com/science/journal/08939659/24	2011
		3.	Tuneski N., Obradovic M.	Some properties of certain expression of analytic functions, *Computers and Mathematics with Applications*, 62 9 (2011), 3438–3445. (IMPACT FACTOR 2.069) http://www.sciencedirect.com/science/journal/08981221/62/9	2011
		4.	H. M. Srivastava, N. Tuneski, Emilija Georgieva–Celakoska	Some Distortion and Other Properties Associated with a Family of the *n*–Fold Symmetric Koebe Type Functions, *Australian Journal of Mathematical Analysis and Applications*, Vol. 9, Issue 2, Article 1, (2012) 1-17. http://ajmaa.org/Volumes/Volume%209%20Issue%202%202012.php	2012
		5.	Tuneski, N.	On a Class of Functions Defined by Takahashi and Nunokawa, *Mathematica Balkanica*, Vol. 25 (1–2) (2011), 203–209. http://www.mathbalkanica.info/toc/cont2512.pdf	2011
	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.	E. Aliaga, N. Tuneski	Some connections between class $\mathcal{U}$ and α-convex functions, *Abstract and Applied Analysis*, Volume 2014, Article ID 692327, 4 pages, http://dx.doi.org/10.1155/2014/692327. (2013 IMPACT FACTOR 1.102) http://www.hindawi.com/journals/aaa/2014/692327/	2014
		2.	N. Tuneski, M. Darus	On functions that are Janowski starlike with respect to N–symmetric points, *Hacettepe Journal of Mathematics and Statistics*, Vol. 41 (2) (2012), 271 – 275. (2010 IMPACT FACTOR 0.385) http://www.hjms.hacettepe.edu.tr/issues/vol41_2.html	2012
	12.3.	Proof of at least three international meetings' participation in the past four years			
		No.	Author	Title	International meeting/conference	year
		1.	N. Tuneski	Functions of bounded turning	International Short Joint Research Workshop "Some inequalities concerned with the geometric function theory", The Research Institute for Mathematical Sciences, Kyoto University, Kyoto, Japan, May 22 – 24, 2013.	2013
		2.	N. Tuneski, M. Darus, E. Gelova	Simple criteria for bounded turning of an analytic function.	"Geometric Function Theory and Applications'2012", Ohrid, R. Macedonia, August 27 – 31, 2012.	2012
		3	N. Tuneski	From inequalities to	13th Serbian	2014

				subordinations and back	Mathematical Congress, Vrnjačka Banja, May 22 - 25, 2014.	

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 / 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	1990	Faculty of Mechanical engineering - Skopje
6.	Area, field and particular specialty of master of science degree			Area	Field	Specialty
				Technical sciences	Mechanical engineering	FEA in metalforming processes
7.	Area, field and area of doctoral degree			Area	Field	Specialty
				Technical sciences	Mechcanical engineering	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 management	
		2.	Computer aided engineering		Production engineering	
		3.	Production processes		Mechanical engineering	
		4.	Technology of rapid prototyping		Mechanical 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 management	
		2.	Sustainable development		Product life cycle management	
		3.	Cleaner production		Metrology	
		4.	Modeling and simulation of plastic injection molding		Production engineering	
	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 management	
		2.	Managment of Technology innovation		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.	A.Kochov:	"Scientific and Technological Innovations for Greater Economic Revitalization (S-TIGER)",		Fulbright Academy, Cambridge University, Boston, USA, February, 2008.
		2.	A.Kochov:	"Macedonian SME's - achivements and future activites: Competitvenss of		pg. 89, Joint Actions on Climate Change Conference, Aalborg, Danmark June 9-11,

				SME through implementation of CP tehnologies",	2009.
		3.	A.Kochov:	"Management of technology - Low Carbon techniques for agro food sector"	European Roundtable for Sustainable Consumption and Production, Delft, Netherland, October 28-31, 2010.
		4.	A.Kochov, B.Dunjic:	Low-Carbon production concept in managing SME in WBC,	Regional Resource Efficient & Cleaner Production Net meeting of NVPCs and NCPPs from the European and Central Asian countries, 4th Nevsky International Ecological Congress, May 2011; St. Petersburg, Russia.
		5.	A.Kochov	Sustainable development supported by low carbon technologies in agro business sector	ERSCP conference, Portoroz, Slovenia, October 2014
	10.2.	Participation in scientific national and international projects (up to 5)			
		No.	Author	Title	Publisher/year
		1.	A. Kochov, at all. UNIDO	Cleaner production technologies	2007-2010
		2.	A. Kochov, at all UNIDO	Resource efficiency and cleaner production	2010-2012
		3.	A. Kochov, at all UNIDO	Low carbon technologies	2011-2014
	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.	A.Kochov:	"CDM projects implementation in SME in Macedonia",	Regional Conference on financing energy efficiency & RES project, energy week, Skopje, Macedonia, 2009.
		2.	A.Kochov:	"Management of technology - Low Carbon techniques for agro food sector",	European Roundtable for Sustainable Consumption and Production, Delft, Netherland, October 28-31, 2010.
		3.	A.Kochov:	Sustainable industrial development in the context of Low Carbon Society concept,	UNIDO-PREPARE conference: *"SCP: How to make it possible"* Kaunas, Lithuania, September 2011.
		4.	A.Kochov:	"Green manufacturing driving low carbon, resource efficient and clean industrialization in developing and transition economies"	2nd Global Network Conference on Resource Efficient and Cleaner Production (RECP – 2011), UN – Gigiri, Nairobi, Kenya, 17-19 October 2011

		5.	A.Kochov	"Management of technology - Low Carbon techniques for agro food sector in WBC"	3rd Global Network Conference on Resource Efficient and Cleaner Production (Swiss, Luzern, October 2013)

11.	Supervision (mentorship) of undergraduate, master and doctoral studies students		
	11.1.	Undergraduate	Over 20
	11.2.	Master	Over 10
	11.3.	Doctoral	Over 5

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)	Done Tashevski		
2.	Date of birth	04.08.1962		
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	2004	UKIM Skopje Macedonia Faculty of Mechanical Engineering
		MSc Technical Sciences	1994	UKIM Skopje Macedonia Faculty of Mechanical Engineering
		BSc Technical Sciences – Mechanical eng.	1985	UKIM Skopje Macedonia Faculty of Mechanical Engineering
6.	Area, field and particular specialty of master of science degree	Area	Field	Specialty
		Mechanical engineering	Energetic	Energy and ecology
7.	Area, field and area of doctoral degree	Area	Field	Specialty
		Mechanical engineering	Energetic	Fuel cells
8.	If employed, state the institution where he/she works and the title and area in which is named	Institution		Title and area
		Faculty of Mechanical Engineering Skopje, University Ss. Cyril and Methodius in Skopje		Professor / mechanical engineering- thermal 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.	Steam and gas turbines	TI/MFS

		2.	Exploitation and maintenance of power plants and systems	TI/MFS	
		3.	Energy efficiency	EE/MFS	
		4.	Energy and ecology	EE/MFS	
	9.2.	List of courses that the teacher is lecturing in the second cycle			
		No.	Course	Study program/institution	
		1.	General ecology	EE/MFS	
		2.	Modeling of processes of energy conversion	TI/MFS	
	9.3.	List of courses that the teacher is lecturing in the third cycle			
		No.	Course	Study program/institution	
		1.	Energy efficiency	TI/MFS	
		2.	Modern power plants	TI/MFS	
10.	Selected work in the past five years				
	10.1.	Relevant scientific printed paper (up to 5)			
		No.	Author	Title	Publisher/year
		1.	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, 2014 (JIF 7,5377)
		2.	D. Tashevski, R. Filkoski, I. Shesho	Optimization of Binary Cogenerative Thermal Power Plants with Solid Oxide Fuel Cells on Natural Gas.	International Journal of Mechanical Engineering and Technology (IJMET), (ISSN 0976–6359 Online), Volume 5, Issue 1, pp. 122-131, India, 2014 (JIF 5,77)
		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), India, 2014 (JIF 1,69)
		4.	D. Tashevski, D. Dimitrovski	Optimization of Binary Co-generative Thermal Power Plants with SOFC on Solid Fuel.	Chemical engineering transaction, vol. 34, pp. 31-36, (DOI: 10.3303/ CET1334006), Italy, 2013 (SJR Thomson Reuters 0,26)
		5.	D. Tashevski, I. Shesho	Three-generation Power Plant with High-temperature Fuel Cells for Complex Building.	International Journal of Engineering Research and Development, (e-ISSN: 2278-067X, p-ISSN: 2278-800X), Volume 6, Issue 5, pp. 46-52, India, 2013 (JIF 1,131)
	10.2.	Participation in scientific national and international projects (up to 5)			
		No.	Author	Title	Publisher/year
		1.	S. Armenski D. Tashevski L. Karakasheva	Production of briquettes and pellets from agricultural waste – Agro Energy	CeProSARD Skopje, Macedonia /2011-2012
	10.3.	Printed books in the last five years (up to 5)			
		No.	Author	Title	Publisher/year
		1.	S. Armenski, D. Tashevski	Thermal power plants – exercise, 300 p.,	Alfa 99 Skopje, ISBN 978-9998-936-36-4, Macedonia, 2010.
		2.	S. Armenski, D. Tashevski, L. Karakasheva	Production of briquets and pellets – handbook. 85 p.	CeProSARD, ISBN 978-608-65330-6-9, Skopje, Macedonia, 2012.
		3.	D. Tashevski:	Maintenance and exploatation of energy	UKIM in Skopje E-publication and digital libraries, Skopje, Macedonia,

				power plants and systems (1st publication), 298 p.,	2014 (No.03-187/2 from 11.2.2014).
	10.4.	Printed professional papers in the last 5 years (up to 5)			
		No.	Author	Title	Publisher/year
		1.	R. Filkoski D. Tashevski, S. Armenski, Z. Markov:	Professional expertise for the inability of hot start, constructive problem of gas turbine, and other uncorrected defects in installation and commissioning of TE-TO AD, No. 07-3270/5.	MFS Skopje / December 2013
		2.	D. Tashevski, R. Filkoski, D. Dimitrovski, I. Shesho:	Technical report of explosion od hot water boiler on LPG located in „Cevahir residence and mall project“ – Skopje for Cevahir Gurup Istanbul, Turkie, subsidiary in R. Macedonia, No. 07-1983/4,	MFS Skopje / December 2013
		3.	D. Tashevski	Energy audit report of JOUDG „Angel Shajce“ object „Buba Mara“, No. 07-235/5,	MFS Skopje / January 2013
		4.	D. Tashevski, I. Shesho:	Head project – mechanical installation, termotechnical installation an facilities for resindetial-bussines object st. M. Apsotolski, tech. No 226/2012,	Bauer Skopje, / May 2012
		5.	D. Tashevski	Energy audit of elementary school and kinder gardens under the authority of the local government, municipality G. Petrov and M.A. Chento (5 kinder gardens and 1 elementary school),	MACEF Skopje / January 2001
11.	Supervision (mentorship) of undergraduate, master and doctoral studies students				
	11.1.	Undergraduate	52 mentorship of undergraduate students		
	11.2.	Master	- 2 mentorship of master students 1. Sashe Panevski - Use of energy management systems in Republic of Macedonia 2. Arben Veliu – The potential for energy saving in buildings and use of renewable energy sources in urban area - Seven students in progress		
	11.3.	Doctoral	One student 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.	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, 2014 (JIF 7,5377)
		2.	D. Tashevski, R. Filkoski,	Optimization of Binary Cogenerative Thermal	International Journal of Mechanical Engineering and Technology (IJMET),

			I. Shesho	Power Plants with Solid Oxide Fuel Cells on Natural Gas.	(ISSN 0976–6359 Online), Volume 5, Issue 1, pp. 122-131, India, 2014 (JIF 5,77)	
		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), India, 2014 (JIF 1,69)	
		4.	D. Tashevski, D. Dimitrovski	Optimization of Binary Co-generative Thermal Power Plants with SOFC on Solid Fuel.	Chemical engineering transaction, vol. 34, pp. 31-36, (DOI: 10.3303/ CET1334006), Italy, 2013 (SJR Thomson Reuters 0,26)	
		5.	D. Tashevski, I. Shesho	Three-generation Power Plant with High-temperature Fuel Cells for Complex Building.	International Journal of Engineering Research and Development, (e-ISSN: 2278-067X, p-ISSN: 2278-800X), Volume 6, Issue 5, pp. 46-52, India, 2013 (JIF 1,131)	
		6.	D. Tashevski, D. Dimitrovski, Z. Markov, I. Shesho:	Energy and Ecology Benefits of Independent SOFC/Gas Turbine Co-generation Power Plant on Natural Gas.	1st Internatinal U.O.C. – B.E.N.A. – Conference "The Sustainability of Pharmaceutical, Medical and Ecological Education and Research – SPHAMEER – 2013", proceedings book p. 6, Constanca, Romania,	
	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.	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, 2014 (JIF 7,5377)	
		2.	D. Tashevski, R. Filkoski, I. Shesho	Optimization of Binary Cogenerative Thermal Power Plants with Solid Oxide Fuel Cells on Natural Gas.	International Journal of Mechanical Engineering and Technology (IJMET), (ISSN 0976–6359 Online), Volume 5, Issue 1, pp. 122-131, India, 2014 (JIF 5,77)	
		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), India, 2014 (JIF 1,69)	
		4.	D. Tashevski, D. Dimitrovski	Optimization of Binary Co-generative Thermal Power Plants with SOFC on Solid Fuel.	Chemical engineering transaction, vol. 34, pp. 31-36, (DOI: 10.3303/ CET1334006), Italy, 2013 (SJR Thomson Reuters 0,26)	
		5.	D. Tashevski, I. Shesho	Three-generation Power Plant with High-temperature Fuel Cells for Complex Building.	International Journal of Engineering Research and Development, (e-ISSN: 2278-067X, p-ISSN: 2278-800X), Volume 6, Issue 5, pp. 46-52, India, 2013 (JIF 1,131)	
	12.3.	Proof of at least three international meetings' participation in the past four years				
		No.	Author	Title	International meeting/conference	year
		1.	D. Dimitrovski, M. Dimitrovski, E. Kitanovska, D. Tashevski:	Pollution from Diesel Engines do to Increase of Imported Vehicles in FYR-Macedonia.	1st International Medical Conference "Environment and Public Health" MED ENV 2014, Mamaia,	12-14 September 2014.

				(IOC - 2nd Award)	Romania,	
		2.	D. Dimitrovski, M. Dimitrovski, G. Popsimonova, D. Tashevski	Biogas – Overview of the Possibilities for Implementation in the Macedonian Agricultural Sector. (IOC)	16th Symposium on Thermal Science and Engineering of Serbia – SIMTERM 2013, p. 11, Sokobanja, Serbia,	22-25 October, 2013.
		3.	D. Dimitrovski, K. Belcheska, D. Tashevski, M. Kocubovsk	Possible Scenarios for Achiving the Goal 20/20/20 in FYR-Macedonia.	1st Internatinal U.O.C. – B.E.N.A. – Conference "The Sustainability of Pharmaceutical, Medical and Ecological Education and Research – SPHAMEER – 2013", p. 6, Constanca, Romania. (IOC)	20-23 June, 2013.
		4.	D. Tashevski, D. Dimitrovski, Z. Markov, I. Shesho:	Energy and Ecology Benefits of Independent SOFC/Gas Turbine Co-generation Power Plant on Natural Gas.	1st Internatinal U.O.C. – B.E.N.A. – Conference "The Sustainability of Pharmaceutical, Medical and Ecological Education and Research – SPHAMEER – 2013", p. 6, Constanca, Romania,	20-23 June, 2013. (IOC)
		5	D. Dimitrovski, M. Dimevska, D. Tashevski:	Strategic connection of Republic of Macedonia to the European natural gas streams. (IOC)	International gas conference of South Eastern Europe, Sarajevo, Bosnia and Herzegovina,	2012

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)	Risto Filkoski		
2.	Date of birth	29.04.1964		
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
		BSc (Dipl. Eng.)	1989	UKIM, Faculty of Mech. Eng., Skopje
		MSc	1997	UKIM, Faculty of Mech. Eng., Skopje
		PhD	2004	UKIM, Faculty of Mech. Eng., Skopje
6.	Area, field and particular specialty of master of science degree	Area	Field	Specialty
		Technical sciences	Power engineering	Power and process engineering
7.	Area, field and area of doctoral degree	Area	Field	Specialty
		Technical sciences	Power engineering	Mathematical modelling and simulation of energy processes
8.	If employed, state the institution where he/she works and the title and area in which is named	Institution		Title and area
		University "Sts Cyril and Methodius", Faculty of Mechanical Engineering		Assoc. professor
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.	Boiler plants	Thermal engineering
		2.	Process technique	Thermal engineering
		3.	Thermodynamics	Power engineering and envitonment
		4.	Energy management and resources	Power engineering and envitonment
	9.2.	List of courses that the teacher is lecturing in the second cycle		
		No.	Course	Study program/institution
		1.	Modelling of energy conversion processes	Thermal engineering
		2.	Steam generators - selected chapters	Thermal engineering
		3.	Fuels use and environment	Power engineering and envitonment
	9.3.	List of courses that the teacher is lecturing in the third cycle		
		No.	Course	Study program/institution
		1.	Selected chapters from modelling of energy conversion processes	Thermal engineering
		2.	Modelling of energy conversion processes and environmental impact	Power engineering and envitonment

10.	Selected work in the past five years				
	10.1.	Relevant scientific printed paper (up to 5)			
		No.	Author	Title	Publisher/year
		1.	R. V.Filkoski, L. Joleska Bureska, I. J. Petrovski	Assessment of the Impact of Under-Fire Air Introduction on the Pulverised Coal Combustion Efficiency	Chemical Eng. Transactions, AIDIC Publ., 2013, 34, 25-30, DOI: 10.3303/CET1334005
		2.	Mikulcic H., Vujanovic M., Markovska N., Filkoski R. V., Ban M., Duic N.	CO_2 Emission Reduction in the Cement Industry	Chem. Eng. Trans., AIDIC Publ., 2013, Vol. 35, p.703-708, ISBN 978-88-95608-26-6; ISSN 1974-9791
		3.	V. Strezov, E. Popovic, R. V. Filkoski, P. Shah, T. Evans	Assessment of the Thermal Processing Behaviour of Tobacco Waste	Energy and Fuels, ACS Publications, 2012, 26, p.5930-5935
		4.	R. V. Filkoski	Pulverised-Coal Combustion with Staged Air Introduction: CFD Analysis with Different Radiation Methods	The Open Thermodynamics Journal, Vol. 4(2010), Bentham Science Publ., 2010, p. 2-12.
		5.	R. V. Filkoski	Radiation Heat Transfer Modelling and CFD Analysis of Pulverised-Coal Combustion with Staged Air Introduction	Archives of Thermodynamics, Vol. 30(2009), No. 4, IFFM Publishers, 2009, p. 97-118.
		6.	R. V. Filkoski, S. V. Belošević, I. J. Petrovski, S. N. Oka, M. A. Sijerčić	CFD Technique as a Tool for Description of the Phenomena Occuring in Pulverised Coal	Proc. ImechE Part A: Journal of Power and Energy, Vol. 221 (3), 2007, p. 399-409.

				Boilers	
		7.	R. V. Filkoski, I. J. Petrovski, P. Karaś	Optimisation of Pulverised Coal Combustion by Means of CFD/CTA Modelling	(An International Journal of) Thermal Science, Vol. 10 **(3)**, 2006, p. 161-179.
	10.2.	Participation in scientific national and international projects (up to 5)			
		No.	Author	Title	Publisher/year
		1.			
	10.3.	Printed books in the last five years (up to 5)			
		No.	Author	Title	Publisher/year
		1.	R. V. Filkoski	Modelling of energy conversion processes	Tempus CARDS JEP-19017 "Numerical Simulation Program in Mechanical Eng.", Faculty of Mech. Eng., Skopje, 2009.
		2.	R. V. Filkoski, I. J. Petrovski	Air Pollution Control, Textbook	DEREC Tempus JEP CD_JEP-19840-2004 "Development of Environmental and Resources Engineering Curriculum, Florence-Skopje, 2008.
		3.	M. Azievska (coord.), R. V. Filkoski et al.	Second National Communication on Climate Change	MESP, MASA, Skopje, 2008, ISBN 978-9989-110-68-9
	10.4.	Printed professional papers in the last 5 years (up to 5)			
		No.	Author	Title	Publisher/year
		1.	Filkoski R. V.	Experiences on the feasibility of the utilisation of vineyard and vine-culture residues for energy purposes	Symp. Biomass solutions for LCP and traffic in Adria region - R&D and application, Adria Section of Int. Combustion Institute, Sarajevo, 2014
		2.	Filkoski R., Tashevski D., Armenski S., Markov Z.	Expert report on the impossibility of hot start, technical problem on gas turbine, latent and other defects during installation and start-up of power plant TE-TO AD Skopje	Faculty of Mech. Engineering, Skopje, Dec. 2013 - Jan. 2014
		3.	I. J. Petrovski, R. V. Filkoski	Energy efficiency improvement and waste heat utilisation in bitumen processing	Technology development project co-fin. by the Ministry of Education and Science of RM, Skopje, 2011
		4.	R.V. Filkoski, I.J. Petrovski, M. Ginovska, H. Borchsenius	A Case Study of Energy Recovery in Ferro-Alloys Industry	II Reg. Conference IEEP '10, Zlatibor, Serbia, 2010.
		5.	R. V. Filkoski, I. J. Petrovski, I. Janev	A Case Study of Energy Management	II Conference "Sustainable

				Improvement in Concrete Products Industry	Development and Climate Changes SUSTAINNIS 2010", Nis, Serbia, 2010.
11.	Supervision (mentorship) of undergraduate, master and doctoral studies students				
	11.1.	Undergraduate		50	
	11.2.	Master		7	
	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.	R. V.Filkoski, L. Joleska Bureska, I. J. Petrovski	Assessment of the Impact of Under-Fire Air Introduction on the Pulverised Coal Combustion Efficiency	Chemical Eng. Transactions, AIDIC Publ., 2013, 34, 25-30, DOI: 10.3303/CET1334005
		2.	Mikulcic H., Vujanovic M., Markovska N., Filkoski R. V., Ban M., Duic N.	CO_2 Emission Reduction in the Cement Industry	Chem. Eng. Trans., AIDIC Publ., 2013, Vol. 35, p.703-708, ISBN 978-88-95608-26-6; ISSN 1974-9791
		3.	V. Strezov, E. Popovic, R. V. Filkoski, P. Shah, T. Evans	Assessment of the Thermal Processing Behaviour of Tobacco Waste	Energy and Fuels, ACS Publications, 2012, 26, p.5930-5935
		4.	R. V. Filkoski	Pulverised-Coal Combustion with Staged Air Introduc-tion: CFD Analysis with Different Radiation Methods	The Open Thermodynamics Journal, Vol. 4(2010), Bentham Science Publ., 2010, p. 2-12.
		5.	R. V. Filkoski	Radiation Heat Transfer Modelling and CFD Analysis of Pulverised-Coal Com-bustion with Staged Air Introduction	Archives of Thermodynamics, Vol. 30(2009), No. 4, IFFM Publishers, 2009, p. 97-118.
		6.	R. V. Filkoski, S. V. Belošević, I. J. Petrovski, S. N. Oka, M. A. Sijerčić	CFD Technique as a Tool for Description of the Phenomena Occuring in Pulverised Coal Boilers	Proc. ImechE Part A: Journal of Power and Energy, Vol. 221 (3), 2007, p. 399-409.
	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.	V. Strezov, E. Popovic, R. V. Filkoski, P. Shah, T. Evans http://pubs.acs.org/toc/enfuem/26/9#RenewableEnergy	Assessment of the Thermal Processing Behaviour of Tobacco Waste	Energy and Fuels, ACS Publications, 2012, 26, p.5930-5935

		2.	R.V. Filkoski, L. Joleska Bureska, I.J. Petrovski http://www.aidic.it/cet/13/34/005.pdf	Assessment of the Impact of Under-Fire Air Introduction on the Pulverised Coal Combustion Efficiency	Chemical Enginee-ring Transactions, AIDIC Publ., 2013, 34, p.25-30
		3.	R. V. Filkoski http://www.benthamscience.com/ open/totherj/openaccess2.htm	Pulverised-Coal Combustion with Staged Air Introduc-tion: CFD Analysis with Different Radiation Methods	The Open Thermodynamics Journal, Vol. 4(2010), Bentham Science Publ., 2010, pp. 2-12.
		4.	R. V. Filkoski, S. V. Belošević, I. J. Petrovski, S. N. Oka, M. A. Sijerčić http://pia.sagepub.com/content/221/3.toc	CFD Technique as a Tool for Description of the Phenomena Occuring in Pulve-rised Coal Boilers	Proc. ImechE Part A: J. of Power and Energy, Vol. 221 **(3)**, 2007, pp. 399-409.
		5.	R. V. Filkoski, I. J. Petrovski, P. Karaś http://thermalscience.vinca.rs/2006/3/	Optimisation of Pulverised Coal Combustion by Means of CFD/CTA Modelling	(An International Journal of) Thermal Science, Vol. 10 **(3)**, Belgrade, 2006, pp. 161-179.

12.3. Proof of at least three international meetings' participation in the past four years

No.	Author	Title	International meeting/conference	year
1.	R. V. Filkoski, M. Chekerovska	Experimental and numerical study of a flat-plate solar energy collector performance	Proceedings of SEEP 2014	Dubai, 23-25 November, 2014
2.	R. V. Filkoski, I. J. Petrovski	Research on the possibility of using agriculture biomass residues for energy purposes	Proceedings of SEEP 2014	Dubai, 23-25 November, 2014
3.	Filkoski R. V.	Experiences on the feasibility of the utilisation of vineyard and vine-culture residues for energy purposes	Symp. Biomass solutions for LCP and traffic in Adria region - R&D and application, Adria Section of Int. Combustion Institute	Sarajevo, 2014
4.	Filkoski R. V.	The smart energy concept: the demand side potential,	Workshop "Smart Grids and Power Highways for the Enlarged Europe: Assessing the Challenges", European Commission, JRC, Inst. for Energy and Transport, Petten	Antalya, 18-20 Sept., 2013

		5.	Filkoski R.V., Stojkovski F., Stojkovski V.	A CFD study of a solar chimney power plant operation	6th Int. Conf. on Sustainable Energy and Environmental Protection SEEP 2013	Maribor, 20-23 August 2013
		6.	Filkoski R.V., Petrovski I.J., Stanojevska B.	Some observations on the possibility of using wine twigs for energy needs	6th Int. Conf. on Sustainable Energy and Environmental Protection SEEP 2013	Maribor, 20-23 August 2013
		7.	Filkoski R.V., Bureska L.J., Petrovski I.J.	Improvement of combustion efficiency of pulverised coal with under-fire air introduction	7th Int. Conf. on Sustainable Development of Energy, Water and Environment Systems SDEWES 2012	Ohrid, 2012
		8.	Filkoski R. V., Bureska L.J., Petrovski I. J.	CFD as research, educational and design tool in energy and environmental engineering	5th Int. Mechanical Eng. Forum IMEF 2012	Prague, 2012
		9.	Filkoski R. V.	Past and present research activities on combustion at the Faculty of Mechani-cal Engineering in Skopje	ACH Combustion Meeting, 2012	Zagreb, 2012
		10.	Filkoski R.V., Popovic E., Strezov V.	Experimental study of product composition during slow pyrolysis processing of tobacco residues	7th International Conference on Biomass for Energy	Kyiv, Ukraine, 2011

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)	Zoran Markov		
2.	Date of birth	23.06.1975		
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	2007	Faculty of Mechanical engineering - Skopje
		M. Sc. in Mechanical Engineering	2001	Faculty of Mechanical engineering - Skopje

		B. Sc. in Mechanical Engineering	1998	Faculty of Mechanical engineering - Skopje
6.	Area, field and particular specialty of master of science degree	Area	Field	Specialty
		Technical-technological sciences	Mechanical	Fluid mechanic and fluid flow systems
7.	Area, field and area of doctoral degree	Area	Field	Specialty
		Technical-technological sciences	Mechanical	Hydro energy

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, Faculty of Mechanical engineering	Professor, Fluid flow and hydraulic machinry

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.	Fluid mechanics	EE, TI, TML, MV/ FME
		2.	Hydraulic turbines and pumps	AFI / FME
		3.	Hydropower plant	EE / FME
	9.2.	List of courses that the teacher is lecturing in the second cycle		
		No.	Course	Study program/institution
		1.	Theory of turbine and CFD simulation	AFI / FME
		2.	Selected chapters of Fluid Mechanics	AFI / FME
		3.	Waste water treatment	EE / FME
	9.3.	List of courses that the teacher is lecturing in the third cycle		
		No.	Course	Study program/institution
		1.	Transformation of renewable energy in hydraulic machines	Mechanics / FME
		2.	Hydro energy and environment	Mechanics / FME

10.	Selected work in the past five years				
	10.1.	Relevant scientific printed paper (up to 5)			
		No.	Author	Title	Publisher/year
		1.	Iliev, I., Markov, Z. & Popovski, P.	Numerical Investigation of the "Tandem Cascade" Effects for the Flow Through Stay and Guide Vanes of a Francis Turbine	(DOI: 10.1007/s40997-016-0036-2), Iranian Journal of Science and Technology, Transactions of Mechanical Engineering, June 2017, Volume 41, Issue 2, pp 169–176, SCI=1.045
		2.	Iliev V., Markov Z., Popovski P.	A Dynamic Behaviour of Low Head Hydropower Plant during the Transient Operational Regimes	Proceedings of the 6th IAHR meeting of the Working Group Cavitation and Dynamic Problems, pp. 315-322, Ljubljana, Slovenia, September 9-11, 2015, http://iahrwg2015.si/en/papers

		3.	Lazarevikj M., Stojkovski F., Iliev I., Markov Z.	Influence of the guide vanes design on stress parameters of Francis 99 turbine	Third Francis 99 Workshop, NTNU, Trondheim, Norway, May 2019.
		4.	Markov Z., Jovanoski I., Dimitrovski D.	Multi-criteria analysis approach for selection of the most appropriate technology for municipal wastewater treatment	Journal of Environmental Protection and Ecology, p.289-303, Vol. 14, no.1 (2017), SCI=0,734
		5.			
	10.2.	Participation in scientific national and international projects (up to 5)			
		No.	Author	Title	Publisher/year
		1.	Markov Z. et al.	HERD-Quality Improvement of Master Studies in Energy and Environment (QIMSEE)	Norwegian Ministry of Foreign Affairs, 2014-2016
		2.	Markov Z. et al.	Building Knowledge and Experience Exchange in CFD	CEEPUS Network CIII-RS-1012-03-1718, 2017-2019
		3.	Markov Z. et al.	Hydroflex	Horizon 2020 research project, 2018-2022
		4.			
		5.			
	10.3.	Printed books in the last five years (up to 5)			
		No.	Author	Title	Publisher/year
		1.	Markov Z., Georgievska M.	Waste water treatment	Konrad-Adenauer-Stiftung and Wilfired Martens Center-Brussels, 2017
	10.4.	Printed professional papers in the last 5 years (up to 5)			
		No.	Author	Title	Publisher/year
		1.	Iliev V., Popovski B., Markov Z., Popovski P.	Analysis of Dynamic Behavior of Reversible Francis Turbine during Transient Operational Regime	International Simposium "Energetika 2017", Zlatibor, Serbia, Journal of the Energy Society of Serbia, Year 19, Vol. 3-4, pp. 392-400, 2017
		2.	Markov Z., Dimitrovski D., Peceva M.	Implementing Master Study Program in Sustainable Energy and Environment	3rd International Conference focused on Harmonisation of research and teaching with sustainable development, Shkoder, Albania, November 2015 http://shkodrabena.com/hertspo2015/hertspo2015/
		3.	Iliev V., Gajic A., Markov Z., Popovski P.	Transient Analysis of a Reversible Hydropower Plant	Proceedings of the International Conference Energy and Ecology Industry, pp. 43-48, Belgrade, Serbia, October 2018
		4.			
11.	Supervision (mentorship) of undergraduate, master and doctoral studies students				
	11.1.	Undergraduate		30	
	11.2.	Master		5	
	11.3.	Doctoral		1 (2 additional 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.				
	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)	**Ana Lazarevska**			
2.	Date of birth	11.12.1969			
3.	Scientific degree / Title	Ph.D.			
4.	Title of the scientific degree	Ph.D. in Technical Science			
5.	Year and institution of the scientific degree	Education	Year	Institution	
		Ph.d In Engineering	2008	Faculty of Mechanical engineering - Skopje	
		M. Sc. In Engineering	2001	Faculty of Mechanical engineering - Skopje	
		B. Sc. In Engineering	1994	Faculty of Mechanical engineering - Skopje	
6.	Area, field and particular specialty of master of science degree	Area	Field	Specialty	
		Technical-sciences	Mechanical	Fluid mechanics Environmental protection	
7.	Area, field and area of doctoral degree	Area	Field	Specialty	
		Technical-sciences	Mechanical	Environmental protection	
8.	If employed, state the institution where he/she works and the title and area in which is named	Institution		Title and area	
		University of Ss Cyril and Methodius, faculty of Mechanical engineering		Associate professor, Environmental protection	

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		
		Nr.	Course	Study program/institution
		1.	Hydraulics and hydraulic machines	IND, PInf / FME
		2.	Systems for hydraulic and pneumatic transport	EE/FME
		3.	Hydraulic and pneumatic transport	AFI/FME
		4.	Designing systems for hydraulic and pneumatic transport	AFI/ FME
		5.	Practice in the industry , small and medium enterprises	AFI, EE / FME

	9.2.	List of courses that the teacher is lecturing in the second cycle			
		Nr.	Course	Study program/institution	
		1.	Water protection and sustainable development	AFI / FME	
		2.	Evaluation of Environmental Impact	IZIS / Ss	
	9.3.	List of courses that the teacher is lecturing in the third cycle			
		Nr.	Course	Study program/institution	
		1.			
		2.			
10.	Selected work in the past five years				
	10.1.	Relevant scientific printed paper (up to 5)			
		Nr.	Author	Title	Publisher/year
		1.	Lazarevska, A. M, Mladenovska, D., Sørensen, Å. L., Glimsdal, A. I.,	"Carbon Emission Reduction Potential of the Gas-Fired Combined Cycle Heat and Power Plant "Energetika""	Proc. "Energetics 2010" International Symposium, Ohrid, 07-09 October, 2010.
		2.	Lazarevska, A. M, Mladenovska, D., Sørensen, Å. L., Glimsdal, A. I.,	"Is Modernization of Bitola Thermal Power Plant feasible as a Clean Development Mechanism Project"	Proc. "Energetics 2010" International Symposium, Ohrid, 07-09 October, 2010.
		3.	Lazarevska, A. M., Fischer, N., Münnich, K., Haarstrick, A	"A Multi-Criteria Decision Making Conceptual Approach to optimal Landfill Monitoring"	Published in NATO Science for Peace and Security Series – C: Environmental Security "GeoSpatial Visual Analytics: Geographical Information Processing and Visual Analytics for Environmental Security", (Eds. De Amicis, R., Stojanovic, R., Conti, G.), Springer Science + Business Media, pp. 97–112, 2009
		4.	Nospal, A., Lazarevska, A. M	"Environmental protection and industry: Parameters necessary for environmentally related decision making"	Published in NATO Science for Peace and Security Series – C: Environmental Security "GeoSpatial Visual Analytics: Geographical Information Processing and Visual Analytics for Environmental Security", (Eds. De Amicis, R., Stojanovic, R., Conti, G.), Springer Science + Business Media, pp. 97–112, 2009,
		5.	Lazarevska, A.M.	"Comparative Analysis of Parameters Obtained while Simulating an Air-Pollution Episode",	Mathematica Balkanica, New Series Vol. 20, 2006, Fasc. 1. pp. 49-62
	10.2.	Participation in scientific national and international projects (up to 5)			
		Nr.	Author	Title	Publisher/year
		1.	Cosmo –	EUREM (European Energy Manager) Plus	Co-funded by the

			Innovative Center		Intelligent Energy Europe Programme of the EU, 2013 – 2015
		2.	Bilic, I.. Lazarevska, A.	Open Access to the Enterpreneuership Lifelong Learning (LLL) Education for Persons with Disabilities (PwDs) adjusted for Visually Impared Persons (VIPs), http://www.lll4business.org/	Alumni Engagement Innovation Fund (AEIF), US Department of State 2012 – 2014
		3.	Lazarevska, A.	Ensuring Equal Access through Service Learning for Persons with Disabilities, http://www.equalaccess4pwds.org/	AEIF, US Department of State 2011 – 2012. Macedonian-American Alumni Association (MAAA)
		4.	Lazarevska, A.M. Atanasovski, A.	"Regional JFDP Alumni Conference "Enhancing Accessibility of the Higher Education to the Disabled", Nov. 22-24, 2010 in Skopje/Ohrid, Macedonia": (http://www.maaa.com.mk/jfdp-conference-2010)	MAAA. Financed by the Junior Faculty Development Program (JFDP) Alumni Grant (JAG), under the auspices of the Alumni Local Initiative Grants Program, funded by the Bureau of Educational and Cultural Affairs of the US Department of State (ECA), administered by the American Councils for International Education: ACTR/ACCELS. (Aug 2010 – Dec 2010)
		5.	Tuneski A.	Development of Environmental and Resources Engineering Learning (DEREL)	EU TEMPUS проект, 2010 – 2014
		6.	Kochov, A.	Cleaner Production (CP) Training (CIRKO National Cleaner Production Center – Macedonia	UNIDO Funded, 2010 – 2011
		7.	A. Nospal et al.	Application of CFD and CAX Technologies in Fluid Flow Processes in Energetics and Ecology.	FME,Ss, financed by the Ministry of education and science, 2006–2009
	10.3.	Printed books in the last five years (up to 5)			
		Nr.	Author	Title	Publisher/year
		1.	Lazarevska, A. M., Bilić, I., Koçi, A. (Eds.),	"Book of Case Studies: Service Learning Success Stories in Macedonia and Croatia"	MAAA, 2012:
		2.	Lazarevska, A. M., et al.,	"Guidelines for Correct Attitude towards Persons with Disabilities or Limited Abilities in Higher Education" (Eds. Lazarevska, A. M., Trajkovski, V., Petrov, R.), in English (ISBN 978-608-4700-01-2), Macedonian (ISBN 978-608-4700-02-9), Croatian and Albanian	MAAA, 2012:
		3.	Ristovska M. 2012:	„Guidelines for Effective Introduction and Implementation of Service–Learning in Higher Education", (Eds. Lazarevska, A. M., Nikolov, A., Stankovic, M.), in Macedonian (ISBN 978-608-4700-03-6). (Eds. Lazarevska, A. M., Stankosky, M., Koçi, A.), in English (ISBN 978-608-4700-00-5),	MAAA, 2012:

		4.	Kochi, A., Reka, A., Lazarevska, A. M. (Eds.), 2011	"Model United Nations: A model for extracurricular Activity", pp. 43 (Eng.), (ISBN 978-608-65257-2-9).	MAAA, 2012:
		5.	Vaclav Smil (translated book)	Energy in Nature and Society	Datapons, 2013
	10.4.	Printed professional papers in the last 5 years (up to 5)			
		Nr.	Author	Title	Publisher/year
		1.	Mladenovska, D., Lazarevska, A. M	Determining Relevant Attributes and Corresponding Indicators in a Decision Making Concept for Site-Selection of Coal Fired Thermal Power Plants	BALKANMINE 2013, Vth JUBILEE BALKAN MINING CONGRESS, 18 ÷ 21th September 2013 – Ohrid, Macedonia
		2.	Peeva, L., Jovanovski, D., Lazarevska, A. M., Shushlevska, M.	Cleaner Production Assessment Report of MEGA DOOEL Skopje	2010 – 2011 Cleaner Production (CP) Training (CIRKO National Cleaner Production Center – Macedonia – UNIDO Funded), 2011
		3.	Lazarevska, A., M.	Draft PDD for the CDM Project: "Gas-Fired Combined Cycle Heat and Power Plant "Energetika"	for AD ELEM, 2010, financed by project leaded by Norsk Energi, Norway
		4.	Lazarevska, A., M.	Draft PDD for the CDM Project: "Rehabilitation of Bitola Thermal Power Plant"	for AD ELEM, 2010, financed by project leaded by Norsk Energi, Norway
11.	Supervision (mentorship) of undergraduate, master and doctoral studies students				
	11.1.	Undergraduate		2	
	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			
		Nr.	Author	Title	Publisher/year
		1.	Lazarevska, A. M., Fischer, N., Münnich, K., Haarstrick, A.	"A Multi-Criteria Decision Making Conceptual Approach to optimal Landfill Monitoring"	Published in NATO Science for Peace and Security Series – C: Environmental Security "GeoSpatial Visual Analytics: Geographical Information Processing and Visual Analytics for Environmental Security", (Eds. De Amicis, R., Stojanovic, R., Conti, G.), **Springer Science + Business Media, 2009**
		2.	Nospal, A., Lazarevska, A. M.	"Environmental protection and industry: Parameters necessary for environmentally related decision making"	Published in NATO Science for Peace and Security Series – C: Environmental Security "GeoSpatial Visual Analytics: Geographical Information Processing and Visual Analytics for Environmental Security", (Eds. De Amicis, R.,

					Stojanovic, R., Conti, G.), **Springer Science + Business Media, 2009**	
	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				
		Nr.	Author	Title	Publisher/year	
		1.	Lazarevska, A. M., Fischer, N., Münnich, K., Haarstrick, A.	"A Multi-Criteria Decision Making Conceptual Approach to optimal Landfill Monitoring"	Published in NATO Science for Peace and Security Series – C: Environmental Security "GeoSpatial Visual Analytics: Geographical Information Processing and Visual Analytics for Environmental Security", (Eds. De Amicis, R., Stojanovic, R., Conti, G.), **Springer Science + Business Media, 2009**	
		2.	Nospal, A., Lazarevska, A. M.	"Environmental protection and industry: Parameters necessary for environmentally related decision making"	Published in NATO Science for Peace and Security Series – C: Environmental Security "GeoSpatial Visual Analytics: Geographical Information Processing and Visual Analytics for Environmental Security", (Eds. De Amicis, R., Stojanovic, R., Conti, G.), **Springer Science + Business Media, 2009**	
	12.3.	Proof of at least three international meetings' participation in the past four years				
		Nr.	Author	Title	International meeting/conference	year
		1.	Lazarevska, A. M, Mladenovska, D., Sørensen, Å. L., Glimsdal, A. I.,	"Carbon Emission Reduction Potential of the Gas-Fired Combined Cycle Heat and Power Plant "Energetika""	Proc. "Energetics 2010" International Symposium, Ohrid, 07-09 October.	2010
		2.	Lazarevska, A. M, Mladenovska, D., Sørensen, Å. L., Glimsdal, A. I.,	"Is Modernization of Bitola Thermal Power Plant feasible as a Clean Development Mechanism Project"	Proc. "Energetics 2010" International Symposium, Ohrid, 07-09 October.	2010
		3.	Mladenovska, D., Lazarevska, A. M	Determining Relevant Attributes and Corresponding Indicators in a Decision Making Concept for Site-Selection of Coal Fired Thermal Power Plants	BALKANMINE 2013, Vth JUBILEE BALKAN MINING CONGRESS, 18 ÷ 21th September 2013 – Ohrid, Macedonia	2013

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)	Dame Dimitrovski			
2.	Date of birth	21.11.1979			
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.	2010	UKIM, Faculty of Mechanical engineering	
		Magister of technical sciences	2007	UKIM, Faculty of Mechanical engineering	
		Mechanical engineer	2003	UKIM, Faculty of Mechanical engineering	
6.	Area, field and particular specialty of master of science degree	Area	Field	Specialty	
		Energetic, Mechanical engineering	Thermoenergy	IC engines and environment	
7.	Area, field and area of doctoral degree	Area	Field	Specialty	
		Energetic, Mechanical engineering	Thermoenergy	IC engines and environment	
8.	If employed, state the institution where he/she works and the title and area in which is named	Institution	Title and area		
		University of St. Cyril and Methodius in Skopje, Faculty of Mechanical engineering	Associate professor, Thermotechnics and Thermoenergetics		

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 and tuning of IC engines	TI, MFS
		2.	Energy from waste	EE, MFS
		3.	Fuels and engines	All, MFS
		4.	Environmental impact assessment from energy processes	EE, MFS
	9.2.	List of courses that the teacher is lecturing in the second cycle		
		No.	Course	Study program/institution
		1.	Waste treatment technologies	EE, MFS
		2.	Energy management	BZPR, MFS
		3.	IC engines advanced technology 1	TI, MFS
	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.	Dame Dimitrovski	Introducing natural gas as a second fuel and reconstruction of a diesel engine to use dual fuel technilogy – emissions, economy	Combustion Institute, Western States, USA, 2008, University of Southern California

		2.	Dame Dimitrovski	Using CNG and Diesel in the City Bus Transport in Skopje	Proceedings of the 2008 Technical Meeting of the Central States Section of The Combustion Institute, USA, 2008
		3.	Dame Dimitrovski	Union Regulations of Road Transport Air Pollution and Its Implementation in the Macedonia	JEPE
		4.	Zoran Markov, Dame Dimitrovski	Production and Utilising of Biogas and Other Measures for Increasing Energy Efficiency in the Municipal Wastewater Treatment Plant	JEPE
		5.	Dame Dimitrovski, Martina Dimeska	Possible directions for strategic connection of Republic of Macedonia to the European natural gas streams	Proceedings of the Institute of Gas Technology
	10.2.	Participation in scientific national and international projects (up to 5)			
		No.	Author	Title	Publisher/year
		1.	Mile Dimitrovski, Vanco Donev, Elenior Nikolov, Dame Dimitrovski	Adjustment of the car park - buses JSP and the use of eco fuels, natural gas, development project	Ministry of education and science, Skopje 2003
		2.	Dame M. Dimitrovski	Using of Biogas for cogenerative systems at sanitary landfill - Drisla Skopje	Project for World Scientific Organization pages 6+52
		3.	Dame Dimitrovski, Sonja Filipovska,	Lowering the influence of using day lights and a mean to reduce the emission from small vehicles	National Agency for Traffic Safety on the roads in 2009, Study
		4.	Dame Dimitrovski,	Emissions and Imissions in the city of Tetovo, traffic development influence on the imissions,	National Agency for Traffic Safety on the roads in 2008, Study
	10.3.	Printed books in the last five years (up to 5)			
		No.	Author	Title	Publisher/year
		1.	Mile Dimitrovski Dame Dimitrovski	Publication: Agro Energy study possibilities for the use of renewable energy sources in rural areas in the country	Study Agro, Energy Study nr. 008/2009 – Biogas 2009
		2.	Dame Dimitrovski	Monograph: Reducing air pollution in Skopje by replacing existing fossil fuels with natural gas, a candidate for the award Gotse Delchev 2008, Skopje, ISBN 978-9989-9812-8-9	2008, Institute of gaseous technique, Ministry of education and science of the Republic of Macedonia
	10.4.	Printed professional papers in the last 5 years (up to 5)			
		No.	Author	Title	Publisher/year

		1.	Dame M. Dimitrovski	Awarded labor original research results published in scientific reference / professional journal with an international editorial board: Ecological benefits of NG buses in Skopje, Awarded article	International Gas conference, Beograd, Serbia, 2007
		2.	Z. Markov, D.Dimitrovski, V.Aleksic	Development of Gas Distribution Network for the city of Kumanovo – Challenges and Solutions, International Gas Conference of South Eastern Europe	Proceedings of the Institute of Gas Technology
		3.	D. Dimitrovski, M. Stojanovski, D. Stojanovska	Virtual pipelines – short cut to natural gas utilization, International Gas Conference of South Eastern Europe	International Gas Conference, Sarajevo 2012
		4.	Dame Dimitrovski	Why biogas from agriculture and livestock, haven't became the basis for rural development in Macedonia	Zemak, Ohrid, 2010
		5.	Done Tashevski, Dame Dimitrovski	Optimization of binary co-generative thermal power plants with SOFC on solid fuel	JETP

11.	Supervision (mentorship) of undergraduate, master and doctoral studies students		
	11.1.	Undergraduate	27
	11.2.	Master	5
	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.	Gordana Popsimonova, Biljana Ristovska, Dame Dimitrovski (CA), Goce Georgievski	Greenhouse production in Macedonia – challenges and opportunities	MESJ 77–84, UDC 621, CODEN: MINSC5, ISSN 1857 – 5293
		2.	Dame Dimitrovski, Blagojce Bogatinovski	Review of printed scientific paper in Mechanical engineering up to date MESJ, review	Mechanical engineering – Scientific journal vol.30, 2012
		3.	Dame Dimitrovski, Goran Dimeski	Possibilities for pollution reduction from households by implementing natural gas	Mechanical engineering – Scientific journal vol 32-1, 2014
		4.	Dame Dimitrovski, Mile Dimitrovski, Elena Kitanovska, Done Tashevski	Pollution from diesel engine with emphasis on pollution in Macedonia	Mechanical engineering – Scientific journal vol 32-1, 2014
	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.	Z. MARKOV, D. DIMITROVSKI, I. JOVANOSKI, A. NENCHEV.	Production and Utilising of Biogas and Other Measures for Increasing Energy Efficiency in the Municipal Wastewater Treatment Plant p.1014	Journal of environmental protection and ecology, 2013, vol.3	
		2.	M. DIMITROVSKI, Z. SAPURIC, D. DIMITROVSKI CA, M. KOCHUBOVSKI.	European Union Regulations of Road Transport Air Pollution and Its Implementation in the FYR Macedonia p.813	Journal of environmental protection and ecology, 2013, vol.3A	
		3	Done Tashevski, Dame Dimitrovski	Optimization of binary co-generative thermal power plants with SOFC on solid fuel	Chemical Engineering Transactions, Journal ISSN: 19749791	
		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, 2014 (JIF 7,5377)	
		5	Dame Dimitrovski, Mile Dimitrovski, Antonio Jovanovski	Model for calculation of NOx from public transport in the city of Skopje	JEPE, 2014, accepted for publishing, vol 4	
	12.3.	Proof of at least three international meetings' participation in the past four years				
		No.	Author	Title	International meeting/conference	year
		1.	D. Dimitrovski, M. Dimitrovski, E. Kitanovska, D. Tashevski:	Pollution from Diesel Engines do to Increase of Imported Vehicles in FYR-Macedonia. (IOC - 2nd Award)	1st International Medical Conference "Environment and Public Health" MED ENV 2014, Mamaia, Romania,	12-14 September 2014.
		2.	D. Dimitrovski, M. Dimitrovski, G. Popsimonova, D. Tashevski	Biogas – Overview of the Possibilities for Implementation in the Macedonian Agricultural Sector. (IOC)	16th Symposium on Thermal Science and Engineering of Serbia – SIMTERM 2013, p. 11, Sokobanja, Serbia,	22-25 October, 2013.
			D. Dimitrovski, K. Belcheska, D. Tashevski, M. Kocubovsk	Possible Scenarios for Achiving the Goal 20/20/20 in FYR-Macedonia.	1st Internatinal U.O.C. – B.E.N.A. – Conference "The Sustainability of Pharmaceutical, Medical and Ecological Education and Research – SPHAMEER – 2013", p. 6, Constanca, Romania.	20-23 June, 2013.

					(IOC)	
			D. Tashevski, D. Dimitrovski, Z. Markov, I. Shesho:	Energy and Ecology Benefits of Independent SOFC/Gas Turbine Co-generation Power Plant on Natural Gas.	1st Internatinal U.O.C. – B.E.N.A. – Conference "The Sustainability of Pharmaceutical, Medical and Ecological Education and Research – SPHAMEER – 2013", p. 6, Constanca, Romania,	20-23 June, 2013. (IOC)
			D. Dimitrovski, M. Dimevska, D. Tashevski:	Strategic connection of Republic of Macedonia to the European natural gas streams. (IOC)	International gas conference of South Eastern Europe, Sarajevo, Bosnia and Herzegovina,	2012

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)	Darko Babunski			
2.	Date of birth	04.10.1975			
3.	Scientific degree / Title	Ph.D./Assistant Professor			
4.	Title of the scientific degree	Ph.D. in Technical Sciences			
5.	Year and institution of the scientific degree	Education	Year	Institution	
		Ph.D	2012	Faculty of Mechanical Engineering - Skopje	
		M.Sc	2006	Faculty of Mechanical Engineering - Skopje	
		B.Sc	1999	Faculty of Mechanical Engineering - Skopje	
6.	Area, field and particular specialty of master of science degree	Area	Field	Specialty	
		Technical Sciences	Mechanical Engineering	Control Systems	
7.	Area, field and area of doctoral degree	Area	Field	Specialty	
		Technical Sciences	Mechanical Engineering	Control Systems	
8.	If employed, state the institution where he/she works and the title and area in which is named	Institution		Title and area	
		Faculty of Mechanical Engineering –Skopje		Assistant Professor, Automation	
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.	Programmable Logic Controllers	Automatics and Control Systems, Faculty of Mechanical Engineering – Skopje	
		2.	Control and automation of HEP	Energetics and Ecology/ Faculty of Mechanical Engineering – Skopje	
		3.	Practice in the industry, small and medium enterprises	Automatics and Control Systems, 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.	Computer control of machines and	Automatics and Control Systems, Faculty of	

			processes	Mechanical Engineering – Skopje	
		2.	Real – Time control systems and Hardware–in-the-loop	Automatics and Control 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.			
10.	Selected work in the past five years				
	10.1.	Relevant scientific printed paper (up to 5)			
		No.	Author	Title	Publisher/year
		1.	I. Mihajlovic, D. Babunski et al.	"Comparison of Spectrolyser Device Measurements with Standard Analysis of Wastewater Samples in Novi Sad, Serbia "	Bulletin of Environmental Contamination and Toxicology, September 2014, Volume 93, Issue 3, pp 354-359 SCI=1.216
		2.	V. Iliev, D. Babunski, et al.	Direct Digital Control of HVAC System and CO2-Based Demand Controlled Ventilation	International Journal of Innovative Technology and Exploring Engineering™ (IJITEE), p.12-17, Vol. 3, no.9 (2014), SCI=0,546
		3.	D. Babunski, E. Zaev, A. Tuneski	Simulation of Load Rejection on a Nonlinear Hydro Power Plant Model with Mixed Mode Nonlinear Controller	proceedings of MECO 2012 conference, Bar, Monteenegro, pp. 275-278
		4.	E. Zaev, D. Babunski et. al	HPP Simulator for real-time simulation and SCADA software testing	Proceedings of the 6-th Annual South East European Doctoral Students Conference, Thessaloniki, Greece, 2011
		5.	D. Babunski, E. Zaev, A. Tuneski	SCADA simulation for monitoring and control of HPP using Robust Law	Proceedings of the IX National Conference With International Participation ETAI 2009, Section A, pp 90, Ohrid, R. Macedonia, 2009
	10.2.	Participation in scientific national and international projects (up to 5)			
		No.	Author	Title	Publisher/year
		1.	A. Tuneski, D. Babunski et al.,	Development of Environment and Resources Engineering Learning - DEREL	TEMPUS Joint Project JP-511001-2010, 2010-2014
		2.	A. Tuneski, D. Babunski et al.,	Development of Environment and Resources Engineering Curriculum - DEREC	TEMPUS Joint European Project JEP-19028_20042005-2008,
		3.	A. Tuneski, D. Babunski et al.,	"Monitoring and Improving the Rivers in the Vardar/Axios Watershed (MIRVAX)",	NATO Partnership for Peace cofinanced project, SfP981877, 2006-2008
	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.			
11.	Supervision (mentorship) of undergraduate, master and doctoral studies students				
	11.1.	Undergraduate		7	
	11.2.	Master		1	
	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.				

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)	**Ana Frichand**			
2.	Date of birth	**26.01.1978**			
3.	Scientific degree / Title	**Ph.D.**			
4.	Title of the scientific degree	**Ph.D in Psychology**			
5.	Year and institution of the scientific degree	Education	Year	Institution	
		BSc. in Psychology	2001	Faculty of Philosophy, Skopje	
		MSc. in Psychology	2007	Faculty of Philosophy, Skopje	
		Ph.D. in Psychology	2010	Faculty of Philosophy, Skopje	
6.	Area, field and particular specialty of master of science degree	Area	Field	Specialty	
		Social sciences	**Psychology**	**Developmental psychology**	
7.	Area, field and area of doctoral degree	Area	Field	Specialty	
		Social sciences	**Psychology**	**Developmental psychology**	
8.	If employed, state the institution where he/she works and the title and area in which is named	Institution	Title and area		
		Faculty of Philosophy, Skopje	Associate professor, Developmental psychology, Psychology of education and fostering и Military psychology		
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			
		Nr.	Course	Study program/institution	
		1.	Psychology of childhood and adolescence	Psychology/Faculty of Philosophy	

		2.	Psychology of adulthood and aging	Psychology/Faculty of Philosophy
		3.	Moral development	Psychology/Faculty of Philosophy
		4.	Conflict transformation	Psychology/Faculty of Philosophy
		5.	Development of children and adolescents in the family	Family studies/Faculty of Philosophy
		6.	Development of adults and aging in the family	Family studies/Faculty of Philosophy
		7.	Developmental psychology	Pedagogy and Special education and rehabilitation/Faculty of Philosophy
		8.		
	9.2.	List of courses that the teacher is lecturing in the second cycle		
		Nr.	Course	Study program/institution
		1.	Developmental psychology	Psychology/Faculty of Philosophy
		2.	Applied developmental psychology	Psychology/Faculty of Philosophy
		3.	Moral psychology	Psychology/Faculty of Philosophy
		4.	Conflict resolution	International relations/Faculty of Philosophy
		5.	Mediation and negotiation	International relations/Faculty of Philosophy
		6.	Psychology of children and youth	Juvenile delinquency/Faculty of Philosophy
		7.	Experts in teamwork	Faculty of Mechanical engineering
		8.	Psychology	Faculty of Pharmacy
	9.3.	List of courses that the teacher is lecturing in the third cycle		
		Nr.	Course	Study program/institution
		1.	Developmental psychology	Psychology/Faculty of Philosophy
		2.	Current trends in moral psychology	Psychology/Faculty of Philosophy

10.	Selected work in the past five years				
	10.1.	Relevant scientific printed paper (up to 5)			
		Nr.	Author	Title	Publisher/year
		1.	Pajaziti, A.; Blazevska Stoilkovska, B.; & **Fritzhand. A.**	From Inclusive Identities to Inclusive Societies: Exploring Complex Social Identity in the Macedonian Context	*Iliria International Review*, 6, 2, 31-45, DOI: 10.21113/iir.v6i2.273, Iliria College, Kosovo and Felix-Verlag, Germany (2016)
		2.	Shurbanovska, O.; **Frichand, A.,** & Blazevska Stoilkovska, B.	Parent-child Relationships in the Family Today	*Sociological Review*, 17, 2, 49-62, UDK 37.064:316.628 053.6 316.356.2.063.24:31 6.628-053.6 Skopje: Bomat Graphics (2016)
		3.	**Fritzhand, A.,** & Blazevska Stoilkovska, B.	Social dominance orientation and Trust in institutions among Macedonian and Albanian Young Adults	*Security Dialogues*, 7, *1*, стр. 7-24 ISSN 1857-7172, Skopje, Faculty of Philosophy (2016)
		4.	**Fritzhand, A.**, Mirovic, T., & Hadzic, A.	The Relationship between the Perception of Parenting Style and Early Maladaptive Schemes: Evidence from the Study on Adolescents and Young Adults in Macedonia and Serbia.	*Proceedings form the international scientific conference „Theory and practice in psychology“* October, 30 – November, 1, 2014, 171-197, Skopje, Faculty of

				Psychology (2016)
	5.	**Frichand, A.** & Petrovic, N.	The Culture of Peace: Measuring the Emotional Climate in the Republic of Macedonia	*Security Dialogues.* Vol.5 No.1, стр. 145-162 Skopje, Faculty of Philosophy (2014)

10.2.	Participation in scientific national and international projects (up to 5)			
	Nr.	Author	Title	Publisher/year
	1.	University of Belgrade, Serbia; University of Banja Luka, R. Srpska; University of Sarajevo, BiH; American University in Pristina and State University of Pristina; Kosovo **Frichand, A.**; Blazevska Stoilkovska, B.; Pajaziti, A., Rustemi, A., и Qose, A. from North Macedonia	**National coordinator** of the regional scientific project "From Inclusive Identities to Inclusive Societies: Exploring Complex Social Identities in Western Balkans Youth"	RRPP and Swiss Agency, *September, 2014-November, 2016*
	2.	Stojanoska Ivanova, T. and **Frichand, A.**	Principal researcher in the national project „How to achieve safer schools?"	City of Skopje and NGO „Women Action" in Skopje *2016*
	3.	Blazevska Stoilkovska, B., Shurbanovska, O., **Frichand, A.** and Stojanoska Ivanova, T.	Interaction between the work and the family: study of importance, integrativeness, control and the conflict of work and family roles in teachers from R. of Macedonia	Faculty of Philosophy, UKIM, *2017*
	4.	Anastasovski, I., Zivkovic, V., Aleksovska Velichkovska, L., Naumovski, M., Milenkovski, J., Nanev, L., Stojanoska Ivanova, T., **Frichand, A**., Daskalovski, B. and Misovski, A.	"The impact of attachment to national sport representations on the national identity of youth in R. of Macedonia"	National – bilaterla projects between R. North Macedonia and Montenegro, *2017*
	5.			
10.3.	Printed books in the last five years (up to 5)			
	Nr.	Author	Title	Publisher/year
	1.	**Fritzhand, A**.	*Moral Thinking and Moral Self-concept in Adolescence: Results from the Study on Adolescents in the Republic of Macedonia*.	(2013). ISBN 978-3-639-51916-7 Germany: Scholars Press
	2.	Stojanoska Ivanova, T. and **Frichand, A.**	*Together towards safer schools*	Women Action, Skopje, 2017 ISBN 978-9989-2645-9-7
	3.	Stojanoska Ivanova, T. and **Frichand, A.**	*Moral values through the lenses of the life and work of Mother Teresa*	Women Action, Skopje, 2017
	4.			
	5.			
10.4	Printed professional papers in the last 5 years (up to 5)			
	Nr.	Author	Title	Publisher/year
	1.			
	2.			
	3.			

		4.			
		5.			
11.	Supervision (mentorship) of undergraduate, master and doctoral studies students				
	11.1.	Undergraduate	120		
	11.2.	Master	17		
	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			
		Nr.	Author	Title	Publisher/year
		1.	Frichand, A.	Vocabulary development in boys and girls from early and middle childhood	ANNUAIRE 70, ISSN 0350-1892 1, 187-204, Skopje, Faculty of Philosophy, 2017
		2.	Fritzhand, A., Kitkanj, Z., Anastasovski, I., Aleksovska Velichkovska, L.	The Role of Sports in Overcoming Aggression in Children and Adolescents.	Research in Phisical Education, Sport and Health, 6, 2, 109-111, ISSN 1857-8152, 2017
		3.	Fritzhand, A. & Gjurovski, M.	Contemporary Challenges to Conflict Resolution Approach Towards Maintaining International Security.	Proceedings from the 9-th international scientific conference "Security System Reforms as a Precondition for Euro-Atlantic Integrations", Ohrid, Macedonia, 61-70, UDK:327.5:327-049.6-049.3(100), 2018
		4.	Miloshevska, T. & Fritzhand, A.	Risk Factors Increasing Vulnerability of Migrant Children.	Security Dialogues, 9, 2, 47-58, 2018
		5.	Miloshevska, T., Bakreski, O., Fritzhand, A.	Digital Media Revolution and Political Violence	International Journal of Multidisciplinary Thought, 7, 3, 85-94, University Publications.net, 2018
		6.	Pajaziti, A.; Blazhevska Stoilkovska, B.; & Fritzhand, A., Rustemi, A., Qose, A.	Towards Inclusive Social Identities in the Republic of Macedonia.	In: Pratto, F., Žeželj, I., Maloku, E., Turjačanin, V., Branković, M. (Eds.). Shaping Social Identities After Violent Conflict: Youth in the Western Balkan, 135-158. Palgrave Macmillan ISBN 978-3-319-62020-6, 2017
	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			
		Nr.	Author	Title	Publisher/year
		1.	Blazevska Stoilkovska, B., Shurbanovska, O., Fritzhand, A. & Stojanoska Ivanova, T.	Life Role Salience and Subjective Well-Being among Macedonian Employees: Does Family Supportive Organization Perception Moderate this Relationship	*International Journal of Occupational Medicine and Environmental Health*, 2018, 31, 3, 281-291
		2.	Thoma, S.; Walker, D.; Chen, Y.H.; Frichand, A.; Moulin-Stożek, D.; & Kristjansson, K.	Assessing adolescent's application of the virtues across multiple	Developmental Psychology, (in print) (if 2.94) (2019)

				cultural contexts: An empirical summary of studies using the Adolescent Intermediate Concepts Measure		
	12.3.	Proof of at least three international meetings' participation in the past four years				
		Nr.	Author	Title	International meeting/conference	year
		1.	Fritzhand, A. & Gjurovski, M.	Can Conflict Resolution Effectively Deal With Terrorism? Critical Overview of Contemporary Challenge to International Security.	International conference "Security, Political and Legal Challenges of the Modern World"	October, 19-21, 2018, Bitola
		2.	Fritzhand, A. & Tashkovski, I.	The Role of Socio-psychological Approach to Conflict Resolution in Maintaining (Inter)National Peace and Stability	7th Climate Change, Economic Development, Environment and People Conference, (ACEU 2018)	September, 27-29, 2018, Struga
		3.	Anastasovski, I.; Velichkovska, L.A.; Frichand, A.; & Kocevski, N.	The relationship between gender and application of traditional sports games in social integration of school age children	Colloque international "La ville et le sport",	May, 10-12, 2017, Brest, France

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)	Emil Zaev		
2.	Date of birth	13.02.1976		
3.	Scientific degree / Title	Ph.D./Assistant Professor		
4.	Title of the scientific degree	Ph.D. in Technical Sciences		
5.	Year and institution of the scientific degree	Education	Year	Institution
		Ph.D	2013	Faculty of Mechanical Engineering - Skopje
		M.Sc	2006	Faculty of Mechanical Engineering - Skopje
		B.Sc	1999	Faculty of Mechanical Engineering - Skopje
6.	Area, field and particular specialty of master of science degree	Area	Field	Specialty
		Technical Sciences	Mechanical Engineering	Control Systems
7.	Area, field and area of doctoral degree	Area	Field	Specialty
		Technical Sciences	Mechanical Engineering	Control Systems
8.	If employed, state the institution where he/she works and the title and area in which is named	Institution	Title and area	
		Faculty of Mechanical Engineering –Skopje	Assistant Professor, Automation	
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.	Monitoring and Control	Automatics and Control Systems, Faculty of Mechanical Engineering – Skopje	
		2.	Control and automation of HEP	Energetics and Ecology/ Faculty of Mechanical Engineering – Skopje	
		3.	Practice in the industry, small and medium enterprises	Automatics and Control Systems, 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.	Proportional technology	Automatics and Control Systems, Faculty of Mechanical Engineering – Skopje	
		2.	Real – Time control systems and Hadrware–in-the-loop	Automatics and Control 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.			
10.	Selected work in the past five years				
	10.1.	Relevant scientific printed paper (up to 5)			
		No.	Author	Title	Publisher/year
		1.	Emil Zaev, Gerhard Rath, and Hubert Kargl	“Energy Efficient Active Vibration Damping“	SICFP2013, Sweden, 2013
		2.	Gerhard Rath and Emil Zaev	“Cylinder Pressures in a Position Controlled SystemWith Separate Meter-in and Meter-out”	Scandinavian International Conference on Fluid Power, 2013
		3.	Emil Zaev, Gerhard Rath, et al.	“HPP Simulator for Real-Time Simulation and SCADA Software Testing“	DSC2011, Thessaloniki, Greece, 2011
		4.	Emil Zaev, Gerhard Rath, Hubert Kargl	“Design of a Hydraulic Damper for Heavy Machinery”	SysStruc 2011, Resita Romania, 2011
		5.	Emil Zaev, Gerhard Rath, et al.	“Hydro Power Plant Governor Testing Using Hardware-In-The-Loop Simulation”,	MECO 2012, Bar, Montenegro, 2012
	10.2.	Participation in scientific national and international projects (up to 5)			
		No.	Author	Title	Publisher/year
		1.	Atanasko Tuneski, Emil Zaev et al.,	Development of Environment and Resources Engineering Learning - DEREL	TEMPUS Joint Project JP-511001-2010, 2010-2014
		2.	Atanasko Tuneski, Emil Zaev et al.,	Development of Environment and Resources Engineering Curriculum - DEREC	TEMPUS Joint European Project JEP-19028_20042005-2008,
		3.	A. Tuneski, Emil Zaev, et al.	“Monitoring and Improving the Rivers in the Vardar/Axios Watershed (MIRVAX)”,	NATO Partnership for Peace cofinanced project, SfP981877, 2006-2008
		4.	A. Tuneski, D. Babunski, E. Заев i dr.	“Proektiranje na SCADA sistem za dalechinsko upravuvawe i monitoring na tehnoloshkite procesi vo prehrambena i cementna industija”	proekt za tehnoloshki razvoj finansiran od GTZ (German Technical Cooperation) 2003
		5.	A. Tuneski, D. Babunski, E. Заев i dr.	“Optimalno, robustno upravuvawe na nelinearni sistemi so nadvoreshni poremetuvanja”	Ministerstvoto za obrazovanie i nauka na R. Makedonija, 2003-2006

	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.			
11.	Supervision (mentorship) of undergraduate, master and doctoral studies students				
	11.1.	Undergraduate		5	
	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)	Emilija Celakoska		
2.	Date of birth	13.11.1975		
3.	Scientific degree / Title	Ph.D		
4.	Title of the scientific degree	Ph.D. in Mathematical Sciences		
5.	Year and institution of the scientific degree	Education	Year	Institution
		Ph.D	2010	Faculty of Natural Sciences and Mathematics - Skopje
		MSc	2006	Faculty of Natural Sciences and Mathematics - Skopje
		BSc	1999	Faculty of Natural Sciences and Mathematics - Skopje
6.	Area, field and particular specialty of master of science degree	Area	Field	Specialty
		Mathematical Sciences	Mathematics	Differential Geometry
7.	Area, field and area of doctoral degree	Area	Field	Specialty
		Mathematical Sciences	Mathematics	Differential Geometry
8.	If employed, state the institution where he/she works and the title and area in which is named	Institution	Title and area	
		Faculty of Mechanical Engineering -Skopje	Associate 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 in 3D	IND
		2.	Structured programming	MHT
		3.	Basics of programming	IND, TML, EE, MPI, TI, HEI
		4.	Mathematical analysis	MHT, HEI, EE, TI, AUS

	9.2.	List of courses that the teacher is lecturing in the second cycle			
		No.	Course	Study program/institution	
		1.	Geometric Transformations and Deformations in 3D	MSPDTP	
	9.3.	List of courses that the teacher is lecturing in the third cycle			
		No.	Course	Study program/institution	
		1.	Nonholonomic geometry in mechanical systems	Mechanical engineering/Faculty of 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.	Emilija Celakoska, Elena Hadzieva, Vesna Celakoska – Jordanova	On Complex Homogeneous Space of Vectors with Constraints	Bulgarian Academy of Sciences/ Journal of Geometry and Symmetry in Physics, Vol. 44, 2017, 1 – 11. (SCOPUS CiteScore 2017, 0.58)
		2.	Emilija Celakoska, Vesna Celakoska – Jordanova, Dushan Chakmakov	SO(3,$\mathbb{C}$) Representation and Action on a Homogeneous Space in $\mathbb{C}^3$	RGN Publications/ Communications in Mathematics and Applications, 9(4), 2018, 671-676. (Web of Science, ESCI)
		3.	Emilija Celakoska, Kostadin Trenčevski	Coverings by n-Cubes and the Gauss–Bonnet Theorem	Academia Scientiarum Fennica/ Annales Academiae Scientiarum Fennicae Mathematica Vol 43, 2018, 1063–1072, (IF 0,941 Web of Science 2018)
		4.	Emilija Celakoska, Ana M. Lazarevska	Conditions on nonlinearity of oscillatory equations inducing the periapsidal precession	Springer/ General Relativity and Gravitation, Vol 51 (5), 2019, 67: 1-17. (IF 1,721 Web of Science 2019)
		5.	Trencevski Kostadin, Celakoska Emilija	Complex Equations of Motion for a Body under Gravitational Influence by using a Nine-Parameter Space-time Bundle with the Structural Group SO(3, C)	Elsevier/ Annals of Physics Vol. 395, 2018, 15-25, (IF 2,465 Web of Science 2018)
	10.2.	Participation in scientific national and international projects (up to 5)			
		No.	Author	Title	Publisher/year
		1.	Dushan Chakmakov, PhD	Combining and optimizing classifiers for pattern recognition applications	Ministry of education and science, 2003 - 2006
		2.	Kostadin Trenchevski, PhD	Differential-geometric and topological problems and their application	Ministry of education and science, 2006-2009
		3.	Nikola Tuneski, PhD	Theory of univalent functions and applications	Ministry of education and science and TUBITAK-Turkey, 2006 - 2008
		4.	Zivorad Tomovski, PhD	Linear and Nonlinear Fractional Models	Bilateral project Macedonia - Austria, 2011-2013
		5.	Emilija Celakoska, PhD	Construction of a model for extracting relevant information from real nonlinear problems	UKIM, 2017/2018

	10.3.	Printed books in the last five years (up to 5)			
		No.	Author	Title	Publisher/year
		1.	N.Tuneski, E. Celakoska	Introduction to MATLAB	Faculty of Mechanical Engineering –Skopje, 2010
	10.4.	Printed professional papers in the last 5 years (up to 5)			
		No.	Author	Title	Publisher/year
		1.	Celakoska Emilija	Lambert function – graph, calculations and applications	UKIM - PMF/2017, Mathematical Omnibus 1, pp.35-45
		2.	Celakoska Emilija	On the normal and abnormal numbers	UKIM-PMF/2018, Mathematical Omnibus 3, pp.43-54
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.				

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 Prangoski		
2.	Date of birth	29.07.1984		
3.	Scientific degree / Title	Ph.D.		
4.	Title of the scientific degree	Ph.D. in Theoretical Mathematics		
5.	Year and institution of the scientific degree	Education	Year	Institution
		B.S. in Mathematics	2007	Faculty of Science, University Ss. Cyril and Methodius, Skopje
		M.Sc. in Theoretical Mathematics	2010	Faculty of Science, University Ss. Cyril and Methodius, Skopje
		Ph.D. in Theoretical Mathematics	2013	Faculty of Science, University of Novi Sad, Novi Sad, Serbia
6.	Area, field and particular specialty of master of science degree	Area	Field	Specialty
		Theoretical Mathematics	Functional Analysis	Theory of distributions
7.	Area, field and area of doctoral degree	Area	Field	Specialty
		Theoretical Mathematics	Functional Analysis	Ultra distributions, Pseudo differential operators
8.	If employed, state	Institution		Title and area

	the institution where he/she works and the title and area in which is named	Faculty of Mechanical Engineering, Dept. of Mathematics and Informatics, University “Ss. Cyril and Methodius"	Associate professor	

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.			
	9.2.	List of courses that the teacher is lecturing in the second cycle			
		No.	Course		
		1.			
	9.3.	List of courses that the teacher is lecturing in the third cycle			
		No.	Course		
		1.			
10.	Selected work in the past five years				
	10.1.	Relevant scientific printed paper (up to 5)			
		No.	Author	Title	Publisher/year
		1.	S.Pilipovic, B.Prangoski	On the convolution of Roumieu ultradistributions through the ε tensor product	Monatshefte fur Mathematik, **173** 1 (2014), 83-105
		2.	B.Prangoski	Laplace transform in spaces of ultradistributions	Filomat, **27** 5 (2013), 747-760
		3.	S. Pilipovic, B. Prangoski	Anti-Wick and Weyl quantization on ultradistribution spaces	J. Math. Pures Appl., online April 2014, http://dx.doi.org/10.1016/j.matpur.2014.04.011
	10.2.	Participation in scientific national and international projects (up to 5)			
		No.	Author	Title	Publisher/year
		1.			
	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.			
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.				

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	18.07.1982				
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		
		PhD in Technical Sciences	2015	UKIM Skopje Macedonia Faculty of Mechanical Engineering		
		MSc Technical Sciences	2009	UKIM Skopje Macedonia Faculty of Mechanical Engineering		
		BSc Technical Sciences – Mechanical eng.	2006	UKIM Skopje Macedonia Faculty of Mechanical Engineering		
6.	Area, field and particular specialty of master of science degree	Area	Field	Specialty		
		Mechanical engineering	Energetic	Energy efficiency		
7.	Area, field and area of doctoral degree	Area	Field	Specialty		
		Mechanical engineering	Renewable energy	Solar energy		
8.	If employed, state the institution where he/she works and the title and area in which is named	Institution			Title and area	
		Faculty of Mechanical Engineering Skopje, University Ss. Cyril and Methodius in Skopje			Assistant Professor / mechanical engineering-thermal 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)		
		2.	Thermal machinces and devices	HPE		
		3.	Computational thermal engineering	TE		
	9.2.	List of courses that the teacher is lecturing in the second cycle				
		No.	Course	Study program/institution		
		1.	Non conventional power plants-advanced	TI		
		2.	Energy efficiency in thermal systems	TI/EE		
		3.	Renewable energy sources-advanced	TI/EE		
		4.	Green Lean	IIM		
		5.	Energy economics			
		6.	Process of energy conversion			
	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		Publisher/year
		1.	D. Tashevski,	Analysis of Parameters		International Journal of Mechanical

			R. Filkoski, D. Dimitrovski, I. Shesho	Affecting the Efficiency Optimization of Binary SOFC Co-generation Power Plants.	Engineering and Technology (IJMET), (ISSN 0976–6359 Online), Volume 5, Issue 10, pp. 180-190, India, 2014 (JIF 7,5377)
		2.	D. Tashevski, R. Filkoski, I. Shesho	Optimization of Binary Cogenerative Thermal Power Plants with Solid Oxide Fuel Cells on Natural Gas.	International Journal of Mechanical Engineering and Technology (IJMET), (ISSN 0976–6359 Online), Volume 5, Issue 1, pp. 122-131, India, 2014 (JIF 5,77)
		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), India, 2014 (JIF 1,69)
		4.	I.Shesho, R.Filkoski, D.Tashevski	Techno-economic and environmental optimization of heat supply systems in urban areas	Thermal Science, Vol. 22, Suppl. 5, pp. S1635-S1647, 2018
		5.	I.Shesho, Z.Markov, D.Tashevski D.Dimitrovski	Possibilities for improving energy efficiency in industry sector utilizing low temperature waste heat recovery	Journal of Environmental Protection and Ecology, Vol 19, No 3, 1431–1441, 2018
	10.2.	Participation in scientific national and international projects (up to 5)			
		No.	Author	Title	Publisher/year
		1.			
	10.3.	Printed books in the last five years (up to 5)			
		No.	Author	Title	Publisher/year
		1.			
		2.			
		3.			
	10.4.	Printed professional papers in the last 5 years (up to 5)			
		No.	Author	Title	Publisher/year
		1.	D. Tashevski, R. Filkoski, S.Armenski D. Dimitrovski, I. Shesho:	Study for defining techno-economic optimal and ecological sustainable structure for heating and implementation of centralized supply with domestic heat water for the urban area in Skopje	MFS Skopje / 2017
		2.	D. Tashevski, R. Filkoski, I. Shesho:	Study for Mmodeling and calculation of heat transfer between heated and unheated residential apartment buildings	MFS Skopje / 2018
		3.	S.Armenski D. Tashevski, R. Filkoski, Z.Markov I. Shesho:	Revision of the study “Analysis of possibilities for supply of TPP Oslomej with natural gas”	MFS Skopje / 2017
		4.			
		5.			
11.	Supervision (mentorship) of undergraduate, master and doctoral studies students				
	11.1.	Undergraduate	5 mentorship of undergraduate students		
	11.2.	Master	4 in progress		

	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.				
		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.				
		3.				
		4.				
		5.				
	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.				
		4.				
		5				

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)	Viktor Iliev		
2.	Date of birth	02.04.1979		
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 engineering - Skopje
		M. Sc. in Mechanical Engineering	2011	Faculty of Mechanical engineering - Skopje
		B. Sc. in Mechanical Engineering	2002	Faculty of Mechanical engineering - Skopje
6.	Area, field and particular specialty of master of science degree	Area	Field	Specialty
		Technical-technological sciences	Mechanical	Fluid mechanic and fluid flow systems (21420)
7.	Area, field and area of doctoral degree	Area	Field	Specialty
		Technical-technological sciences	Mechanical	Fluid mechanic and fluid flow systems (21420)
8.	If employed, state the	Institution	Title and area	

	institution where he/she works and the title and area in which is named	University of Ss Cyril and Methodius, faculty of Mechanical engineering	Assistant Professor, Fluid mechanics and fluid flow systems (21420)	

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.	Energy pipeline systems	HPE (Hydraulic power engineering) / FME
		2.	Water supply and irrigation systems	HPE / FME
		3.	Unsteady flows in HEP	HPE / FME
	9.2.	List of courses that the teacher is lecturing in the second cycle		
		No.	Course	Study program/institution
		1.	Measurements, monitoring and data acquisition	AFI / FME
		2.	Selected chapters of Fluid Mechanics	EE / FME
		3.	Experimental engineering	EE / FME
		4.	Control of HEP	AFI / FME
	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	Publisher/year
		1.	Viktor Iliev, Aleksandar Gajić, Zoran Markov, Predrag Popovski	Transient Analysis of a Reversible Hydropower Plant	International Conference, Energy and Ecology Industry EEI2018, October 2018, Belgrade.
		2.	U. Karadžić, V. Iliev, A. Bergant	Fluid Structure Interaction Effects in Small-Scale Pipeline Apparatus	International Conference, Energy and Ecology Industry EEI2018, Belgrade, October 2018.
		3.	Z. Kostikj, V.Stojkovski, V.Iliev, F.Stojkovski	Control system at the run-of-river SHPP by inlet turbine pressure vs elevation of the water at the intake	XXXIV savetovanju ENERGETIKA 2018**,** Zlatibor, Mart 2018.
		4.	Zoran Markov, Viktor Iliev, Predrag Popovski	Influential Parameters in the Investigation of Pressure Pulsation in a Pump-Turbine Draft Tube	18th Symposium on Thermal Science and Engineering of Serbia, October 2017
		5.	Viktor Iliev, Zoran Markov, Predrag Popovski	Analysis of Dynamic Behavior of Reversible Francis Turbine During the Transient Operational Regimes	Energetika 2016, Savez energeticara / March Zlatibor 2016.
	10.2.	Participation in scientific national and international projects (up to 5)			
		No.	Author	Title	Publisher/year
		1.	Trajkovski L., Valentino S., Viktor I. et al.	Structural analysis and synthesis of systems for control and automation for small HPP	National project, UKIM, 2015-2016
		2.			
		3.			
		4.			
		5.			
	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.	Viktor Iliev, Mihail Digalovski	Project for reconstruction and revitalization of measurement and control equipments in HPV	AD ESM / FME October 2018
		2.	Viktor Iliev et al.	Control measurements in cooling tower	ArcelorMittal (CRM) / CIRKO 2016
		3.	Zvonimir Kostikj, Viktor Iliev	Feasibility study for increasing the electricity production in small HPP Berovo	
		4.	Viktor Iliev	Technical documentation for construction of the open wind tunnel in laboratory for fluid mechanics and hydraulic machines	FME / September 2016
		5.	Zvonimir Kostikj, Valentino Stojkvoski, Viktor Iliev	Feasibility study for energy efficiency of water for water supply system Lukar-Negotino	JP Komunalec Negotino / CIRKO 2016
11.	Supervision (mentorship) of undergraduate, master and doctoral studies students				
	11.1.	Undergraduate		23	
	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 **Sustainable Energy and Environment** 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 N. 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, **SUSTAINABLE ENERGY AND ENVIRONMENT** study programme, shall be awarded the title:

In Macedonian:
Магистер по машинство – *Одржлива енергетика и екологија*

In English:
Master of science in mechanical engineering - *Sustainable Energy and Environment*

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 N. 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 N. 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.

24a. 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

ANNEX 1

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

Машински факултет
Број 02-1776/1
26.09.2019 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, 3 и 11 став 4 од Правилникот за донесување студиски програми (Универзитетски гласник број 140/2009), Наставно-научниот совет на Машинскиот факултет во Скопје, на 38-та редовна седница, одржана на 26 септември 2019 година, ја донесе следнава

О Д Л У К А
за измена и дополнување на студиска програма на втор циклус студии на Машински факултет во Скопје

1. Се изменува и дополнува студиската програма на англиски јазик **Sustainable Energy and Environment (SEE – OEE Одржлива енергетика и екологија)** на втор циклус студии на Машинскиот факултет во Скопје во состав на Универзитетот "Св. Кирил и Методиј" во Скопје, за реакредитација.

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

3. Проектот/Елаборатот за измени и дополнувања 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 изменетата и дополнета студиска програма ќе отпочнат од учебната 2020/2021 година.

5. Составен дел на оваа одлука е Проектот/Елаборатот за измени и дополнувања 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

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- 1135/4
29.11.2019 година
Скопје

Врз основа на член 104 од Законот за високото образование, член 246 од Статутот на Универзитетот „Св. Кирил и Методиј“ во Скопје, по предлог на Наставно-научниот совет на Машинскиот факултет, Универзитетскиот сенат на Универзитетот „Св. Кирил и Методиј“ во Скопје, на 36. седница одржана на 29.11.2019 година, донесе

ОДЛУКА

за усвојување на Предлог-проект за повторна акредитација на студиската програма Sustanable energy and Environment, од втор циклус академски студии - едногодишни, на Машинскиот Факултет

Член 1

Универзитетскиот сенат го усвојува Предлог-проектот за повторна акредитација на студиската програма **Sustanable energy and Environment**, од втор циклус академски студии - едногодишни, на Машинскиот Факултет.

Член 2

Универзитетскиот сенат го упатува проектот од член 1 на оваа Одлука до Одборот за акредитација и евалуација на високото образование на натамошна постапка за акредитација, односно повторна акредитација. Проектот, во печатена и во електронска форма до Одборот за акредитација и евалуација на високото образование се доставува 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
- Одборот за акредитација и евалуација на високото образование

ANNEX 3

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 Зоран Марков, во звање редовен професор, 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 Sustainable Energy and Environment на втор циклус студии при Машински факултет – Скопје на предметите:

1. Modeling and Simulations of Energy Systems
2. Advanced Course in Energy Transformation
3. Fluid mechanics in environmental engineering
4. Water and waste water treatment
5. Design of fluid conveying and hydro power system

Своерачен потпис

Проф. д-р Зоран Марков

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 Атанаско Тунески, во звање редовен професор, 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 Sustainable Energy and Environment на втор циклус студии при Машински факултет – Скопје на предметите:

1. Modeling and Simulations of Energy Systems
2. Advanced Course in Energy Transformation
3. Environmental systems analysis

Своерачен потпис

Проф. д-р Атанаско 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

ИЗЈАВА́

Од Атанас Кочов, во звање редовен професор, 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 Sustainable Energy and Environment на втор циклус студии при Машински факултет – Скопје на предметот:

1. An introduction to eco-innovations

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

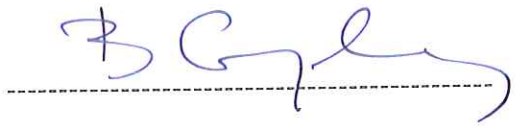
ИЗЈАВА

Од Валентино Стојковски, во звање редовен професор, 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 Sustainable Energy and Environment на втор циклус студии при Машински факултет – Скопје на предметите:

1. Modeling and Simulations of Energy Systems
2. Advanced Course in Energy Transformation
3. Fluid mechanics in environmental engineering
4. Environmental measurement methods and monitoring systems
5. Design of fluid conveying and hydro power system

Своерачен потпис



Проф. д-р Валентино Стојковски

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 Лазе Трајковски, во звање редовен професор, 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 Sustainable Energy and Environment на втор циклус студии при Машински факултет – Скопје на предметот:

1. Modeling and Simulations of Energy Systems

Своерачен потпис

Проф. д-р Лазе Трајковски

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 Ристо Филкоски, во звање редовен професор, 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 Sustainable Energy and Environment на втор циклус студии при Машински факултет – Скопје на предметите:

1. Modeling and Simulations of Energy Systems
2. Advanced Course in Energy Transformation
3. Advanced thermodynamics – selected chapters
4. Clean fossil and alternative fuels energy

Своерачен потпис

Р. Филкоски

Проф. д-р Ристо Филкоски

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 Доне Ташевски, во звање редовен професор, 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 Sustainable Energy and Environment на втор циклус студии при Машински факултет – Скопје на предметите:

1. Modeling and Simulations of Energy Systems
2. Advanced Course in Energy Transformation
3. Modern Thermal Plants
4. Energy efficiency

Своерачен потпис

Проф. д-р Доне Ташевски

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 Ана Лазаревска, во звање вонреден професор, 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 Sustainable Energy and Environment на втор циклус студии при Машински факултет – Скопје на предметот:

1. Energy vs. sustainable development: Concepts and aspects

Своерачен потпис

Вон. проф. д-р Ана Лазаревска

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

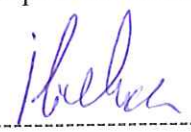
ИЗЈАВА

Од Виктор Илиев, 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 Sustainable Energy and Environment на втор циклус студии при Машински факултет – Скопје на предметот:

1. Advanced Course in Energy Transformation

Своерачен потпис



Доц. д-р Виктор Илиев

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 Емил Заев, во звање вонреден професор, вработен/а на Машински факултет - Скопје при Универзитетот „Св. Кирил и Методиј“ во Скопје.

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1. Modeling and Simulations of Energy Systems
2. Automation of environmental processes

Своерачен потпис

Вон. проф. д-р Емил Заев

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/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 Sustainable Energy and Environment на втор циклус студии при Машински факултет – Скопје на предметите:

1. Advanced Course in Energy Transformation
2. Experts in Teamwork
3. Non-conventional power plants

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 Дарко Бабунски, во звање вонреден професор, 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 Sustainable Energy and Environment на втор циклус студии при Машински факултет – Скопје на предметите:

1. Modeling and Simulations of Energy Systems
2. Environmental measurement methods and monitoring systems
3. Automation of environmental processes

Своерачен потпис

Вон. проф. д-р Дарко Бабунски

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

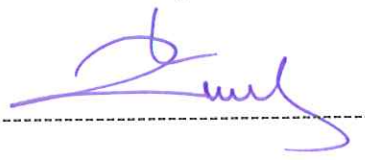
ИЗЈАВА

Од Даме Димитровски, во звање вонреден професор, 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 Sustainable Energy and Environment на втор циклус студии при Машински факултет – Скопје на предметите:

1. Modeling and Simulations of Energy Systems
2. Advanced Course in Energy Transformation
3. Experts in Teamwork
4. Transport and the environment
5. Eco-engines
6. Waste management

Своерачен потпис



Вон. проф. д-р Даме Димитровски

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 Ана Фрицханд, во звање вонреден професор, 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 Sustainable Energy and Environment на втор циклус студии при Машински факултет – Скопје на предметот:

1. Experts in Teamwork

Своерачен потпис

Вон. проф. д-р Ана Фрицханд

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.

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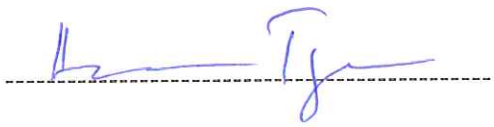
1. Selected Topics in Mathematics and Informatics

Своерачен потпис



Проф. д-р Никола Тунески

Република Северна Македонија
УНИВЕРЗИТЕТ "СВ. КИРИЛ И МЕТОДИЈ"-СКОПЈЕ
МАШИНСКИ ФАКУЛТЕТ
Бр. 08-17518
26-09-2019 20_ год.
СКОПЈЕ

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

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1. Selected Topics in Mathematics and Informatics

Своерачен потпис

Проф. д-р Душан Чакмаков

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

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1. Selected Topics in Mathematics and Informatics

Своерачен потпис

Проф. д-р Алекса Малчески

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 Емилија Целакоска, во звање вонреден професор, 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 Sustainable Energy and Environment на втор циклус студии при Машински факултет – Скопје на предметот:

1. Selected Topics in Mathematics and Informatics

Своерачен потпис

Е. Целакоска

Вон. проф. д-р Емилија Целакоска

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

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1. Selected Topics in Mathematics and Informatics

Своерачен потпис

Вон. проф. д-р Бојан Прангоски

ANNEX 4

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

РЕПУБЛИКА СЕВЕРНА МАКЕДОНИЈА
Универзитет „Св. Кирил и Методиј" -Скопје
Филозофски факултет

Република Северна Македонија
УНИВЕРЗИТЕТ "СВ. КИРИЛ И МЕТОДИЈ"-СКОПЈЕ
МАШИНСКИ ФАКУЛТЕТ
СКОПЈЕ

Примено: 18-11-2019			
Прилог:	Орг.Един.	Број:	Вредност:
	08	1848/2	

Број: 08-2596/6

Датум: 08-11-2019 г.
СКОПЈЕ

Врз основа на член 110 и 179 од Законот за високо образование („Сл. Весник на РМ бр.82/2018), и член 59 од Статутот на Филозофскиот факултет (Универзитетски гласник бр.463/19), Наставно-научниот совет на Филозофскиот факултетот во Скопје на **XXV** седница одржана на **6.XI 2019** година донесе

О Д Л У К А
за давање согласност за ангажирање на професори за учество во акредитација на студиски програми на други факултети и институти во рамките на УКИМ

Член 1

Се дава согласност за ангажирање во акредитација на студиски програми за проф. д-р Ана Фрицханд на Машински факултет во Скопје по предметот Experts in Teamwork на студиската програма Sustainable energy and environment на втор циклус студии, 6 ЕКТС.

Член 2

Условите, меѓусебните права и обврски кои произлегуваат од извршувањето на работата ќе се уредат со договор.

Член 3

Одлуката стапува во сила со денот на донесувањето, а ќе се применува во учебната 2019/2020 година.

Образложение

Согласно барањето на Машински факултет во Скопје со наш бр. 08-2596/1 од 4.10.2019 година, за добивање на согласност за ангажирање на професори за изготвување и акредитација на студиска програма по предметот Experts in Teamwork на студиската програма Sustainable energy and environment на втор циклус студии, 6 ЕКТС, како и Одговорот од Институтот за психологија бр. 08-2596/5 од 10.10.2019 год., Наставно-научниот совет на Филозофскиот факултет во Скопје, на својата XXV седница одржана на 6.XI 2019, донесе одлука како во диспозитивот на актот.

По еден примерок од одлуката да се достави на Машински факултет во Скопје, именуваната, институтот, Одделението за правни и општи работи и архивата на Факултетот.

Д Е К А Н
на Филозофскиот факултет

_____
Проф. д-р Ратко Дуев

изработил: Ана Иванова

ANNEX 5

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 science in mechanical engineering - *Sustainable Energy and Environment*
2.3. Name of study programme, main area, field, and branch of study	Sustainable Energy and Environment study programme, Scientifc area - Technical and technological sciences, Field - 214 Mechanical Engineering Branch – Mechanical Engineering, Energy, Environment
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
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 Energy and Environment
4.3. Programme details (orientation, module, grades, ECTS credits)[1]	The Results Certificate containg the couses 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