

Study program: PRODUCTION ENGINEERING (3 years)

I Semester-First year			
Mandatory subjects			
SUBJECTS	ECTS	Hours	Total
Mathematics I	8	3+2+2	216
Mechanical materials	8	3+2+2	216
Computer Science	6	2+2+1	156
Elective subject from the faculty 1	4	2+1+1	120
Elective subject from the faculty 2	4	2+1+1	120
Total:	30	12+8+7	828

I Semester-First year			
Elective subjects			
SUBJECTS	ECTS	Hours	Total
Basics of Physics	4	2+1+1	120
Physics II	4	2+1+1	120
Electrotechnics and electronics	4	2+1+1	120
Casting technology	4	2+1+1	120

II Semester-First year			
Mandatory subjects			
SUBJECTS	ECTS	Hours	Total
Mathematics II	8	3+2+2	216
Engineering graphics	6	2+2+1	156
Technical Mechanics I (statics)	6	2+2+1	156
Elective subject from the faculty 3	4	2+1+1	120
Elective subject from the University 1	6	0+0+1	156
Sports and Recreation	0	0+0+2	
Total:	30	9+7+11	804

II Semester-First year			
Elective subjects			
SUBJECTS	ECTS	Hours	Total
The modern mechanical materials	4	2+1+1	120
Engineering logistics	4	2+1+1	120

III Semester-Second year			
Mandatory subjects			
SUBJECTS	ECTS	Hours	Total
Thermodynamics	8	3+2+2	216
Strength of materials	8	3+2+2	216
Technical Mechanics II (kinematics, dynamics, oscillations)	6	2+2+1	156
Elective subject from the faculty 4	4	2+1+1	120
Elective subject from the faculty 5	4	2+1+1	120
Total:	30	12+8+7	828

III Semester-Second year			
Elective subjects			
SUBJECTS	ECTS	Hours	Total
Corrosion and corrosion protection	4	2+1+1	120
Probability and statistics	4	2+1+1	120
Ergonomics	4	2+1+1	120
Industrial Management	4	2+1+1	120

IV Semester-Second year			
Mandatory subjects			
SUBJECTS	ECTS	Hours	Total
Machine elements	8	3+2+2	216
Fluid Mechanics	6	2+2+1	156
Numerical methods	6	2+2+1	156
Elective subject from the faculty 6	4	2+1+1	120
Elective subject from the University 2	6	0+0+4	156
Total:	30	9+7+9	804

IV Semester-Second year			
Elective subjects			
SUBJECTS	ECTS	Hours	Total
Measurement and measuring instruments	4	2+1+1	120
Heat transfer	4	2+1+1	120

V Semester-Third year			
Mandatory subjects			
SUBJECTS	ECTS	Hours	Total
Thermo-technical machines	8	3+2+2	216
Processing using cutting and plastic deformation	8	3+2+2	216
CAD technology	6	2+2+1	156
Elective subject from the faculty 7	4	2+1+1	120
Elective subject from the faculty 8	4	2+1+1	120
Total:		12+8+7	828

V Semester-Third year			
Elective subjects			
SUBJECTS	ECTS	Hours	Total
Sustainable energy systems	4	2+1+1	120
Machinery for transport	4	2+1+1	120
Engineering economics	4	2+1+1	120
Basics of internal combustion engines	4	2+1+1	120

VI Semester-Third year			
Mandatory subjects			
SUBJECTS	ECTS	Hours	Total
Machines and tools for plastic processing	8	3+2+2	216
Metal cutting machines and devices	6	2+2+1	156
Elective subject from the University 3	6	2+2+1	156
Elective subject from the faculty 9	4	2+1+1	120
Final Exam	6	0+0+6	144
Total:	30	9+7+11	792

VI Semester-Third year			
Elective subjects			
SUBJECTS	ECTS	Hours	Total
Mechatronics	4	2+1+1	120
Waste management	4	2+1+1	120

FACULTY OF MECHANICAL ENGINEERING –STADY PROGRAM: PRODUCTION ENGINEERING

ENGINEERING

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course	Mathematics 1			
2.	Code	2FI100112			
3.	Study Program	Production Engineering / Transport, Organization and Logistics			
4.	Organizer of the study program (unit or institute, Faculty, department)	University Goce Delcev-Stip Faculty of mechanical engineering -Vinica			
5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	first/first	7.	Number of credits	8
8.	Professor (s)	Prof. Jordan Zivanovik PhD			
9.	Requirements for enrollment the Course	no			
10.	Purposes of the curriculum (competencies): Upgrading high school mathematics knowledge and introduction to higher mathematics				
11.	Content of the course program: Axiomatic definition of the real numbers. Limited sets. Intervals, environments, open and closed sets. Absolute value and distance. Mathematical induction. Matrices. Operations with matrices. Some special matrices. Determinants. Minor and algebraic complements. Calculating the inverse matrix. Kramer formulas. Gauss algorithm. Vectors. Collection of vectors. Multiplying a vector by a number. Coordinate system. Scalar, vector and mixed product. Equations of the line and plane. Relationship between lines and planes. Real sequence. Convergence and the limit. Limited and monotonous sequences. Operations with sequences. Zero-sequences and sequences with unlimited grow in absolute value. Number e. Some special sequences. Subsequences. Kauchy's sequence convergence criterion. Real function of a real variable - basic concepts. Examples of functions and some classes of functions - elementary functions. Limits and continuity of functions. Statements and rules for their calculation. Basic theorems in differential calculus. L' Hopital's rule. Monotony and extremes. Second derivative and its application. Examination of functions and construction of graphs. Higher-order derivatives and differentials. Taylor's formula.				
12.	Learning methods: Lectures, laboratory exercises, numerical exercises, e-learning, seminar work, teamwork, consultation				
13.	Total available time		216 hours		
14.	Distribution of available time		3+2+2 / per week		
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	3	
		15.2.	theoretical and practical exercises.	2	

			e-exams, preparation of independent seminar work	
16.	Other forms of activities	16.1.	Project tasks	1
		16.2.	Individual tasks	1
		16.3.	Home learning	
17.	Method of assessment			
	17.1.	Tests / oral exams		70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10 points
	17.3.	Activity and participation		20 points
18.	Assessment Criteria (points / score)		up 50 points	5(five) (F)
			51 to 60 points	6(six) (E)
			61 to 70 points	7 (seven) (D)
			71 to 80 points	8 (eight) (C)
			81 to 90 points	9 (nine) (B)
			91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam		60% success from all pre-exam activities ie. 42 points from two mid-term exams , seminar paper, attendance of lectures and exercises	
20.	Language of teaching / study		Macedonian	
21.	Method of monitoring the quality of teaching		Self-evaluation	

22.	Literature				
22.1.	Required literature				
	No.	Author	Title	Publisher	Year
	1.	Glyn James	Modern engineering mathematics	Translation of the government of RM	2009
	2.	Zivanovik and Assistants	Lectures and exercises of mathematics 1	E-learning	2010
	3.	B.Trpenovski, N.Celakovski, Gj,Cupona	Visa matematika I-IV	Prosvetno delo, Skopje	1995
	Additional literature				
	No.	Author	Title	Publisher	Year
	1.	M.Merkle	Matematička analiza	Racunarski fakultet, Beograd	2006
22.2.	2.	Ivan Slapnicar http://www.fesb.hr/mat1	Matematika 1	Fakultet elektr. strojarstva i brodogradnje	2002, Split
	3.				

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course	Mechanical materials			
2.	Code	2MF100112			
3.	Study Program	Production engineering/Transport Organization and Logistics			
4.	Organizer of the study program (unit or institute, Faculty, department)	University Goce Delcev-Stip Faculty of mechanical engineering -Vinica			
5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	First/I semester	7.	Number of credits	8
8.	Professor (s)	Slavco Cvetkov, PhD, Assi. Professor			
9.	Requirements for enrollment the Course	No			
10.	Purposes of the curriculum (competencies): At the end of the course, students will have competences obtained through the necessary fund of theoretical, methodological and applicative studying in the area of mechanical materials.				
11.	Content of the course program: 1. Introduction to the materials 2. Division and structure of metals 3. Alloys and state diagram 4. Steels: Obtaining and labelling 5. Carbon steels: structural and tool steels 6. Alloy steel: structural and tool steels 7. Heat treatment of steels 8. Surface hardening of steels 9. Cast iron: gray iron and malleable iron 10. Non ferrous metals and their alloys 11. Ceramics, glass and composites 12. Polymers and non metals (wood, leather, rubber)				
12.	Learning methods: -Teaching, exercises, projects assignment				
13.	Total available time	216			
14.	Distribution of available time	3 + 2 + 2 / per week			

15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	3
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	2
16.	Other forms of activities	16.1.	Project tasks	1 hours
		16.2.	Individual tasks	1 hours
		16.3.	Home learning	/ hours
17.	Method of assessment			
	17.1.	Tests / oral exams		70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10 points
	17.3.	Activity and participation		20 points
18.	Assessment Criteria (points / score)	up 50 points		5(five) (F)
		51 to 60 points		6(six) (E)
		61 to 70 points		7 (seven) (D)
		71 to 80 points		8 (eight) (C)
		81 to 90 points		9 (nine) (B)
		91 to 100 points		10 (ten) (A)
19.	Signature requirement and passing the final exam	60% success from all pre exam activities i.e. 42 points from two mid-term exams , seminar paper, attendance of lectures and exercises		
20.	Language of teaching / study	Macedonian		
21.	Method of monitoring the quality of teaching	Self-evaluation		

22.	Literature				
	22.1.	Required literature			
		No.	Author	Title	Publisher
		1.	Angel Tasevski, PhD Vladan Andonovic, MsC	Mechanical materials	UGD - Stip
		2.	Angel Tasevski, PhD Vladan Andonovic, MsC	Mechanical materials estimation	UGD - Stip
		3.			
	22.2.	Additional literature			
		No.	Author	Title	Publisher
		1.			
		2.			
		3.			

Annex No.3		Program of the Course - first cycle studies				
1.	Title of the Course		Computer Science			
2.	Code		2FI110112			
3.	Study program		Production Engineering / Transport, Organization and Logistics			
4.	Organizer of the study program (unit or institute, Faculty, department)		University Goce Delcev-Stip Faculty of mechanical engineering -Vinica			
5.	Cycle (first, second, or third study cycle)		First study cycle			
6.	Academic year / semester		2012-2013 / first	7.	Number of credits	6
8.	Professor (s)		Assi. Professor Zoran Zdravev, PhD			
9.	Requirements for enrollment the Course		No			
10.	Purposes of the curriculum (competencies): <ul style="list-style-type: none">- Adopting the basic concepts of computer science and concepts for using computers for communication, research and office work.					
11.	Contents of the course program: <ul style="list-style-type: none">- Introduction to computer science: algorithms, abstraction, history,- Computer hardware: introduction, types, architecture of computer systems, Murau law- Computer hardware: Peripherals, Computer Memory, digital identification;- Computer software: applicative software, open source software licenses;- Computer software: system software, programming languages;- Computer software: web services, online document storage and editing systems,- Computer networks: LAN, MAN, WAN, topologies, applications that run on network components, connectivity;- Computer networks: Internet, intranet, extranet, Internet services;- Computer security: a concept, a security risk, malicious software, unauthorized access, cryptography;- Information systems: introduction, types, ERP, CRM, HR, SCM;- Content Management Systems CMS: DMS, DAMS, WCM, ECP, ERS;- Databases: fundamentals, types, use					
12.	Learning methods: Lectures, Laboratory exercises, e-learning, individual and team projects, consultations.					
13.	Total available time		156 hours			
14.	Distribution of available time		2+2+1			

15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	2
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	2
16.	Other forms of studying activities	16.1.	Project tasks	
		16.2.	Individual tasks	1
		16.3.	Home learning	
17.	Method of assessment			
	17.1.	Tests / oral exams		70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10 points
	17.3.	Activity and participation		20 points
18.	Assessment Criteria (points / score)	Up 50 points		5 (five) (F)
		51 to 60 points		6 (six) (E)
		61 to 70 points		7 (seven) (D)
		71 to 80 points		8 (eight) (C)
		81 to 90 points		9 (nine) (B)
		91 to 100 points		10 (ten) (A)
19.	Signature requirement and passing the final exam	60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions		
20.	Language of teaching / study	Macedonian		
21.	Method of monitoring the quality of teaching	Self-evaluation		

22.	Literature					
	22.1.	Required literature				
		Order No.	Author	Title	Publisher	Year
		1.	Zoran Zdravev and other	Computer Science script	UGD	2012
		2.	Zoran Zdravev and other	Practicum in Computer Science	UGD	2012
		3.				
	22.2.	Additional Literature				
		Order No.	Author	Title	Publisher	Year
		1.	Glenn Brookshear	„Computer Science – an overview“	Pearson International edition	2009
		2.	Carl Reynolds and Paul Tymann	„Principles of Computer Science“	McGraw Hill	2008
		3.	James O'Brien	„Introduction to Information Systems “	McGraw Hill	2008

Annex No.3		Program of the Course - first/second/third cycle studies			
1.	Title of the Course	Basics of Physics			
2.	Code	2FP120512			
3.	Study Program	Production Engineering			
4.	Organizer of the study program (unit or institute, Faculty, department)	University Goce Delcev Faculty of mechanical engineering			
5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	1/1	7.	Number of credits	4
8.	Professor (s)	Prof. Todor Delipetrov, PhD			
9.	Requirements for enrollment the Course	enrolled semester			
10.	Purposes of the curriculum (competencies): Students are introduced to the basic concepts and laws of physics (Newton’s laws, Hooke’s law), elasticity and plasticity of bodies				
11.	Content of the course program: Test methods in physics, structure of matter, interaction. Reference system - comparative body trajectory and separation movements, Special Theory of Relativity (time dilation and length contraction). Laws for the movement, the concept of force, Newton's first law, mass, Newton's Second Law, Newton's Third Law. Work, energy and power. Elasticity and structure of bodies: voltage and relative deformation, Hooke’s law. Oscillations, alignment fluctuations. Fluid mechanics. Statics gases. Fluid dynamics. Wave motion. Sound and sound sources.				

12.	Learning methods: Lectures, exercises (numerical and practical), papers and home learning			
13.	Total available time		216 hours	
14.	Distribution of available time		2 + 1 + 1 / per week	
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	2
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	1
16.	Other forms of activities	16.1.	Project tasks	
		16.2.	Individual tasks	1
		16.3.	Home learning	
17.	Method of assessment			
	17.1.	Tests / oral exams		70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10 points
	17.3.	Activity and participation		20 points
18.	Assessment Criteria (points / score)		up 50 points	5 (five) (F)
			51 to 60 points	6 (six) (E)
			61 to 70 points	7 (seven) (D)
			71 to 80 points	8 (eight) (C)
			81 to 90 points	9 (nine) (B)
			91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam		60% success from all activities before exam i.e. 42 points from two mid-term exams, seminar paper, attendance of lectures and exercises	
20.	Language of teaching / study		Macedonian	
21.	Method of monitoring the quality of teaching		Self-evaluation	

22.	Literature				
22.1.	Required literature				
	No.	Author	Title	Publisher	Year
	1.	Todor Delipetrov	Physics 1	RGF	2003
	2.				
	3.				
22.2.	Additional literature				
	No.	Author	Title	Publisher	Year
	1.	Lj. Petkovski	General physics	UKIM	1995

		2.	Z. Stojanov	General physics, book 1	UKIM	1985
		3.				

Annex No.3		Program of the Course - first/second/third cycle studies			
1.	Title of the Course	Physics 2			
2.	Code	2FP101212			
3.	Study Program				
4.	Organizer of the study program (unit or institute, Faculty, department)	University Goce Delcev Faculty of mechanical engineering			
5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	1/2	7.	Number of credits	4
8.	Professor (s)	Prof. Todor Delipetrov, PhD			
9.	Requirements for enrollment the Course	Student has enrolled current year			
10.	Purposes of the curriculum (competencies): Students are introduced to the basic concepts and laws of electromagnetism, optics, nuclear and atomic physics				
11.	Content of the course program: Heat: temperature, spread of bodies, state of gas, melting, boiling, vaporization. Electrostatics: Coulomb’s law, electrical work and power of the electric current, Joule’s Law, Ohm’s law, thermal phenomena, magnetic permeability and susceptibility. AC: effective value of alternating current, power of alternating current, electrical oscillations. Geometrical optics: light rejection and image in the flat mirror, thin lens equation, optical instruments. Physical optics: nature of light, laser, optical lattice. Atomic and nuclear physics: spectrum of hydrogen atom, quantum theory, radioactive radiation, detectors and protection, radioactive decay law				
12.	Learning methods: Lectures, exercises (numerical and practical), papers and home learning				
13.	Total available time		156 hours		
14.	Distribution of available time		2 + 2 + 1 / per week		
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching		2
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work		2
16.	Other forms of activities	16.1.	Project tasks		

		16.2.	Individual tasks	1
		16.3.	Home learning	
17.	Method of assessment			
	17.1.	Tests / oral exams		70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10 points
	17.3.	Activity and participation		20 points
18.	Assessment Criteria (points / score)		up 50 points	5 (five) (F)
			51 to 60 points	6 (six) (E)
			61 to 70 points	7 (seven) (D)
			71 to 80 points	8 (eight) (C)
			81 to 90 points	9 (nine) (B)
			91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam		60% success from all activities before exam i.e. 42 points from two mid-term exams, seminar paper, attendance of lectures and exercises	
20.	Language of teaching / study		Macedonian	
21.	Method of monitoring the quality of teaching		Self-evaluation	

22.	Literature				
22.1.	Required literature				
	No.	Author	Title	Publisher	Year
	1.	M. Delipetrev B. Doneva	Physics 2	UGD	2013
	2.				
	3.				
	Additional literature				
22.2.	No.	Author	Title	Publisher	Year
	1.	Z. Stojanov	General physics, book 2	UKIM	1985
	2.				
	3.				

Annex No.3		Program of the course–first cycle studies	
1.	Title of the Course	Electrotechnics and Electronics	
2.	Code	2ET110012	
3.	Study program	Production Engineering / Transport, Organization and Logistics	

4.	Organizer of the study program (unit or institute, Faculty, department)	University Goce Delcev-Stip Faculty of mechanical engineering -Vinica			
5.	Cycle (first, second, or third study cycle)	1 st cycle			
6.	Academic year / semester	1 st / 1 st	7.	Number of ECTS credits	4
8.	Professor (s)	Roman Golubovski, Assistant Professor			
9.	Requirements for enrollment of the course	enrolled 1 st semester			
10.	Purposes of the curriculum (competencies): Introduction to basic principles of electrotechnics and electronics.				
11.	Contents of the course program: 1. Electric Current - Intensity, Current Field, Density 2. Electric Voltage and Potential 3. Basic Laws - Joule's, Ohm's, I & II Kirchhoff's 4. Magnetic Flux, Magnetic Field andMagnetism 5. Magnetic Induction, Ampere's Law and Magnetic Circuit 6. Electrical Measurements 7. Semiconductors 8. Diodes 9. BJT Transistors 10. MOSFET Transistors 11. Thyristors 12. Operational Amplifiers				
12.	Learning methods: Lectures, numerical exercises, individual and team projects, homework.				
13.	Total available time	120			
14.	Distribution of available time	2+1+1			
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	2	
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	1	
16.	Other forms of studying activities	16.1.	Project tasks		
		16.2.	Individual tasks	1	
		16.3.	Home learning		

17.	Method of assessment			
	17.1.	Tests / oral exams	70 points	
	17.2.	Seminars (paper / project - presentation: written and/or oral)	10 points	
	17.3.	Activity and participation	20 points	
18.	Assessment Criteria (points / score)		Up 50 points	5 (five) (F)
			51 to 60 points	6 (six) (E)
			61 to 70 points	7 (seven) (D)
			71 to 80 points	8 (eight) (C)
			81 to 90 points	9 (nine) (B)
			91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam		60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions	
20.	Language of teaching / study		Macedonian	
21.	Method of monitoring the quality of teaching		Self-evaluation	

22.	Literature					
	22.1.	Required literature				
		Order No.	Author	Title	Publisher	Year
		1.	M. Popnikolova-Radevska	Electrotechnics	TF, Bitola	2004
		2.	M. Kamilovski	Electronics 1	UKIM, Skopje	2005
	22.2	Additional Literature				
		Order No.	Author	Title	Publisher	Year
		1.				

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course		Casting technology		
2.	Code		2MF101812		
3.	Study Program		Production engineering/ Transport Organization and Logistics		
4.	Organizer of the study program (unit or institute, Faculty, department)		University Goce Delcev-Stip Faculty of mechanical engineering - Vinica		
5.	Cycle (first, second and third cycle)		First cycle		
6.	Academic year / semester		First / I semester	7. Number of credits	4

8.	Professor (s)	Slavco Cvetkov, PhD, Assistant Professor		
9.	Requirements for enrollment the Course	No		
10.	Purposes of the curriculum (competencies): At the end of the course, students will have competences obtained through the necessary fund of theoretical, methodological and applicative studying in the area of casting technology.			
11.	Content of the course program: 1.Introduction to the casting 2. Casting materials 3.Casting metallurgy 4. Sand casting 5. Centrifugal casting 6. Precise casting 7.Vacuum casting 8.Casting under pressure 9.Heaters for melting 10.Tools for casting 11.Construction tools for casting 12. Defects in casting			
12.	Learning methods: -Teaching, exercises, projects assignment			
13.	Total available time		120	
14.	Distribution of available time		2 + 1 + 1 / per week	
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	2
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	1
16.	Other forms of activities	16.1.	Project tasks	/ hours
		16.2.	Individual tasks	1 hours
		16.3.	Home learning	/ hours
17.	Method of assessment			
	17.1.	Tests / oral exams		70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10 points
	17.3.	Activity and participation		20 points
18.	Assessment Criteria (points / score)	up 50 points		5(five) (F)
		51 to 60 points		6(six) (E)
		61 to 70 points		7 (seven) (D)
		71 to 80 points		8 (eight) (C)
		81 to 90 points		9 (nine) (B)
		91 to 100 points		10 (ten) (A)

19.	Signature requirement and passing the final exam	60% success from all pre exam activities i.e. 42 points from two mid-term exams , seminar paper, attendance of lectures and exercises
20.	Language of teaching / study	Macedonian
21.	Method of monitoring the quality of teaching	Self-evaluation

22.	Literature				
22.1.	Required literature				
	No.	Author	Title	Publisher	Year
	1.	Zoran Anisic	Production technologies	Visa Tehnicka Skola	2003
	2.				
	3.				
	Additional literature				
	No.	Author	Title	Publisher	Year
22.2.	1.				
	2.				
	3.				

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course	Mathematics II			
2.	Code	2FI100412			
3.	Study Program	Production Engineering / Transport, Organization and Logistics			
4.	Organizer of the study program (unit or institute, Faculty, department)	University Goce Delcev-Stip Faculty of mechanical engineering -Vinica			
5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	First/II	7.	Number of credits	8
8.	Professor (s)	Prof. Martin Lukarevski PhD / Prof. Jordan ZivanovikPhD			
9.	Requirements for enrollment the Course	Enrollment of the first cycle study program			
10.	Purposes of the curriculum (competencies): Knowledge and understanding of the basic mathematical concepts and theories, knowledge of ICT in mathematics, flexible use of knowledge in practice.				
11.	Content of the course program:				

	13. The concept of Integral Calculus: Indefinite integral – integration by substitution and integration by parts, fundamental integration formulas, Definite integral-concept, properties and applications.			
	14. Infinite series: Criteria for convergence, alternating series, Conditional and absolute convergence. Sequences and series of functions. Power series. Circle of convergence.			
	15. Multivariate Calculus: definition, properties and graphics of functions with several variables; Partial derivatives; Maximum and minimum values; The total differential.			
	16. Multiple integrals.			
	17. Introduction of differential equations: Terminology and notation; A first-order differential equation for the exponential function; First-order linear differential equations and other types of first-order differential equations.			
12.	Learning methods: <ul style="list-style-type: none">– Lectures,– e-learning,– individual and team projects– Consultations.			
13.	Total available time		216	
14.	Distribution of available time		3+2+2 / per week	
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	3
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	2
16.	Other forms of activities	16.1.	Project tasks	1 hours
		16.2.	Individual tasks	1 hours
		16.3.	Home learning	hours
17.	Method of assessment			
	17.1.	Tests / oral exams		70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10 points
	17.3.	Activity and participation		20 points
18.	Assessment Criteria (points / score)	up 50 points		5(five) (F)
		51 to 60 points		6(six) (E)
		61 to 70 points		7 (seven) (D)

		71 to 80 points	8 (eight) (C)
		81 to 90 points	9 (nine) (B)
		91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam	60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions	
20.	Language of teaching / study	Macedonian	
21.	Method of monitoring the quality of teaching	Self-evaluation	

22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.	Glyn James	Modern engineering mathematics	Translation of the Government of R.Macedonia	2009
		2.	Milan Merkle	Matematička analiza	Racunarski Fakultet - Beograd	2007
	3.	Tatjana Atanasova Pacemska	Matematika 2	Avtorizirani predavanja	2011	
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year
		1.	Nikita Sekutkovski	Matematička analiza 1	Prosvetno delo - Skopje	2008
		2.	Boro Piperevski	Matematika 2	FEIT - Skopje	2008
3.						

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course	Engineering graphics			
2.	Code	2FP100912			
3.	Study Program	Production Engineering /Transport, Organization and Logistics			
4.	Organizer of the study program (unit or institute, Faculty, department)	University Goce Delcev-Stip Faculty of mechanical engineering -Vinica			
5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	First / second semester	7.	Number of credits	6

8.	Professor (s)	Assi. Prof. Slavco Cvetkov, Ph.D.		
9.	Requirements for enrollment the Course	None		
10.	Purposes of the curriculum (competencies): Training in drawing and reading technical drawings of machine parts. Training in drawing machine parts in the program package Auto CAD.			
11.	Content of the course program: Technical drawing. Views - basic, special and abbreviated views. Standards. Formats, naming and sizes of technical drawings. Types of lines and their application. Technical Letter. Sections and types of intersections. Marking and hatching at intersections. Labeling and types of quotation. Longitudinal tolerances. The shape and position tolerance. Designation of the quality of surface processing. To put position on machined parts. Listing of the thread. Modeling of parts. Workshop drawing. Formation of the mechanical drawing workshop part given the spatial layout and the orthogonal view. Formation of the mechanical drawing workshop part of assembled drawing. Technical Documentation			
12.	Learning methods: Lectures, exercises, individual works, home learning, consultations.			
13.	Total available time		156 hours	
14.	Distribution of available time		2+2+1 / per week	
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	2 hours
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	2 hours
16.	Other forms of activities	16.1.	Project tasks	
		16.2.	Individual tasks	1 hours
		16.3.	Home learning	
17.	Method of assessment			
	17.1.	Tests / oral exams		70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10 points
	17.3.	Activity and participation		20 points
18.	Assessment Criteria (points / score)		up 50 points	5(five) (F)
			51 to 60 points	6(six) (E)
			61 to 70 points	7 (seven) (D)
			71 to 80 points	8 (eight) (C)
			81 to 90 points	9 (nine) (B)
			91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam		60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions	

20.	Language of teaching / study	Macedonian
21.	Method of monitoring the quality of teaching	Self-evaluation

22.	Literature				
22.1.	Required literature				
	No.	Author	Title	Publisher	Year
	1.	Risto Taškovski	Engineering Graphics	Mechanical faculty, Skopje	2008
	2.				
	3.				
22.2.	Additional literature				
	No.	Author	Title	Publisher	Year
	1.				
	2.				
	3.				

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course	Technical Mechanics I (statics)			
2.	Code	2MF100212			
3.	Study Program	Production Engineering /Transport, Organization and Logistics			
4.	Organizer of the study program (unit or institute, Faculty, department)	University “Goce Delcev”- Stip. Faculty of Mechanical Engineering -Vinica			
5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	First / second	7.	Number of credits	6
8.	Professor (s)	Assi. Prof. Slavco Cvetkov, Ph.D			
9.	Requirements for enrollment the Course	No			
10.	Purposes of the curriculum (competencies): Students are introduced to statics: forces, moments, carriers, equilibrium of bodies, friction, centre of gravity;				
11.	Content of the course program: 1.System of forces acting in the plane, composition and decomposition of forces acting at a point; 2.Momentof force about a point, Varignon’s theorem; 3.System of forces attacking panel und various counts; 4. Graphic alignment of forces, equilibrium of forces; 5. Planar carriers, transverse and axial forces; 6.Simple beam loaded with concentrated forces; 7.Simple beam loaded with a continuous load, coupling forces; Console; 8.Beam with overhangs; Gerber carrier-beam; 9. Statically determined framework supports; Lattice girders;				

	10.Statics in space; Spatial carriers; 11.Sliding friction, rolling friction, friction of the rope; 12.Centre of gravity line, surface and body; Guldin's theorems;					
12.	Learning methods: Lectures, Laboratory exercises, e-learning, individual and team projects, consultations.					
13.	Total available time		156 hours			
14.	Distribution of available time		2 +2 +1/ per week			
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	2hours		
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	2hours		
16.	Other forms of activities	16.1.	Project tasks			
		16.2.	Individual tasks	1 hour		
		16.3.	Home learning			
17.	Method of assessment					
	17.1.	Tests / oral exams			70	
	17.2.	Seminars (paper / project - presentation: written and/or oral)			10	
	17.3.	Activity and participation			20	
18.	Assessment Criteria (points / score)		to 50 points	5(five) (F)		
			from 51 to 60 points	6(six) (E)		
			from 61 to 70 points	7 (seven) (D)		
			from 71 to 80 points	8 (eight) (C)		
			from 81 to 90 points	9 (nine) (B)		
			from 91 to 100 points	10 (ten) (A)		
19.	Signature requirement and passing the final exam		60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions			
20.	Language of teaching / study		Macedonian			
21.	Method of monitoring the quality of teaching		Self-evaluation			
22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.	Simeon Simeonov	Technical mechanics 1(peer reviewed script)	UGD-Stip	2012
		2.	Z.Petrevski, V. Gavrilovski, M. Mickovski	Tasks from Statics	Mechanical faculty Skopje	2008
		3.	R.Josifova	Technical mechanics 1	Principal - Skopje	1981
	22.2.	Additional literature				

	No.	Author	Title	Publisher	Year
	1.	B. Andonovic	Technical mechanics 1	Technical Faculty- Bitola	2006
	2.	E. Bahtovska	Mechanics	Technical Faculty- Bitola	2007
	3.				

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course	The modern mechanical materials			
2.	Code	2MF101912			
3.	Study Program	Production engineering/Transport Organization and Logistics			
4.	Organizer of the study program (unit or institute, Faculty, department)	University Goce Delcev-Stip Faculty of mechanical engineering -Vinica			
5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	First/I semester	7.	Number of credits	4
8.	Professor (s)	Slavco Cvetkov, PhD, Assi. Professor			
9.	Requirements for enrollment the Course	No			
10.	Purposes of the curriculum (competencies): At the end of the course, students will have competences obtained through the necessary fund of theoretical, methodological and applicative studying in the area of the mechanical materials.				
11.	Content of the course program: 1. Introduction to the newest materials 2. The modern engineering materials 3. Composites 4. Introduction to fullerenes 5. Biomaterials and their usage 6. Polymers 7. Smart materials				

	8. Cellular materials			
	9. Nanomaterials			
	10. Ceramics			
	11. Wood, paper and glues			
	12. The procedure of material selection			
12.	Learning methods: - Teaching, exercises, projects assignment			
13.	Total available time	120		
14.	Distribution of available time	2 + 1 + 1 / per week		
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	2
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	1
16.	Other forms of activities	16.1.	Project tasks	
		16.2.	Individual tasks	1 hour
		16.3.	Home learning	
17.	Method of assessment			
	17.1.	Tests / oral exams		70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10 points
	17.3.	Activity and participation		20 points
18.	Assessment Criteria (points / score)	up 50 points		5(five) (F)
		51 to 60 points		6(six) (E)
		61 to 70 points		7 (seven) (D)
		71 to 80 points		8 (eight) (C)
		81 to 90 points		9 (nine) (B)
		91 to 100 points		10 (ten) (A)
19.	Signature requirement and passing the final exam	60% success from all pre exam activities i.e. 42 points from two mid-term exams, seminar paper, attendance of lectures and exercises		
20.	Language of teaching / study	Macedonian		
21.	Method of monitoring the quality of teaching	Self-evaluation		
22.	Literature			

	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.	Angel Tasevski, PhD; Vladan Andonovic, MsC	The modern mechanical materials	UGD - Stip	2011
		2.				
		3.				
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year
		1.				
		2.				
		3.				

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course	Engineering logistics			
2.	Code	2MF106712			
3.	Study Program	Production engineering/Transport, organization and logistics			
4.	Organizer of the study program(unit or institute, Faculty, department)	University Goce Delcev-Stip Faculty of mechanical engineering -Vinica			
5.	Cycle (first, second and third cycle)	First cycle studies (Bachelor studies)			
6.	Academic year / semester	First/Second semester	7.	ECTS	4
8.	Professor (s)	Prof. Zoran Despodov			
9.	Requirements for enrollment the Course	No			
10.	Purposes of the curriculum(competencies): Familiarize students with the fundamentals of Engineering logistics, practical application and ways of making a better use of the resources				

11.	Content of the course program: 13. Introduction to logistics. 2. Logistics systems in industrial enterprises. 3. Engineering Logistics and organization of production. 4. Supply of materials. 5. Storage for materials. 6. Inter operational transport. 7. Packaging and storage. 8. Means of transport in the system of engineering logistics. 9. Transportation problems. 10. Information systems and the activities of the logistic system. 11. Logistics support of the flexible manufacturing. 12. Distribution of the final products.			
12.	Learning methods: -Theory, practical teaching and auditory exercises			
13.	Total available time		120	
14.	Distribution of available time		2+1+1	
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	2
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	1
16.	Other forms of activities	16.1.	Project tasks	
		16.2.	Individual tasks	1
		16.3.	Home learning	
17.	Method of assessment			
	17.1.	Tests / oral exams		70 points
	17.2.	Seminars (paper/project - presentation: written and/or oral)		10 points
	17.3.	Activity and participation		20 points
18.	Assessment Criteria (points /score)		up 50 points	5 (five) (F)
			51 to 60 points	6 (six) (E)
			61 to 70 points	7 (seven) (D)
			71 to 80 points	8 (eight) (C)
			81 to 90 points	9 (nine) (B)
			91 to 100 points	10 (ten) (A)

19.	Signature requirement and passing the final exam	60% success from all pre exam activities i.e. 42 points from two mid-term exams, seminar paper, attendance of lectures and exercises
20.	Language of teaching / study	Macedonian
21.	Method of monitoring the quality of teaching	Self-evaluation

22.	Literature				
22.1.	Required literature				
	No.	Author	Title	Publisher	Year
	1.	T. Pantelic	Industrial logistics	ICIM, Krusevac	2001
	2.	V. Jocik	Technical logistics	Nis	2001
	3.				
22.2.	Additional literature				
	No.	Author	Title	Publisher	Year
	1.				
	2.				
	3.				

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course	Thermodynamics			
2.	Code	2MF100312			
3.	Study Program	Production engineering / Transport, organization and logistics			
4.	Organizer of the study program (unit or institute, Faculty, department)	University Goce Delcev-Stip Faculty of mechanical engineering -Vinica			
5.	Cycle (first, second and third cycle)	first cycle			
6.	Academic year / semester	2/III	7.	Number of credits	8
8.	Professor (s)	Assistant Prof. Radomir Cvetanovski, PhD			
9.	Requirements for enrollment the Course	non			
10.	Purposes of the curriculum (competencies):Introducing the values of condition and their changes, the basic gas laws, equation of condition of ideal gases, internal energy, entropy, heat diagram; humid air				

11.	Content of the course program: 1. Introductory terms and values of condition; Basic gas laws; Concept of ideal gas and equation of condition of an ideal gas; The main laws of thermodynamics; Specific heat capacity; Changes of condition of ideal gases; 2. Circular process; Recoverable and irreversible processes; Entropy; Double phased fixtures; Real gases; Humid air;			
12.	Learning methods: Lectures with presentations through slides, exercises, independent preparation and presentation of the project assignment			
13.	Total available time		216	
14.	Distribution of available time		3+2+2 / per week	
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	3
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	2
16.	Other forms of activities	16.1.	Project tasks	1 hours
		16.2.	Individual tasks	1 hours
		16.3.	Home learning	hours
17.	Method of assessment			
	17.1.	Tests / oral exams		70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10 points
	17.3.	Activity and participation		20 points
18.	Assessment Criteria (points / score)		up 50 points	5(five) (F)
			51 to 60 points	6(six) (E)
			61 to 70 points	7 (seven) (D)
			71 to 80 points	8 (eight) (C)
			81 to 90 points	9 (nine) (B)
			91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam		60% from pre-exam activities or 42 points from the two tests, seminar papers, attendance of lectures and exercises	
20.	Language of teaching / study		Macedonian	
21.	Method of monitoring the quality of teaching		Self-evaluation	

22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.	Atanas Blazeovski	Termodinamika I	UKIM,	1994

		2.	Atanas Blazeovski	Zbirka reseni zadaci po Termodinamika I	UKIM	1996
		3.				
		Additional literature				
	22.2.	No.	Author	Title	Publisher	Year
		1.	NedjeljkaPetric, Ivo Vojnović, VanjaMartinac	Tehnicka Termodinamika	Kemisko-tehnoloskiFakultet - Split	2007
		2.				
		3.				

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course	Strength of materials			
2.	Code	2MF100412			
3.	Study Program	Production Engineering /Transport, Organization and Logistics			
4.	Organizer of the study program (unit or institute, Faculty, department)	University “Goce Delcev”- Stip. Faculty of Mechanical Engineering -Vinica			
5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	second / third	7.	Number of credits	8
8.	Professor (s)	Assi. Prof. Simeon Simeonov, Ph.D			
9.	Requirements for enrollment the Course	Attended course of technical mechanics 1			
10.	Purposes of the curriculum (competencies): Students are introduced to the moments of inertia, the types of stresses, dimensioning				
11.	Content of the course program: Geometric features of planar sections: static moment, the moment of inertia, Steiner’s theorem; Tensile and compressive: axial stresses, dependence of the stress on the deformation -Hooke’s law. Plane stress condition; Shear and torsion; Bending: pure bending, bending from forces, strength calculation, uniform strength, major stresses at the bent beam; Elastic deformations at linear carriers; Statically indeterminate frameworks and carriers ; Buckling: Euler and Tetmayer methods ; Complex stresses: hypotheses of strength ,obliquely bending; Complex stresses of tensile (compressive) and torsion , Complex stresses of tensile (compressive) and bending, Complex stresses of bending and torsion ; Cylinder with a thick wall, Tank with thin wall; Strength of the material under dynamic load effect.				
12.	Learning methods: Lectures, Laboratory exercises, e-learning, individual and team projects, consultations.				
13.	Total available time	216 hours			
14.	Distribution of available time	3 +2 +2/ per week			
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching		3 hours
		15.2.	theoretical and practical exercises,		2hours

			e-exams, preparation of independent seminar work			
16.	Other forms of activities	16.1.	Project tasks	1hour		
		16.2.	Individual tasks	1 hour		
		16.3.	Home learning			
17.	Method of assessment					
	17.1.	Tests / oral exams		70		
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10		
	17.3.	Activity and participation		20		
18.	Assessment Criteria (points / score)		to 50 points	5(five)(F)		
			from 51 to 60 points	6(six) (E)		
			from 61 to 70 points	7 (seven) (D)		
			from 71 to 80 points	8 (eight) (C)		
			from 81 to 90 points	9 (nine) (B)		
			from 91 to 100 points	10 (ten) (A)		
19.	Signature requirement and passing the final exam		60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions			
20.	Language of teaching / study		Macedonian			
21.	Method of monitoring the quality of teaching		Self-evaluation			
22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.	Simeon Simeonov	Strength of material (script)	UGD-Stip	2011
		2.	A.Ilievski, Lj.Todorovska-Azievska, N.Babamov	Strength of material	Dgitprint - Skopje	2008
		3.	Lj.Trajkovska	Strength of material1	UKIM -Skopje	1993
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year
		1.	Lj.Trajkovska	Strength of material1 Collection tasks ,	UKIM -Skopje	1993 1993
		2.	K.Angjusev, D.Korunovski, Z.Petreski,G.Tasevski	Strength of material1 Collection tasks ,	Mechanical faculty Skopje	2008 2008
		3.				

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course	Technical Mechanics 2(kinematics, dynamics, oscillations)			
2.	Code	2MF100612			
3.	Study Program	Production Engineering /Transport, Organization and Logistics			
4.	Organizer of the study program (unit or institute, Faculty, department)	University “Goce Delcev”- Stip. Faculty of Mechanical Engineering -Vinica			
5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	Second/ third	7.	Number of credits	6
8.	Professor (s)	Assi. Prof. Simeon Simeonov, Ph.D			
9.	Requirements for enrollment the Course	No			
10.	Purposes of the curriculum (competencies): Students are introduced to the movement of bodies, kinematics, dynamics and oscillations				
11.	Content of the course program: 1.Introduction to kinematics, motion particle, velocity, acceleration; 2.Types of motion: rectilinear, harmonic, circle, oblique angle shot; 3.Kinematics of a rigid body, translational motion, rotational motion and plane motion; 4.Composed motion of a rigid body, compositon of translations, composition of rotations, composition of translation and rotation of a rigid body; 5. Introduction to dynamics, dynamics of particle, differential equation of motion, types of motion; 6.Laws of mechanics, impulse and work of force, amount of motion, kinetic energy, potential energy.... ; 7.Dynamics of material systems, principles of mechanics: Lagrange-D’Alembert principle; 8.Moments of inertia of a body, 9.Rigid body dynamics, translation motion, rotation motion, plane motion; 10.Oscillations general, free oscillations, Free damped (with resistance) oscillations , resistance of oscillations is proportional to the first degree of speed, force is constant; 11. Forced oscillations without resistance ,forced oscillations with resistance (damped); 12Application of oscillations in a technique.				
12.	Learning methods: Lectures, Laboratory exercises, e-learning, individual and team projects, consultations.				
13.	Total available time	156 hours			
14.	Distribution of available time	2 +2 +1/ per week			
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching		2 hours
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work		2hours
16.	Other forms of activities	16.1.	Project tasks		

			16.2.	Individual tasks	1 hour	
			16.3.	Home learning		
17.	Method of assessment					
	17.1.	Tests / oral exams			70	
	17.2.	Seminars (paper / project - presentation: written and/or oral)			10	
	17.3.	Activity and participation			20	
18.	Assessment Criteria (points / score)		to 50 points		5(five)(F)	
			from 51 to 60 points		6(six) (E)	
			from 61 to 70 points		7 (seven) (D)	
			from 71 to 80 points		8 (eight) (C)	
			from 81 to 90 points		9 (nine) (B)	
			from 91 to 100 points		10 (ten) (A)	
19.	Signature requirement and passing the final exam		60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions			
20.	Language of teaching / study		Macedonian			
21.	Method of monitoring the quality of teaching		Self-evaluation			
22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.	S.Simeonov Z.Sovreski	Technical mechanics 1(peer reviewed script)	UGD-Stip	2011
		2.	E,Vetijakoska	Kinematics, dynamics, oscillations	Mechanical faculty-Skopje	2008
		3.	E,Vetijakoska	Kinematics	Mechanical faculty-Skopje	2009
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year
		1.	B. Andonovic	Technicalmechanics1 collection of solved problems	Technical Faculty- Bitola	1996
		2.	S. Guric	Dynamics and theory of oscillation	Mechanical faculty-beograd	1981
		3.	I . Mickovski Lj. Azievska	Mechanisms and oscillations	Mechanical faculty-Skopje	2001

Annex No.3		Program of the Course - first cycle studies	
1.	Title of the Course	Corrosion and corrosion protection	
2.	Code	2MF102112	

3.	Study Program	Production engineering/Transport Organization and Logistics			
4.	Organizer of the study program (unit or institute, Faculty, department)	University Goce Delcev-Stip Faculty of mechanical engineering -Vinica			
5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	Second/IIIsemester	7.	Number of credits	4
8.	Professor (s)	Assi. Professor Slavco Cvetkov, PhD			
9.	Requirements for enrollment the Course	No			
10.	Purposes of the curriculum (competencies): At the end of the course, students will have competences obtained through the necessary fund of theoretical, methodological and applicative studying in the area of the materials corrosion and protection.				
11.	Content of the course program: 1. Introduction to the corrosion 2. Corrosion in water solutions 3. Pitting corrosion 4. Contact corrosion 5. Corrosion under mechanical factors 6. Procedures for metals protection 7. Protection with electrode potential 8. Anode protection 9. Protection with surface coating 10. Electrochemical procedures for metals protection 11. Coating metals protection 12. Constructive methods for metals protection				
12.	Learning methods: -Teaching, exercises, projects assignment				
13.	Total available time		120		
14.	Distribution of available time		2 + 1 + 1 / per week		
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching		2
		15.2.	theoretical and practical exercises.		1

			e-exams, preparation of independent seminar work	
16.	Other forms of activities	16.1.	Project tasks	
		16.2.	Individual tasks	1 hour
		16.3.	Home learning	
17.	Method of assessment			
	17.1.	Tests / oral exams		70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10 points
	17.3.	Activity and participation		20 points
18.	Assessment Criteria (points / score)		up 50 points	5(five) (F)
			51 to 60 points	6(six) (E)
			61 to 70 points	7 (seven) (D)
			71 to 80 points	8 (eight) (C)
			81 to 90 points	9 (nine) (B)
			91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam		60% success from all pre exam activities i.e. 42 points from two mid-term exams , seminar paper, attendance of lectures and exercises	
20.	Language of teaching / study		Macedonian	
21.	Method of monitoring the quality of teaching		Self-evaluation	

22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.	H.J. Svetomir	Corrosion and protection	Skopje - TMF	1989
		2.	M. Milenkovic	Corrosion and protection	Belgrade	1966
		3.				
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year
		1.				
		2.				
		3.				

Annex No.3		Program of the Course - first cycle studies	
1.	Title of the Course	Probability and statistics	

2.	Code	2FI130712			
3.	Study Program	Production Engineering /Transport, Organization and Logistics			
4.	Organizer of the study program (unit or institute, Faculty, department)	University Goce Delcev - Stip Faculty of mechanical engineering-Vinica			
5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	Second/IV	7.	Number of credits	4
8.	Professor (s)	Prof. Tatjana Atanasova Pacemska, Ph.D			
9.	Requirements for enrollment the Course	Enrollment of the first cycle study program			
10.	Purposes of the curriculum (competencies): Knowledge and understanding of the basic concepts and theories of probability and statistics and their flexible use in practice.				
11.	Content of the course program: Basic concepts of the probability theory. Random Experiment. Random event. Probability space. The axioms of probability. Classical definition of probability. Geometric definition of probability. Conditional probability. Total probability. Bayes' theorems or rule. Bernoulli' scheme. Approximate theorems of the Bernoulli' scheme. Discrete and continuous random variables. Random vectors. Definition of the mathematical expectation, variance and standard deviation. Functions of random variables. Law of large numbers. Chebyshev' Inequality. Central limit theorem. Descriptive statistics. Confidence intervals. Tests of hypothesis.				
12.	Learning methods: <ul style="list-style-type: none">– Lectures,– e-learning,– individual and team projects– Consultations.				
13.	Total available time		120		
14.	Distribution of available time		2+1+1 / per week		
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	2	
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	1	
16.	Other forms of activities	16.1.	Project tasks	hours	
		16.2.	Individual tasks	1 hours	
		16.3.	Home learning	hours	

17.	Method of assessment			
	17.1.	Tests / oral exams	70 points	
	17.2.	Seminars (paper / project - presentation: written and/or oral)	10 points	
	17.3.	Activity and participation	20 points	
18.	Assessment Criteria (points / score)		up 50 points	5(five) (F)
			51 to 60 points	6(six) (E)
			61 to 70 points	7 (seven) (D)
			71 to 80 points	8 (eight) (C)
			81 to 90 points	9 (nine) (B)
			91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam		60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending oflectures and discussions	
20.	Language of teaching / study		Macedonian	
21.	Method of monitoring the quality of teaching		Self-evaluation	

22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.	Risto Malceski	Voved vo teorijata na verojatnosta	FON	2006
		2.	Željko Pauše	Uvod u matematičku statistiku	Školska knjiga, Zagreb	1993
		3.	Nikola Tuneski, Biljana Jolevska-Tuneska	Zbirka reseni zadaci po Verojatnost i statistika	Masinski Fakultet - Skopje	2011
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year
		1.				
		2.				
		3.				

Annex No.3		Program of the Course - first/second/third cycle studies	
1.	Title of the Course	Ergonomics	
2.	Code	2MF106812	

3.	Study Program	Production engineering/Transport, organization and logistics			
4.	Organizer of the study program(unit or institute, Faculty, department)	University Goce Delcev-Stip Faculty of mechanical engineering -Vinica			
5.	Cycle (first, second and third cycle)	First cycle studies (Bachelor studies)			
6.	Academic year / semester	Second /third semester	7.	ECTS	4
8.	Professor (s)	Assi. Prof. Dejan Mirakovski, PhD			
9.	Requirements for enrollment the Course	No			
10.	Purposes of the curriculum(competencies): Introduction to ergonomics and its principles, ergonomic design of the workspace, work place, characteristics of the work place and organization.				
11.	Content of the course program: 1.Introduction to ergonomics, 2. Anthropometric aspect of the man-machine system, 3. Ergonomic principles, 4. Ergonomics as a field for quality improvement, 5. Ergonomic design of the workspace in modern offices, 6. Ambient perception, 7. Impact of lighting in working conditions, 8. Presentation of visual information, 9. Workplace and its organization, 10. Design for special groups of people, 11. Human errors, accidents and safety at work, 12. Rhythm of the body, working ability and effects of the alcohol.				
12.	Learning methods: – Lectures, exercises, individual tasks				
13.	Total available time		120		
14.	Distribution of available time		2+1+1 / per week		
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching		2
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work		1

16.	Other forms of activities		16.1.	Project tasks	hours
			16.2.	Individual tasks	1 hours
			16.3.	Home learning	hours
17.	Method of assessment				
	17.1.	Tests / oral exams			70 points
	17.2.	Seminars (paper/project - presentation: written and/or oral)			10 points
	17.3.	Activity and participation			20 points
18.	Assessment Criteria(points /score)		up 50points		5(five) (F)
			51 to 60 points		6(six) (E)
			61 to 70 points		7 (seven) (D)
			71 to 80 points		8 (eight) (C)
			81 to 90 points		9 (nine) (B)
			91 to 100 points		10 (ten) (A)
19.	Signature requirementandpassingthefinal exam		60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions		
20.	Language ofteaching / study		Macedonian		
21.	Method ofmonitoringthe quality of teaching		Self-evaluation		

22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.	Prof. R. Polenakovik	"Ergonomics" (customized lectures)	UKIM, Faculty of Mechanical Engineering, Skopje	2007
		2.				
		3.				
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year
		1.				
		2.				
		3.				

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course	Industrial Management			
2.	Code	2MF106912			
3.	Study Program	Production Engineering /Transport, Organization and Logistics			
4.	Organizer of the study program (unit or institute, Faculty, department)	University Goce Delcev-Stip Faculty of mechanical engineering -Vinica			
5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	Second/Third semester	7.	Number of ECTS credits	4
8.	Professor (s)	Assi. Prof. Misko Dzidrov, Ph.D			
9.	Requirements for enrollment the Course	No			
10.	Purposes ofthe curriculum(competencies):Learning of managerial functions: planning, organizing and staffing, leadership, controlling.				
11.	Contents of the course program: 1. Introduction to Management 2. Problem solving and decision making 3. Information and information systems 4. Fundamentals of organizational communication 5. Organizational communication - flows, networks and types 6. Management by objectives and managerial function of planning 7. Managerial function of organizing: division and grouping of work 8. Managerial function of organization: coordination, management range and organizational design 9. Organizational conflicts 10. Staffing and Motivating 11. Styles of leadership and types of managers 12. Systems and processes in controlling				
12.	Learning methods: Interactive teaching, exercises, individual and/or team work on projects, consultations and individual-study.				

13.	Total availabletime		120 hours	
14.	Distribution of availabletime		2 +1 +1	
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	2
		15.2.	theoretical andpractical exercises, e-exams, preparationofindependentseminar work	1
16.	Other forms of activities	16.1.	Project tasks	
		16.2.	Individual tasks	1
		16.3.	Home learning	
17.	Method of assessment			
	17.1.	Tests / oral exams		70 points
	17.2.	Seminars (paper/project - presentation: written and/or oral)		10 points
	17.3.	Activity and participation		20 points
18.	Assessment Criteria(points /score)		up 50points	5(five) (F)
			51 to 60 points	6(six) (E)
			61 to 70 points	7 (seven) (D)
			71 to 80 points	8 (eight) (C)
			81 to 90 points	9 (nine) (B)
			91 to 100 points	10 (ten) (A)
19.	Signature requirementandpassingthefinal exam		60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions	
20.	Language ofteaching / study		Macedonian	
21.	Method ofmonitoringthe quality of teaching		Self-evaluation	

22.	Literature				
22.1.	Required literature				
	Order No.	Author	Title	Publisher	Year
	1.	T. Kralev	Management Principles Part 1	CIM	2001
	2.				
	3.				

	22.2.	Additional literature				
		Order No.	Author	Title	Publisher	Year
		1.	T. Krlev	Management Principles Part 1	CIM	2005
		2.	T. Krlev	Management Principles Handbook	CIM	2005
		3.	V. Bulat	Industrial Management	Faculty for Industrial Management - Kruševac	2007

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course	Machine elements			
2.	Code	2MF100712			
3.	Study Program	Production Engineering /Transport, Organization and Logistics			
4.	Organizer of the study program (unit or institute, Faculty, department)	University “Goce Delcev”- Stip. Faculty of Mechanical Engineering -Vinica			
5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	second / fourth	7.	Number of credits	8
8.	Professor (s)	Assi. Prof. Ph.D Simeon Simeonov			
9.	Requirements for enrollment the Course	Attended course of Strength of material			
10.	Purposes of the curriculum (competencies): Students are introduced to the properties of machine elements, their dimensioning and constructing;				
11.	Content of the course program: Elements for joining. Separable threaded fasteners, types, threaded transmitters, threaded fasteners, material, calculation; Wedges, serrated joints, pins. Inseparable fasteners (rivets, welded connections); Springs, flexible springs, spirally screw springs, construction and calculation; Bearing, ball bearing (rolling bearings), sleeve bearing (slide bearings), construction and calculation; Clutches, constantly engaged, engaged-disengaged manageable clutches, automatic clutches. Installation of pipes; Gears, cylindrical gears, construction and calculation. Conical gears , construction and calculation; Worm and gear sets; Belts transmitters; Friction transmitters; Chains.				
12.	Learning methods: Lectures, Laboratory exercises, e-learning, individual and team projects, consultations.				
13.	Total available time	216 hours			
14.	Distribution of available time	3 +2 +2/ per week			
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching		3 hours

		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	2hours		
16.	Other forms of activities	16.1.	Project tasks	1hour		
		16.2.	Individual tasks	1 hour		
		16.3.	Home learning			
17.	Method of assessment					
	17.1.	Tests / oral exams		70		
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10		
	17.3.	Activity and participation		20		
18.	Assessment Criteria (points / score)		to 50 points	5(five)(F)		
			from 51 to 60 points	6(six) (E)		
			from 61 to 70 points	7 (seven) (D)		
			from 71 to 80 points	8 (eight) (C)		
			from 81 to 90 points	9 (nine) (B)		
			from 91 to 100 points	10 (ten) (A)		
19.	Signature requirement and passing the final exam		60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions			
20.	Language of teaching / study		Macedonian			
21.	Method of monitoring the quality of teaching		Self-evaluation			
22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.	Simeon Simeonov	Strength of material (script)	UGD-Stip	2011
		2.	D.Stamboliev	Machine elements ,1,2	UKIM Skopje	1975
		3.	K.Trimcevski	Machine elements	Mechanical faculty - Skopje	
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year
		1.	M. Ognjanovik	Mechanical elements	Mechanical faculty - Beograd	2008
		2.	S.Simeonov	Mechanical elements-collection tasks	UGD -Stip	2011
		3.				

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course	Fluid Mechanics			
2.	Code	2MF100812			
3.	Study Program	Production Engineering /Transport, Organization and Logistics			
4.	Organizer of the study program (unit or institute, Faculty, department)	University Goce Delcev-Stip Faculty of mechanical engineering -Vinica			
5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	II/IV semester	7.	Number of credits	6
8.	Professor (s)	Assi. Prof. Radomir Cvetanoski, Ph.D			
9.	Requirements for enrollment the Course	none			
10.	Purposes of the curriculum (competencies): Introducing students to the mechanics of fluids, and training for calculations and practical application of the laws of fluid mechanic				
11.	Content of the course program: Tasks and application of fluid mechanics; most important thermodynamic and physical properties of gases; most important thermodynamic and physical properties of liquids; Statics of fluids; Kinematics flow; ideal fluid dynamics; Some elementary flows ideal fluid through electrical flow; two-dimensional potential flow; convection viscous fluid; Methods of application of fluid mechanics (hydraulics); laminar flow through circular pipes; Hydraulic shock.				
12.	Learning methods: Theoretical lectures, auditory exercises, lectures with presentations through slides, exercises, independent elaboration and defense of the project task				
13.	Total available time		156 hours		
14.	Distribution of available time		2+2+1 / per week		
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	2	
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	2	
16.	Other forms of activities	16.1.	Project tasks	hours	
		16.2.	Individual tasks	1 hours	
		16.3.	Home learning	hours	

17.	Method of assessment			
	17.1.	Tests / oral exams	70 points	
	17.2.	Seminars (paper / project - presentation: written and/or oral)	10 points	
	17.3.	Activity and participation	20 points	
18.	Assessment Criteria (points / score)		up 50 points	5(five) (F)
			51 to 60 points	6(six) (E)
			61 to 70 points	7 (seven) (D)
			71 to 80 points	8 (eight) (C)
			81 to 90 points	9 (nine) (B)
			91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam		60% of pre-exam activities i.e. 42 points from two mid-term exams , seminar paper, attendance of lectures and exercises	
20.	Language of teaching / study		Macedonian language	
21.	Method of monitoring the quality of teaching		Self-evaluation	

22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.	Ass. Prof. Ph.D Radomir Cvetanoski	Fluid Mechanics	UGD	2009
		2.	Frank White	Fluid Mechanics	Ars Lamina Skopje	2009
		3.	Ilija Mijakovski	Fluid Mechanics-collection solution tasks	Technical Faculty - Bitola	1994
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year
		1.				
		2.				
		3.				

Annex No.3		Program of the Course - first cycle studies	
1.	Title of the Course	Numerical methods	
2.	Code	2FP101512	
3.	Study Program	Production Engineering /Transport, Organization and Logistics	
4.	Organizer of the study program (unit or institute, Faculty, department)	University Goce Delcev-Stip Faculty of mechanical engineering -Vinica	

5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	Second/Fourth	7.	Number of credits	6
8.	Professor (s)	Prof. Blagoj Golomeov, Ph.D.			
9.	Requirements for enrollment the Course	No			
10.	Purposes of the curriculum (competencies): Students are introduced to the basics of numerical mathematics.				
11.	Content of the course program: Introduction. Basic concepts of error estimation. Approximately solving equations with one unknown. Method of halving. Newton-Rafson method. Secant method. Interpolation. Polynomial interpolation. Lagrange formula. Newton interpolation's formula back and forth. Two-dimensional interpolation. Numerical differentiation, Newton interpolation. Numerical integration. Newton IP. Trapeze and Simpson's rule. Gaussian elimination, Jakob and Gauss Zajdelov method. Numerical solution of ordinary differential equations. Taylor series methods. Euler method. Higher-order methods. Runge-Kuta method. Polynomial regression. Method of least squares. Techniques for network planning. Project, activity, event. Presentation of addicted activities. Fulker rule. PERT method- time analysis. Method CPM-critical path.				
12.	Learning methods: Lectures, e-learning, individual and team projects, consultations.				
13.	Total available time		156		
14.	Distribution of available time		2+2+1 / per week		
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching		2
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work		2
16.	Other forms of activities	16.1.	Project tasks		
		16.2.	Individual tasks		1
		16.3.	Home learning		
17.	Method of assessment				
	17.1.	Tests / oral exams			70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)			10 points
	17.3.	Activity and participation			20 points
18.	Assessment Criteria (points / score)		up 50 points		5(five) (F)
			51 to 60 points		6(six) (E)
			61 to 70 points		7 (seven) (D)
			71 to 80 points		8 (eight) (C)

		81 to 90 points	9 (nine) (B)
		91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam	60% of pre-examactivities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions	
20.	Language of teaching / study	Macedonian	
21.	Method of monitoring the quality of teaching	Self-evaluation	

22.	Literature				
22.1.	Required literature				
	No.	Author	Title	Publisher	Year
	1.	Blagoj Golomeov	Numerical methods in mining and geology	Faculty of Natural and Technical Sciences	2009
	2.				
	3.				
22.2.	Additional literature				
	No.	Author	Title	Publisher	Year
	1.				

Annex No.3		Program of the Course - first/second/ third cycle studies			
1.	Title of the Course	Measurement and measuring instruments			
2.	Code	2MF102212			
3.	Study Program:	Production Engineering /Transport, Organization and Logistics			
4.	Organizer of the study program (unit or institute, Faculty, department)	University Goce Delcev-Stip Faculty of mechanical engineering -Vinica			
5.	Cycle (first, second, third cycle)	First cycle			
6.	Academic year / semester	Second / fourth semester	7.	Number of ECTS credits	4
8.	Professor (s)	Assi. Prof. Bratica Temelkoska, Ph.D			
9.	Requirements for enrolment the Course	No			
10.	Purposes of the curriculum (competencies):Students are introduced to the types of measuring instruments and their application.				
11.	Content of the course program: Basic and general terms in metrology; Measurement and measurement concept,				

	defined in terms of metrology; Measuring instruments; caliper rule and micrometers; comparators; yardsticks for measuring angles and cones; Methods for measurement and control coils; measuring machines; Measuring instruments based on optical measurements; pressure measurement. Temperature measurement; Instruments for measuring flow; Measuring force. Instruments for measuring deformations.				
12.	Learning methods; Theoretical lectures, laboratory exercises				
13.	Total available time			120 hours	
14.	Distribution of the available time			2+1+1	
15.	Forms of teaching/ Learning activities	15.1	Lectures - theoretical contact teaching/e-teaching	2	
		15.2	Theoretical and practical exercises, e-exams, preparation of independent seminar work	1	
16.	Other forms of activities	16.1	Projects tasks		
		16.2	Individual tasks	1	
		16.3	Home learning		
17.	Method of assessment				
	17.1.	Tests / oral exams,			70 points
	17.2.	Seminars (paper /project - presentation ; written and /or oral			10 points
	17.3.	Activity and participation			20 points
18.	Assessment Criteria (points / score)		to 50 points	5(five) (F)	
			from 51 to 60 points	6(six) (E)	
			from 61 to 70 points	7(seven) (D)	
			from 71 to 80 points	8(eight) (C)	
			from 81 to 90 points	9(nine) (B)	
			from 91 to 100 points	10(ten) (A)	
19.	Signature requirement and passing tne final exam		60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions		
20.	Language of teaching/study		Macedonian		
21.	Method of monitoring the quality of teaching		Self-evaluation		

22.	Literature					
	22.1	Required literature				
		Order No.	Author	Title	Publisher	Year
		1.	Bratica Temelkoska	Measurement and measuring instruments-textbook	University “Goce Delcev”- Stip. Faculty of	2009

					Mechanical Engineering - Vinica	
		2.				
		3.				
	22.2	Additional literature				
		Order No.	Author	Title	Publisher	Year
		1.				
		2.				
		3.				

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course	Heat transfer			
2.	Code	MF102312			
3.	Study Program	Production Engineering /Transport, Organization and Logistics			
4.	Organizer of the study program (unit or institute, Faculty, department)	University Goce Delcev Faculty of Mechanical Engineering			
5.	Cycle (first, second and third cycle)	first cycle			
6.	Academic year / semester	II/IV semester	7.	Number of credits	4
8.	Professor (s)	Assi. Prof. Radomir Cvetanoski, Ph.D			
9.	Requirements for enrollment the Course	No			
10.	Purposes of the curriculum (competencies): Introduction to basic concepts of heat and temperature, the basic types of heat transfer, conduction, convection and radiation, heat transfer devices, Heat and types of Heat, efficiency and design.				
11.	Content of the course program: 1.Temperature and heat; Transmission of heat; conduction heat transfer; Convective heat tranfer; Radiation heat transfer; Heat; 2. Efficiency of heat exchangers; Classification of heat exchangers; Tubular heat exchangers; Plate heat echangers; Regenerativeheat exchangers; Designing heat exchangers;				
12.	Learning methods: Lectures with presentations through slides, exercises, independent elaboration and defense of the project task				
13.	Total available time		120 hours		
14.	Distribution of available time		2 +1+1 / per week		
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching,		2

			e-teaching	
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	1
16.	Other forms of activities	16.1.	Project tasks	hours
		16.2.	Individual tasks	1 hours
		16.3.	Home learning	hours
17.	Method of assessment			
	17.1.	Tests / oral exams		70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10 points
	17.3.	Activity and participation		20 points
18.	Assessment Criteria (points / score)		up 50 points	5(five) (F)
			51 to 60 points	6(six) (E)
			61 to 70 points	7 (seven) (D)
			71 to 80 points	8 (eight) (C)
			81 to 90 points	9 (nine) (B)
			91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam		60% of pre-exam activities i.e. 42 points from two mid-term exams , seminar paper, attendance of lectures and exercises	
20.	Language of teaching / study		Macedonian language	
21.	Method of monitoring the quality of teaching		Self-evaluation	

22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.	A. Mojsovski	Heat transfer and mass	UKIM	1992
		2.				
		3.				
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year
		1.	Schlunder E. U	Heat Exchanger Design Handbook	Hamisphere Publishing Corporation, Washington, USA	1987
		2.	John H. Lienhard	A heat transfer textbook	Philogiston press	2011
		3.				

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course	Thermo-technical machines			
2.	Code	2MF100912			
3.	Study Program	Production engineering			
4.	Organizer of the study program (unit or institute, Faculty, department)	University Goce Delcev-Stip Faculty of Mechanical Engineering -Vinica			
5.	Cycle (first, second and third cycle)	first cycle			
6.	Academic year / semester	3/V	7.	Number of credits	8
8.	Professor (s)	Assistant Prof. Zlatko Sovreski, PhD			
9.	Requirements for enrollment the Course	none			
10.	Purposes of the curriculum (competencies): Introduction to basic thermo technical machines, steam boilers, thermal turbines, steam turbines, heating appliances and air conditioning, cooling units, engine SVS.				
11.	Content of the course program: 1.Types of energy; Energy sources; Steam boilers; Heat balance and heat losses; Coefficient of efficiency; Construction of steam boilers; Thermal turbines and plants. 2.Basic elements and classification of steam turbine units; Heating and cooling; ventilation plants; Refrigerating plants; Motor SVS; engine cycle in SVS.				
12.	Learning methods: Lectures with presentations through slides, exercises, independent preparation and presentation of the project assignment				
13.	Total available time	216			
14.	Distribution of available time	3+2+2 / per week			
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching		3
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work		2
16.	Other forms of activities	16.1.	Project tasks		1 hours
		16.2.	Individual tasks		1 hours
		16.3.	Home learning		hours
17.	Method of assessment				
	17.1.	Tests / oral exams			70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)			10 points

	17.3.	Activity and participation	20 points
18.	Assessment Criteria (points / score)	up 50 points	5(five) (F)
		51 to 60 points	6(six) (E)
		61 to 70 points	7 (seven) (D)
		71 to 80 points	8 (eight) (C)
		81 to 90 points	9 (nine) (B)
		91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam	60% of pre-examactivities or 42 points from the two mid-term exams, seminar papers, attendance of lectures and exercises	
20.	Language of teaching / study	Macedonian	
21.	Method of monitoring the quality of teaching	Self-evaluation	

22.	Literature				
22.1.	Required literature				
	No.	Author	Title	Publisher	Year
	1.	Armenski Slave	Termodinamicki masini I uredi	UKIM	1995
	2.				
	3.				
	Additional literature				
22.2.	No.	Author	Title	Publisher	Year
	1.	Petrovski Ilija	Parni kotli	UKIM	2004
	2.	Dimitrovski Mile	Motori SVS-teorija I sovremena oprema	UKIM	2001
	3.				

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course	Processing using cutting and plastic deformation			
2.	Code	2MF101012			
3.	Study Program	Production Engineering			
4.	Organizer of the study program (unit or institute, Faculty, department)	University Goce Delcev-Stip Faculty of Mechanical Engineering - Vinica Department of Production Engineering			
5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	Third year/ Fifth semester	7.	Number of credits	8
8.	Professor (s)	Assi. Prof. Slavco Cvetkov, Ph.D.			
9.	Requirements for enrollment the Course	None			
10.	Purposes of the curriculum (competencies):				

	Training and running processes by grinding, processing sheet with plastic deformation and processing technologies using spatial plastic deformation.				
11.	Content of the course program: 1. Processing using grinding: Basics of the theory of processing using cutting. The quality of processing and economical cutting. Processing using cutting: production operations, the basic elements of the processed piece, cutting tool, resistance to cutting, speed cutting, sweep, the number of rotation, allowances for processing. Processing by milling, Saw logs, drilling, insertion, planning, grinding. Preparation of gears. 2. Processing using plastic deformation: Elementary theoretical basis. Technology of processing metal sheets using cutting.				
12.	Learning methods: Lectures, exercises, individual works, practical classes, home learning, consultations.				
13.	Total available time		216 hours		
14.	Distribution of available time		3+2+2 / per week		
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	3 hours	
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	2 hours	
16.	Other forms of activities	16.1.	Project tasks	1hours	
		16.2.	Individual tasks		
		16.3.	Home learning	1 hours	
17.	Method of assessment				
	17.1.	Tests / oral exams		70 points	
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10 points	
	17.3.	Activity and participation		20 points	
18.	Assessment Criteria (points / score)		up 50 points		5(five) (F)
			51 to 60 points		6(six) (E)
			61 to 70 points		7 (seven) (D)
			71 to 80 points		8 (eight) (C)
			81 to 90 points		9 (nine) (B)
			91 to 100 points		10 (ten) (A)
19.	Signature requirement and passing the final exam		60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions		
20.	Language of teaching / study		Macedonian		
21.	Method of monitoring the quality of teaching		Self-evaluation		

22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.	Slavco Cvetkov	Processing using cutting and plastic deformation-script	UGD-Stip Mechanical faculty-Vinica	2013
		2.				
		3.				
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year
		1.	Milisav Kalajdžić	Technology of machine construction	Mechanical faculty, Belgrade	2006
		2.	Joko Stanić	Processing theory of processes	Mechanical faculty, Belgrade	1994
		3.	J. Lazarev, V. Strezov	Machines and processing using deformation	Mechanical faculty, Skopje	2001
		4	D. M. Nikolić	Theory of processing II Theory of processing metals using deformation	Mechanical faculty, Belgrade	1999
		5	D. M. Nikolić	Theory of processing II Theory of processing metals using deformation	Mechanical faculty, Belgrade	1999

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course	CAD technology			
2.	Code	2MF101112			
3.	Study Program	Production Engineering			
4.	Organizer of the study program (unit or institute, Faculty, department)	University “Goce Delcev”- Stip. Faculty of Mechanical Engineering -Vinica			
5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	third / fifth	7.	Number of credits	6
8.	Professor (s)	Assi. Prof. Simeon Simeonov, Ph.D			
9.	Requirements for enrollment the Course	No			
10.	Purposes of the curriculum (competencies): Students are introduced to the basics and application of CAD technology in mechanical engineering				
11.	Content of the course program: Introduction to CAD technology, 2D documentation, Dimensions, Making templates, Primitives obtained by extruding, Primitives obtained by rotation, Primitives obtained by				

	translation along the path, Modeling ribs, Sketched primitives modeling, Creating assemblies of primitives.					
12.	Learning methods: Lectures, Laboratory exercises, e-learning, individual and team projects, consultations.					
13.	Total available time		156 hours			
14.	Distribution of available time		2 +2 +1/ per week			
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	2 hours		
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	2hours		
16.	Other forms of activities	16.1.	Project tasks			
		16.2.	Individual tasks	1 hour		
		16.3.	Home learning			
17.	Method of assessment					
	17.1.	Tests / oral exams			70	
	17.2.	Seminars (paper / project - presentation: written and/or oral)			10	
	17.3.	Activity and participation			20	
18.	Assessment Criteria (points / score)		to 50 points		5(five)(F)	
			from 51 to 60 points		6(six) (E)	
			from 61 to 70 points		7 (seven) (D)	
			from 71 to 80 points		8 (eight) (C)	
			from 81 to 90 points		9 (nine) (B)	
			from 91 to 100 points		10 (ten) (A)	
19.	Signature requirement and passing the final exam		60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions			
20.	Language of teaching / study		Macedonian			
21.	Method of monitoring the quality of teaching		Self-evaluation			
22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.		SolidWorks –software And a book		
		2.				
		3.				
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year

		1.	G. Devedzik	CAD/CAM technology	Mechanical faculty Kraguevac	2004
		2.				
		3.				

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course	Sustainable energy systems			
2.	Code	2MF102412			
3.	Study Program	Production Engineering			
4.	Organizer of the study program (unit or institute, Faculty, department)	University Goce Delcev-Stip Faculty of mechanical engineering -Vinica			
5.	Cycle (first, second and third cycle)	first cycle			
6.	Academic year / semester	III/V semester	7.	Number of credits	4
8.	Professor (s)	Assi. Prof. Radomir Cvetanoski, Ph.D			
9.	Requirements for enrollment the Course	No			
10.	Purposes of the curriculum (competencies): Introduction to sustainable energy systems, solar energy, geothermal energy, biomass, wind energy.				
11.	Content of the course program: 1.Introduction; Classification of sustainable energy systems; Solar energy - features; Devices and application of solar energy for hot water; Devices and application of solar energy for electricity; General geothermal energy; 2.Application of geothermal energy; Energy from biomass - potential sources; obtaining fuel from biomass; devices for obtaining fuel from biomass; wind energy; wind turbines and their application				
12.	Learning methods: Lectures with presentations through slides, exercises, independent elaboration and defense of the project task				
13.	Total available time		120 hours		
14.	Distribution of available time		2+1+1 / per week		
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching		2
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work		1

16.	Other forms of activities		16.1.	Project tasks	hours
			16.2.	Individual tasks	1 hours
			16.3.	Home learning	hours
17.	Method of assessment				
	17.1.	Tests / oral exams			70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)			10 points
	17.3.	Activity and participation			20 points
18.	Assessment Criteria (points / score)		up 50 points		5(five) (F)
			51 to 60 points		6(six) (E)
			61 to 70 points		7 (seven) (D)
			71 to 80 points		8 (eight) (C)
			81 to 90 points		9 (nine) (B)
			91 to 100 points		10 (ten) (A)
19.	Signature requirement and passing the final exam		60% of pre-exam activities i.e. 42 points from two mid-term exams , seminar paper, attendance of lectures and exercises		
20.	Language of teaching / study		Macedonian language		
21.	Method of monitoring the quality of teaching		Self-evaluation		

22.	Literature				
22.1.	Required literature				
	No.	Author	Title	Publisher	Year
	1.	S. Armenski	Renewable energy sources	NIP Student comes Skopje	2007
	2.				
	3.				
22.2.	Additional literature				
	No.	Author	Title	Publisher	Year
	1.	G. Kanevce	Sustainable energy systems lectures	Bitola	
	2.	A.M.Laughton	Renewable Energy Sources	Taylor&Francis, London	2003
	3.				

Annex No.3		Program of the Course - first cycle studies	
1.	Title of the Course	Machinery for transport	
2.	Code	2MF109512	
3.	Study Program	Production Engineering	

4.	Organizer of the study program (unit or institute, Faculty, department)	University “Goce Delcev”- Stip. Faculty of Mechanical Engineering -Vinica			
5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	third /fifth	7.	Number of credits	4
8.	Professor (s)	Assi. Prof. Simeon Simeonov, Ph.D			
9.	Requirements for enrollment the Course	No			
10.	Purposes of the curriculum (competencies): Students are introduced to the types of means of transportation, calculation and application.				
11.	Content of the course program: Introduction; Machinery for transport with cyclic work: simple mechanisms, cranes and hoists; Cranes’ features: capacity, relative time of work; types of loads. Mechanisms of cranes; Resistances and power of cranes; Elements for carrying the load: ropes, chains, chain wheels, rope drums. Elements for holding the load; Brakes, elements for raising, clutches, safety devices, Elements for retention, lifts, skippers; Transportation vehicles: carts, tractors, forklifts; Machines for continuous transport, conveyors with traction components: Conveyor belts; Conveyors with: plates, harrow. Elevators; Machines without traction components: roller conveyors, oscillatory conveyors, screw conveyors, hydraulic and pneumatic conveyors.				
12.	Learning methods: Lectures, Laboratory exercises, e-learning, individual and team projects, consultations.				
13.	Total available time		120 hours		
14.	Distribution of available time		2 +1 +1/ per week		
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching		2 hours
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work		1hours
16.	Other forms of activities	16.1.	Project tasks		
		16.2.	Individual tasks		1 hour
		16.3.	Home learning		
17.	Method of assessment				
	17.1.	Tests / oral exams			70
	17.2.	Seminars (paper / project - presentation: written and/or oral)			10
	17.3.	Activity and participation			20
18.	Assessment Criteria (points / score)		to 50 points		5(five)(F)
			from 51 to 60 points		6(six) (E)

		from 61 to 70 points	7 (seven) (D)		
		from 71 to 80 points	8 (eight) (C)		
		from 81 to 90 points	9 (nine) (B)		
		from 91 to 100 points	10 (ten) (A)		
19.	Signature requirement and passing the final exam	60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions			
20.	Language of teaching / study	Macedonian			
21.	Method of monitoring the quality of teaching	Self-evaluation			
22.	Literature				
22.1.	Required literature				
	No.	Author	Title	Publisher	Year
	1.	S.Simeonov	Machinery for transport (script)	UGD -Stip	2011
	2.	J.Jancevski	Transporting appliances	Mechanical faculty Skopje	2003
	3.				
22.2.	Additional literature				
	No.	Author	Title	Publisher	Year
	1.	Sava Dedier	Transporting appliances	Mechanical faculty -Beograd	1971
	2.	Sotir Panovski	Transferred processes	Technical faculty - Bitola	2009
	3.				

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course	Engineering economics			
2.	Code	2MF107012			
3.	Study Program	Production Engineering /Transport, Organization and Logistics			
4.	Organizer of the study program (unit or institute, Faculty, department)	University Goce Delcev-Stip Faculty of mechanical engineering -Vinica			
5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	Third/sixth	7.	Number of ECTS credits	4
8.	Professor (s)	Assi. Prof. Misko Dzidrov, Ph.D			

9.	Requirements for enrollment the Course	No		
10.	Purposes of the curriculum (competencies): Learning in the field of engineering economic, the methods and analysis, as well as making investment decisions among project alternatives. Strengthening analytical skills related to financial information.			
11.	Contents of the course program: 1. Introduction to the economic methods applied in engineering 2. Decision-making methods 3. Studying of cash flow concepts 4. Rate of return, return of investments, 5. Financial indicators for profitability, effectiveness, efficiency, 6. Cost analysis, revenue, profits, 7. Balance sheet and income statement 8. Studying of basic economic value analysis (present value, annual analysis, incremental analysis, cost/ benefit analysis) 9. Methods for calculating of depreciation 10. Techniques for estimating of equipment replacement 11. Making investment decisions among project alternatives 12. Learning techniques for preparation of a business plan and feasibility study			
12.	Learning methods: Interactive teaching, exercises, individual and/or team work on projects, consultations and individual learning			
13.	Total available time		120 hours	
14.	Distribution of available time		2 +1 +1	
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	2
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	1
16.	Other forms of activities	16.1.	Project tasks	
		16.2.	Individual tasks	1
		16.3.	Home learning	
17.	Method of assessment			

	17.1.	Tests / oral exams	70
	17.2.	Seminars (paper / project - presentation: written and/or oral)	10
	17.3.	Activity and participation	20
18.	Assessment Criteria (points / score)	to 50 points	5(five)(F)
		from 51 to 60 points	6(six) (E)
		from 61 to 70 points	7 (seven) (D)
		from 71 to 80 points	8 (eight) (C)
		from 81 to 90 points	9 (nine) (B)
		from 91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam		60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions
20.	Language of teaching / study		Macedonian
21.	Method of monitoring the quality of teaching		Self-evaluation

22.	Literature					
	22.1.	Required literature				
		Order No.	Author	Title	Publisher	Year
		1.	V. Gecevska	Engineering Economics	Faculty of Mechanical Engineering, UKIM, Skopje	2010
		2.	D. Bojadzhioski	Enterprise Economics	Economic Faculty Skopje	1999
		3.				
	22.2.	Additional literature				
		Order No.	Author	Title	Publisher	Year
		1.	Michael R. Baye	Managerial Economics & Business Strategy	McGraw-Hill College	2007
		2.				
3.						

Annex No.3		Program of the Course - first cycle studies	
1.	Title of the Course	Machines and tools for plastic processing	
2.	Code	2MF101212	
3.	Study Program	Production Engineering	
4.	Organizer of the study program (unit or institute, Faculty, department)	University Goce Delcev-Stip Faculty of Mechanical Engineering - Vinica Department of Production Engineering	

5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	Third / Sixth semester	7.	Number of credits	8
8.	Professor (s)	Assi. Prof. Slavco Cvetkov, Ph.D			
9.	Requirements for enrollment the Course	Passed exam of Processing using cutting and plastic deformation			
10.	Purposes of the curriculum (competencies): Training to use treatment processes of plastic deformation and processing machines as well as design and construction of tools for plastic deformation processing.				
11.	Content of the course program: 1. Machines for plastic processing. Machines for sheet metal processing, crank and hydraulic presses. Angle bending presses and crank scissors for cutting sheet metal. Hammers and forging presses. 2. Tools for plastic processing. Basic elements, components and materials for construction. Constructing tools for sheet metal piercing, punching, bending and drawing. Forging tools for hammers and forging presses.				
12.	Learning methods: Lectures, exercises, individual work, practical classes, home learning, consultations.				
13.	Total available time		216 hours		
14.	Distribution of available time		3+2+2 / per week		
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	3 hours	
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	2 hours	
16.	Other forms of activities	16.1.	Project tasks	1 hours	
		16.2.	Individual tasks	1 hours	
		16.3.	Home learning		
17.	Method of assessment				
	17.1.	Tests / oral exams			70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)			10 points
	17.3.	Activity and participation			20 points
18.	Assessment Criteria (points / score)		up 50 points		5(five) (F)
			51 to 60 points		6(six) (E)
			61 to 70 points		7 (seven) (D)
			71 to 80 points		8 (eight) (C)
			81 to 90 points		9 (nine) (B)
			91 to 100 points		10 (ten) (A)

19.	Signature requirement and passing the final exam	60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending to lectures and discussions
20.	Language of teaching / study	Macedonian
21.	Method of monitoring the quality of teaching	Self-evaluation

22.	Literature				
22.1.	Required literature				
	No.	Author	Title	Publisher	Year
	1.	Slavco Cvetkov	Machines and tools for plastic processing - script	UGD-Stip Mechanical faculty-Vinica	2013
	2.				
	3.				
	Additional literature				
	No.	Author	Title	Publisher	Year
22.2.	1.	J, Lazarev V, Strezov.	Machines and processing with deformation	Mechanical faculty, Skopje	1994
	2.	M. Jovičić, Lj. Tanović	Tools and equipment - Design and construction tools for making metal sheet parts	Mechanical faculty, Belgrade	2007
	3.	B. Musafija	Metal processing using plastic deformation	Svjetlost Sarajevo	2001

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course	Basics of internal combustion engines			
2.	Code	2MF109112			
3.	Study Program	Production Engineering			
4.	Organizer of the study program (unit or institute, Faculty, department)	University "Goce Delcev"- Stip, Faculty of Mechanical Engineering -Vinica			
5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	third / fifth	7.	Number of ECTS credits	5
8.	Professor (s)	Assi. Prof. Zlatko V. Sovreski, Ph.D			

9.	Requirements for enrollment the Course	No		
10.	Content of the course program: Introduction to basic Thermotechnical machines - steam boilers, thermal turbines, steam turbines, devices heating and air conditioning, refrigeration plants, internal combustion engines			
11.	Contents of the course program: Types of energy; energy sources; steam boilers; Heat balance and heat losses; Useful coefficient; construction of steam boilers; Thermal turbines and plants. Basic elements and classification steam turbines plants; Heating and cooling; ventilation plants; Refrigerating plants; Motor cycles in engines internal combustion			
12.	Learning methods: Lectures, Laboratory exercises, e-learning, individual and team projects, consultations.			
13.	Total available time		120 hours	
14.	Distribution of available time		2+1+1	
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	2
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	1
16.	Other forms of studying activities	16.1.	Project tasks	
		16.2.	Individual tasks	1
		16.3.	Home learning	
17.	Method of assessment			
	17.1.	Tests / oral exams		70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10 points
	17.3.	Activity and participation		20 points
18.	Assessment Criteria (points / score)		up 50 points	5(five) (F)
			51 to 60 points	6(six) (E)
			61 to 70 points	7 (seven) (D)
			71 to 80 points	8 (eight) (C)
			81 to 90 points	9 (nine) (B)
			91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam		60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions	
20.	Language of teaching / study		Macedonian	
21.	Method of monitoring the quality of teaching		Self-evaluation	

22.	Literature				
22.1.	Required literature				
	Order No.	Author	Title	Publisher	Year
	1.	S. Armenski	Thermotechnical machinery and devices	University "Ss. Cyril and Methodius " Skopje	1995
	2.				
	3.				
	Additional literature				
22.2.	Order No.	Author	Title	Publisher	Year
	1.	I. Petreski	Steam turbines	University "Ss. Cyril and Methodius " Skopje	2004
	2.	M. Dimitrovski	Engines internal combustion	University "Ss. Cyril and Methodius " Skopje	2001
	3.				

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course	Metalcutting machines and devices			
2.	Code	2MF101312			
3.	Study Program	Production Engineering			
4.	Organizer of the study program (unit or institute, Faculty, department)	University Goce Delcev-Štip Faculty of Mechanical Engineering - Vinica Department of Production Engineering			
5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	Third year/ Sixth semester	7.	Number of credits	6
8.	Professor (s)	Assi. Prof. Slavco Cvetkov, Ph.D.			
9.	Requirements for enrollment the Course	Passed exam of Processing using cutting and plastic deformation			
10.	Purposes of the curriculum (competencies): Training to use processing machines for cutting (metalcutting machines) as well as design and construction of devices for metalcutting machines				
11.	Content of the course program: 1. Metalcutting machines. Basic parts (construction) of the metalcutting machines.				

	Lathes, milling machines, cutting machines, boring mills, grinding machines (grinders), insertion machines, mill drill, machines for fine processing and processing centers. 2. Devices of metalcutting machines. Constriction devices, based on processed parts, elements and constriction mechanism, components. Universal assembling devices. Performing special construction of devices for metalcutting machines.			
12.	Learning methods: Lectures, exercises, individual work, practical classes, home learning, consultations.			
13.	Total available time		156 hours	
14.	Distribution of available time		2+2+1 / per week	
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	2 hours
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	2 hours
16.	Other forms of activities	16.1.	Project tasks	
		16.2.	Individual tasks	1 hours
		16.3.	Home learning	
17.	Method of assessment			
	17.1.	Tests / oral exams		70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10 points
	17.3.	Activity and participation		20 points
18.	Assessment Criteria (points / score)		up 50 points	5(five) (F)
			51 to 60 points	6(six) (E)
			61 to 70 points	7 (seven) (D)
			71 to 80 points	8 (eight) (C)
			81 to 90 points	9 (nine) (B)
			91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam		60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions	
20.	Language of teaching / study		Macedonian	
21.	Method of monitoring the quality of teaching		Self-evaluation	

22.	Literature					
	Required literature					
	22.1.	No.	Author	Title	Publisher	Year
		1.	Slavco Cvetkov	Metalcutting machines and devices- script	UGD-Stip Mechanical	2011

					faculty-Vinica	
		2.				
		3.				
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year
		1.	Slavco Cvetkov	Metalcutting machines and devices- script	UGD-Stip Mechanical faculty-Vinica	2011
		2.	Tanovic LJ., Jovicic M.	Tools and devices - design, calculation and construction of auxiliary equipment	Mechanical faculty Belgrade	2008
		3.				

Annex No.3		Program of the Course - first cycle studies				
1.	Title of the Course		Mechatronics			
2.	Code		2MF102612			
3.	Study Program		Production Engineering			
4.	Organizer of the study program (unit or institute, Faculty, department)		University “Goce Delcev”- Stip, Faculty of Mechanical Engineering -Vinica			
5.	Cycle (first, second and third cycle)		First cycle			
6.	Academic year / semester		Third/sixth	7.	Number of ECTS credits	4
8.	Professor (s)		Assi. Prof. Zlatko V.Sovreski, Ph.D			
9.	Requirements for enrollment the Course		No			
10.	Purposes of the curriculum (competencies): Introducing Mechatronics and mechatronic components to students					
11.	Contents of the course program: Introduction to Mechatronics; Collecting data; Sensors; Electric actuators systems; Mechanical actuators systems; Management Theory: modeling; Control Theory: analyses; robotic systems; Reliability concept of mechatronic Systems; research studies: CNC machines and robotic arm; design of mechatronic systems;					
12.	Learning methods: Lectures, Laboratory exercises, e-learning, individual and team projects, consultations.					
13.	Total available time			120		
14.	Distribution of available time			2+1+1		
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching			2

		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	1		
16.	Other forms of activities	16.1.	Project tasks			
		16.2.	Individual tasks	1		
		16.3.	Home learning			
17.	Method of assessment					
	17.1.	Tests / oral exams		70 points		
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10 points		
	17.3.	Activity and participation		20 points		
18.	Assessment Criteria (points / score)		up 50 points	5(five) (F)		
			51 to 60 points	6(six) (E)		
			61 to 70 points	7 (seven) (D)		
			71 to 80 points	8 (eight) (C)		
			81 to 90 points	9 (nine) (B)		
			91 to 100 points	10 (ten) (A)		
19.	Signature requirement and passing the final exam		60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions			
20.	Language of teaching / study		Macedonian			
21.	Method of monitoring the quality of teaching		Self-evaluation			
22.	Literature					
	22.1.	Required literature				
		Order No.	Author	Title	Publisher	Year
		1.	Godfrej C.Onvubolu	Mechatronics - Principles and Applications	United King down,	2005
		2.				
		3.				
	22.2.	Additional literature				
		Order No.	Author	Title	Publisher	Year
		1.				
		2.				
		3.				

Annex No.3		Program of the Course - first cycle studies				
1.	Title of the Course		Waste management			
2.	Code		2MF107212			
3.	Study Program		Production Engineering			
4.	Organizer of the study program (unit or institute, Faculty, department)		University Goce Delcev-Stip Faculty of mechanical engineering -Vinica			
5.	Cycle (first, second and third cycle)		1 st cycle			
6.	Academic year / semester		3 rd / 6 th	7.	Number of credits	4
8.	Professor (s)		Prof. Orce Spasovski, PhD			
9.	Requirements for enrollment the Course		none			
10.	Purposes of the curriculum (competencies): Students are introduced to the characteristics of the waste collection, transportation and recycling.					
11.	Content of the course program: Sources, properties and types of solid waste; Determination of physical, chemical and biological characteristics of the solid waste; Factors affecting the occurrence of solid waste; Waste collection and transport, handling, storage and solid waste compression; Dangerous radioactive wastes; medical waste; Solid waste recycling; Biological Treatment of solid Waste; thermal treatment of waste; burning and the use of heat, gasification and plasma technique; Application of different methods of energy use during heat treatment; sanitary storage of waste.					
12.	Learning methods: Lecturing, exercises					
13.	Total available time			120		
14.	Distribution of available time			2+2+1 / per week		
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching		2	
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work		1	
16.	Other forms of studying activities	16.1.	Project tasks		hours	
		16.2.	Individual tasks		1 hours	
		16.3.	Home learning		hours	
17.	Method of assessment					
	17.1.	Tests / oral exams			70 points	
	17.2.	Seminars (paper / project - presentation: written and/or oral)			10 points	

	17.3.	Activity and participation	20 points
18.	Assessment Criteria (points / score)	up 50 points	5(five) (F)
		51 to 60 points	6(six) (E)
		61 to 70 points	7 (seven) (D)
		71 to 80 points	8 (eight) (C)
		81 to 90 points	9 (nine) (B)
		91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam	60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions	
20.	Language of teaching / study	Macedonian	
21.	Method of monitoring the quality of teaching	Self-evaluation	

22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year
		1.	Ilik	Upravljanjem cvrstim otpadom	Institut za ispitivanje materijala Beograd	1998
		2.				
		3.				

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course	Welding and assembly			
2.	Code	2MF101412			
3.	Study Program	Production Engineering			
4.	Organizer of the study program (unit or institute, Faculty, department)	University "Goce Delcev"- Stip. Faculty of Mechanical Engineering -Vinica			
5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	third/ sixth	7.	Number of ECTS credits	6
8.	Professor (s)	Assi. Prof. Bratica Temelkoska, Ph.D			
9.	Requirements for enrollment the Course	No			

10.	Purposes of the curriculum (competencies): Students are introduced to the types of welding, technologies and their application			
11.	Content of the course program: Introduction to Welding Technology; Gas welding; arc welding; gas arc welding protection; arc welding; resistance welding, Special welding procedures; Related welding procedures: build-up welding, brazing, soldering; Procedures of merging new materials: welding composites, ceramic materials and plastics; Welding other metal materials. Structure and properties of metals. Structure of the welded junction; corrosion of welded junction. Heat treatment of the base fabric and welded junction; Installation of welded constructions.			
12.	Learning methods: Theory, practical teaching and auditory exercises			
13.	Total available time		156 hours	
14.	Distribution of available time		2+2+1	
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	2
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	2
16.	Other forms of activities	16.1.	Project tasks	
		16.2.	Individual tasks	1
		16.3.	Home learning	
17.	Method of assessment			
	17.1.	Tests / oral exams		70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10 points
	17.3.	Activity and participation		20 points
18.	Assessment Criteria (points / score)		up 50 points	5(five) (F)
			51 to 60 points	6(six) (E)
			61 to 70 points	7 (seven) (D)
			71 to 80 points	8 (eight) (C)
			81 to 90 points	9 (nine) (B)
			91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam		60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions	
20.	Language of teaching / study		Macedonian	
21.	Method of monitoring the quality of teaching		Self-evaluation	

22.	Literature		
	22.1	Required literature	

		Order No.	Author	Title	Publisher	Year
		1.	B.Temelkoska	Merging materials-textbook	University “Goce Delcev”- Stip. Faculty of Mechanical Engineering -Vinica	2010
		2.				
		3.				
	22.2	Additional literature				
		Order No.	Author	Title	Publisher	Year
		1.				
		2.				
		3.				

Study program: PRODUCTION ENGINEERING (4 years)

I Semester-First year			
Mandatory subjects			
SUBJECTS	ECTS	Hours	Total
Mathematics I	8	3+2+2	216
Mechanical materials	8	3+2+2	216
Computer Science	6	2+2+1	156
Elective subject from the faculty 1	4	2+1+1	120
Elective subject from the faculty 2	4	2+1+1	120
Total:	30	12+8+7	828

I Semester-First year			
Elective subjects			
SUBJECTS	ECTS	Hours	Total
Basics of Physics	4	2+1+1	120
Physics II	4	2+1+1	120
Electrotechnics and elektronics	4	2+1+1	120
Casting technology	4	2+1+1	120

II Semester-First year			
Mandatory subjects			
SUBJECTS	ECTS	Hours	Total
Mathematics II	8	3+2+2	216
Engineering graphics	6	2+2+1	156
Technical Mechanics I (statics)	6	2+2+1	156
Elective subject from the faculty 3	4	2+1+1	120
Elective subject from the University 1	6	0+0+1	156
Sports and Recreation	0	0+0+2	
Total:	30	9+7+11	804

II Semester-First year			
Elective subjects			
SUBJECTS	ECTS	Hours	Total
The modern mechanical materials	4	2+1+1	120
Engineering logistics	4	2+1+1	120

III Semester-Second year			
Mandatory subjects			
SUBJECTS	ECTS	Hours	Total
Thermodynamics	8	3+2+2	216
Strength of materials	8	3+2+2	216
Technical Mechanics II (kinematics, dynamics, oscillations)	6	2+2+1	156
Elective subject from the faculty 4	4	2+1+1	120
Elective subject from the faculty 5	4	2+1+1	120
Total:	30	12+8+7	828

III Semester-Second year			
Elective subjects			
SUBJECTS	ECTS	Hours	Total
Corrosion and corrosion protection	4	2+1+1	120
Probability and statistics	4	2+1+1	120
Ergonomics	4	2+1+1	120
Industrial Management	4	2+1+1	120

VI Semester-Third year			
Mandatory subjects			
SUBJECTS	ECTS	Hours	Total
Machines and tools for plastic processing,	8	3+2+2	216
Metal cutting machines and devices	6	2+2+1	156
Welding and assembly	6	2+2+1	156
Elective university subject 3	6	2+2+1	156
Elective subject from the faculty 9	4	2+1+1	120
Total:	30	11+9+6	804

VI Semester-Third year			
Elective subjects			
SUBJECTS	ECTS	Hours	Total
Mechatronics	4	2+1+1	120
Waste management	4	2+1+1	120

VII Semester-Fourth year			
Mandatory subjects			
SUBJECTS	ECTS	Hours	Total
Hydraulic machinery and components	8	3+2+2	216
Heating, air conditioning and heat systems	8	3+2+2	216
Basics of automatic control	6	2+2+1	156
Elective subject from the faculty 10	4	2+1+1	120
Elective subject from the faculty 11	4	2+1+1	120
Total:	30	11+8+7	828

VII Semester-Fourth year			
Elective subjects			
SUBJECTS	ECTS	Hours	Total
Design of technological processes	4	2+1+1	120
Programming of Computer Numerically Control (CNC) machines	4	2+1+1	120
Modelling and simulations	4	2+1+1	120
Industrial Ventilation	4	2+1+1	120

VIII Semester-Fourth year			
Man Elective subject from the University datory subjects			
SUBJECTS	ECTS	Hours	Total
Quality Management	6	2+2+1	156
Occupational Safety and Health	6	2+2+1	156
Elective subject from the University 4	6	2+2+1	156
Elective subject from the faculty 12	4	2+1+1	120
Diploma Thesis	8	0+0+8	192
Total:	30	8+7+12	780

VIII Semester-Fourth year			
Elective subjects			
SUBJECTS	ECTS	Hours	Total
Computer Aided Manufacturing (CAM)	4	2+1+1	
Energy efficiency	4	2+1+1	

FACULTY OF MECHANICAL ENGINEERING –STADY PROGRAM: PRODUCTION ENGINEERING

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course	Mathematics 1			
2.	Code	2FI100112			
3.	Study Program	Production Engineering / Transport, Organization and Logistics			
4.	Organizer of the study program (unit or institute, Faculty, department)	University Goce Delcev-Stip Faculty of mechanical engineering -Vinica			
5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	first/first	7.	Number of credits	8
8.	Professor (s)	Prof. Jordan Zivanovik PhD			
9.	Requirements for enrollment the Course	no			
10.	Purposes of the curriculum (competencies): Upgrading high school mathematics knowledge and introduction to higher mathematics				
11.	Content of the course program: Axiomatic definition of the real numbers. Limited sets. Intervals, environments, open and closed sets. Absolute value and distance. Mathematical induction. Matrices. Operations with matrices. Some special matrices. Determinants. Minor and algebraic complements. Calculating the inverse matrix. Kramer formulas. Gauss algorithm. Vectors. Collection of vectors. Multiplying a vector by a number. Coordinate system. Scalar, vector and mixed product. Equations of the line and plane. Relationship between lines and planes. Real sequence. Convergence and the limit. Limited and monotonous sequences. Operations with sequences. Zero-sequences and sequences with unlimited grow in absolute value. Number e. Some special sequences. Subsequences. Kauchy's sequence convergence criterion. Real function of a real variable - basic concepts. Examples of functions and some classes of functions - elementary functions. Limits and continuity of functions. Statements and rules for their calculation. Basic theorems in differential calculus. L' Hopital's rule. Monotony and extremes. Second derivative and its application. Examination of functions and construction of graphs. Higher-order derivatives and differentials. Taylor's formula.				
12.	Learning methods: Lectures, laboratory exercises, numerical exercises, e-learning, seminar work, teamwork, consultation				

13.	Total available time		216 hours	
14.	Distribution of available time		3+2+2 / per week	
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	3
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	2
16.	Other forms of activities	16.1.	Project tasks	1
		16.2.	Individual tasks	1
		16.3.	Home learning	
17.	Method of assessment			
	17.1.	Tests / oral exams		70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10 points
	17.3.	Activity and participation		20 points
18.	Assessment Criteria (points / score)		up 50 points	5(five) (F)
			51 to 60 points	6(six) (E)
			61 to 70 points	7 (seven) (D)
			71 to 80 points	8 (eight) (C)
			81 to 90 points	9 (nine) (B)
			91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam		60% success from all pre-exam activities ie. 42 points from two mid-term exams , seminar paper, attendance of lectures and exercises	
20.	Language of teaching / study		Macedonian	
21.	Method of monitoring the quality of teaching		Self-evaluation	

22.	Literature		
	22.1.	Required literature	

		No.	Author	Title	Publisher	Year
		1.	Glyn James	Modern engineering mathematics	Translation of the government of RM	2009
		2.	Zivanovik and Assistants	Lectures and exercises of mathematics 1	E-learning	2010
		3.	B.Trpenovski, N.Celakovski, Gj,Cupona	Visa matematika I-IV	Prosvetno delo, Skopje	1995
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year
		1.	M.Merkle	Matematička analiza	Racunarski fakultet, Beograd	2006
		2.	Ivan Slapnicar http://www.fesb.hr/mat1	Matematika 1	Fakultet elektr. strojarstva i brodogradnje	2002, Split
		3.				

Annex No.3		Program of the Course - first cycle studies				
1.	Title of the Course		Mechanical materials			
2.	Code		2MF100112			
3.	Study Program		Production engineering/Transport Organization and Logistics			
4.	Organizer of the study program (unit or institute, Faculty, department)		University Goce Delcev-Stip Faculty of mechanical engineering -Vinica			
5.	Cycle (first, second and third cycle)		First cycle			
6.	Academic year / semester		First/I semester	7.	Number of credits	8

8.	Professor (s)	Slavco Cvetkov, PhD, Assi. Professor		
9.	Requirements for enrollment the Course	No		
10.	Purposes of the curriculum (competencies): At the end of the course, students will have competences obtained through the necessary fund of theoretical, methodological and applicative studying in the area of mechanical materials.			
11.	Content of the course program: 1. Introduction to the materials 2. Division and structure of metals 3. Alloys and state diagram 4. Steels: Obtaining and labelling 5. Carbon steels: structural and tool steels 6. Alloy steel: structural and tool steels 7. Heat treatment of steels 8. Surface hardening of steels 9. Cast iron: gray iron and malleable iron 10. Non ferrous metals and their alloys 11. Ceramics, glass and composites 12. Polymers and non metals (wood, leather, rubber)			
12.	Learning methods: -Teaching, exercises, projects assignment			
13.	Total available time		216	
14.	Distribution of available time		3 + 2 + 2 / per week	
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	3
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	2
16.	Other forms of activities	16.1.	Project tasks	1 hours
		16.2.	Individual tasks	1 hours

		16.3.	Home learning	/ hours
17.	Method of assessment			
	17.1.	Tests / oral exams		70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10 points
	17.3.	Activity and participation		20 points
18.	Assessment Criteria (points / score)		up 50 points	5(five) (F)
			51 to 60 points	6(six) (E)
			61 to 70 points	7 (seven) (D)
			71 to 80 points	8 (eight) (C)
			81 to 90 points	9 (nine) (B)
			91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam		60% success from all pre exam activities i.e. 42 points from two mid-term exams , seminar paper, attendance of lectures and exercises	
20.	Language of teaching / study		Macedonian	
21.	Method of monitoring the quality of teaching		Self-evaluation	

22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.	Angel Tasevski, PhD Vladan Andonovic, MsC	Mechanical materials	UGD - Stip	2011
		2.	Angel Tasevski, PhD Vladan Andonovic, MsC	Mechanical materials estimation	UGD - Stip	2011
		3.				
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year
		1.				
		2.				

		3.				
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Annex No.3		Program of the Course - first cycle studies				
1.	Title of the Course		Computer Science			
2.	Code		2FI110112			
3.	Study program		Production Engineering / Transport, Organization and Logistics			
4.	Organizer of the study program (unit or institute, Faculty, department)		University Goce Delcev-Stip Faculty of mechanical engineering -Vinica			
5.	Cycle (first, second, or third study cycle)		First study cycle			
6.	Academic year / semester		2012-2013 / first	7.	Number of credits	6
8.	Professor (s)		Assi. Professor Zoran Zdravev, PhD			
9.	Requirements for enrollment the Course		No			
10.	Purposes of the curriculum (competencies): <ul style="list-style-type: none">- Adopting the basic concepts of computer science and concepts for using computers for communication, research and office work.					
11.	Contents of the course program: <ul style="list-style-type: none">- Introduction to computer science: algorithms, abstraction, history,- Computer hardware: introduction, types, architecture of computer systems, Murau law- Computer hardware: Peripherals, Computer Memory, digital identification;- Computer software: applicative software, open source software licenses;- Computer software: system software, programming languages;- Computer software: web services, online document storage and editing systems,- Computer networks: LAN, MAN, WAN, topologies, applications that run on network components, connectivity;- Computer networks: Internet, intranet, extranet, Internet services;- Computer security: a concept, a security risk, malicious software, unauthorized access, cryptography;					

	<ul style="list-style-type: none">- Information systems: introduction, types, ERP, CRM, HR, SCM;- Content Management Systems CMS: DMS, DAMS, WCM, ECP, ERS;- Databases: fundamentals, types, use			
12.	Learning methods: Lectures, Laboratory exercises, e-learning, individual and team projects, consultations.			
13.	Total available time		156 hours	
14.	Distribution of available time		2+2+1	
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	2
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	2
16.	Other forms of studying activities	16.1.	Project tasks	
		16.2.	Individual tasks	1
		16.3.	Home learning	
17.	Method of assessment			
	17.1.	Tests / oral exams		70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10 points
	17.3.	Activity and participation		20 points
18.	Assessment Criteria (points / score)		Up 50 points	5 (five) (F)
			51 to 60 points	6 (six) (E)
			61 to 70 points	7 (seven) (D)
			71 to 80 points	8 (eight) (C)
			81 to 90 points	9 (nine) (B)
			91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam		60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions	
20.	Language of teaching / study		Macedonian	
21.	Method of monitoring the quality of teaching		Self-evaluation	

22.	Literature					
	22.1.	Required literature				
		Order No.	Author	Title	Publisher	Year
		1.	Zoran Zdravev and other	Computer Science script	UGD	2012
		2.	Zoran Zdravev and other	Practicum in Computer Science	UGD	2012
		3.				
	22.2.	Additional Literature				
		Order No.	Author	Title	Publisher	Year
		1.	Glenn Brookshear	„Computer Science – an overview“	Pearson International edition	2009
		2.	Carl Reynolds and Paul Tymann	„Principles of Computer Science“	McGraw Hill	2008
		3.	James O'Brien	„Introduction to Information Systems “	McGraw Hill	2008
	Annex No.3					
			Program of the Course - first/second/third cycle studies			
	1.	Title of the Course		Basics of Physics		
2.	Code		2FP120512			
3.	Study Program		Production Engineering			
4.	Organizer of the study program (unit or institute, Faculty, department)		University Goce Delcev Faculty of mechanical engineering			
5.	Cycle (first, second and third cycle)		First cycle			
6.	Academic year / semester		1/1	7.	Number of credits	4
8.	Professor (s)		Prof. Todor Delipetrov, PhD			
9.	Requirements for enrollment the Course		enrolled semester			
10.	Purposes of the curriculum (competencies):					

	Students are introduced to the basic concepts and laws of physics (Newton’s laws, Hooke’s law), elasticity and plasticity of bodies			
11.	Content of the course program: Test methods in physics, structure of matter, interaction. Reference system - comparative body trajectory and separation movements, Special Theory of Relativity (time dilation and length contraction). Laws for the movement, the concept of force, Newton's first law, mass, Newton's Second Law, Newton's Third Law. Work, energy and power. Elasticity and structure of bodies: voltage and relative deformation, Hooke’s law. Oscillations, alignment fluctuations. Fluid mechanics. Statics gases. Fluid dynamics. Wave motion. Sound and sound sources.			
12.	Learning methods: Lectures, exercises (numerical and practical), papers and home learning			
13.	Total available time		216 hours	
14.	Distribution of available time		2 + 1 + 1 / per week	
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	2
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	1
16.	Other forms of activities	16.1.	Project tasks	
		16.2.	Individual tasks	1
		16.3.	Home learning	
17.	Method of assessment			
	17.1.	Tests / oral exams		70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10 points
	17.3.	Activity and participation		20 points
18.	Assessment Criteria (points / score)		up 50 points	5 (five) (F)
			51 to 60 points	6 (six) (E)
			61 to 70 points	7 (seven) (D)
			71 to 80 points	8 (eight) (C)
			81 to 90 points	9 (nine) (B)

		91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam	60% success from all activities before exam i.e. 42 points from two mid-term exams, seminar paper, attendance of lectures and exercises	
20.	Language of teaching / study	Macedonian	
21.	Method of monitoring the quality of teaching	Self-evaluation	

22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.	Todor Delipetrov	Physics 1	RGF	2003
		2.				
		3.				
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year
		1.	Lj. Petkovski	General physics	UKIM	1995
		2.	Z. Stojanov	General physics, book 1	UKIM	1985
3.						

Annex No.3		Program of the Course - first/second/third cycle studies	
1.	Title of the Course	Physics 2	
2.	Code	2FP101212	
3.	Study Program		
4.	Organizer of the study program (unit or institute, Faculty, department)	University Goce Delcev Faculty of mechanical engineering	

5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	1/2	7.	Number of credits	4
8.	Professor (s)	Prof. Todor Delipetrov, PhD			
9.	Requirements for enrollment the Course	Student has enrolled current year			
10.	Purposes of the curriculum (competencies): Students are introduced to the basic concepts and laws of electromagnetism, optics, nuclear and atomic physics				
11.	Content of the course program: Heat: temperature, spread of bodies, state of gas, melting, boiling, vaporization. Electrostatics: Coulomb’s law, electrical work and power of the electric current, Joule’s Law, Ohm’s law, thermal phenomena, magnetic permeability and susceptibility. AC: effective value of alternating current, power of alternating current, electrical oscillations. Geometrical optics: light rejection and image in the flat mirror, thin lens equation, optical instruments. Physical optics: nature of light, laser, optical lattice. Atomic and nuclear physics: spectrum of hydrogen atom, quantum theory, radioactive radiation, detectors and protection, radioactive decay law				
12.	Learning methods: Lectures, exercises (numerical and practical), papers and home learning				
13.	Total available time		156 hours		
14.	Distribution of available time		2 + 2 + 1 / per week		
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	2	
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	2	
16.	Other forms of activities	16.1.	Project tasks		
		16.2.	Individual tasks	1	
		16.3.	Home learning		
17.	Method of assessment				
	17.1.	Tests / oral exams			70 points

	17.2.	Seminars (paper / project - presentation: written and/or oral)	10 points		
	17.3.	Activity and participation	20 points		
18.	Assessment Criteria (points / score)		up 50 points	5	(five) (F)
			51 to 60 points	6	(six) (E)
			61 to 70 points	7	(seven) (D)
			71 to 80 points	8	(eight) (C)
			81 to 90 points	9	(nine) (B)
			91 to 100 points	10	(ten) (A)
19.	Signature requirement and passing the final exam	60% success from all activities before exam i.e. 42 points from two mid-term exams, seminar paper, attendance of lectures and exercises			
20.	Language of teaching / study	Macedonian			
21.	Method of monitoring the quality of teaching	Self-evaluation			

22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.	M. Delipetrev B. Doneva	Physics 2	UGD	2013
		2.				
		3.				
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year
		1.	Z. Stojanov	General physics, book 2	UKIM	1985
		2.				
3.						

Annex No.3		Program of the course—first cycle studies			
1.	Title of the Course	Electrotechnics and Electronics			
2.	Code	2ET110012			
3.	Study program	Production Engineering / Transport, Organization and Logistics			
4.	Organizer of the study program (unit or institute, Faculty, department)	University Goce Delcev-Stip Faculty of mechanical engineering -Vinica			
5.	Cycle (first, second, or third study cycle)	1 st cycle			
6.	Academic year / semester	1 st / 1 st	7.	Number of ECTS credits	4
8.	Professor (s)	Roman Golubovski, Assistant Professor			
9.	Requirements for enrollment of the course	enrolled 1 st semester			
10.	Purposes of the curriculum (competencies): Introduction to basic principles of electrotechnics and electronics.				
11.	Contents of the course program: 1. Electric Current - Intensity, Current Field, Density 2. Electric Voltage and Potential 3. Basic Laws - Joule's, Ohm's, I & II Kirchhoff's 4. Magnetic Flux, Magnetic Field and Magnetism 5. Magnetic Induction, Ampere's Law and Magnetic Circuit 6. Electrical Measurements 7. Semiconductors 8. Diodes 9. BJT Transistors 10. MOSFET Transistors 11. Thyristors 12. Operational Amplifiers				
12.	Learning methods: Lectures, numerical exercises, individual and team projects, homework.				

13.	Total available time		120	
14.	Distribution of available time		2+1+1	
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	2
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	1
16.	Other forms of studying activities	16.1.	Project tasks	
		16.2.	Individual tasks	1
		16.3.	Home learning	
17.	Method of assessment			
	17.1.	Tests / oral exams		70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10 points
	17.3.	Activity and participation		20 points
18.	Assessment Criteria (points / score)		Up 50 points	5 (five) (F)
			51 to 60 points	6 (six) (E)
			61 to 70 points	7 (seven) (D)
			71 to 80 points	8 (eight) (C)
			81 to 90 points	9 (nine) (B)
			91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam		60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions	
20.	Language of teaching / study		Macedonian	
21.	Method of monitoring the quality of teaching		Self-evaluation	

22.	Literature					
	22.1.	Required literature				
		Order	Author	Title	Publisher	Year

		No.				
		1.	M. Popnikolova-Radevska	Electrotechnics	TF, Bitola	2004
		2.	M. Kamilovski	Electronics 1	UKIM, Skopje	2005
	22.2	Additional Literature				
		Order No.	Author	Title	Publisher	Year
		1.				

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course	Casting technology			
2.	Code	2MF101812			
3.	Study Program	Production engineering/ Transport Organization and Logistics			
4.	Organizer of the study program (unit or institute, Faculty, department)	University Goce Delcev-Stip Faculty of mechanical engineering -Vinica			
5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	First / I semester	7.	Number of credits	4
8.	Professor (s)	Slavco Cvetkov, PhD, Assistant Professor			
9.	Requirements for enrollment the Course	No			
10.	Purposes of the curriculum (competencies): At the end of the course, students will have competences obtained through the necessary fund of theoretical, methodological and applicative studying in the area of casting technology.				
11.	Content of the course program: 1.Introduction to the casting 2. Casting materials 3.Casting metallurgy				

	4. Sand casting 5. Centrifugal casting 6. Precise casting 7.Vacuum casting 8.Casting under pressure 9.Heaters for melting 10.Tools for casting 11.Construction tools for casting 12. Defects in casting			
12.	Learning methods: -Teaching, exercises, projects assignment			
13.	Total available time		120	
14.	Distribution of available time		2 + 1 + 1 / per week	
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	2
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	1
16.	Other forms of activities	16.1.	Project tasks	/ hours
		16.2.	Individual tasks	1 hours
		16.3.	Home learning	/ hours
17.	Method of assessment			
	17.1.	Tests / oral exams		70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10 points
	17.3.	Activity and participation		20 points
18.	Assessment Criteria (points / score)		up 50 points	5(five) (F)
			51 to 60 points	6(six) (E)
			61 to 70 points	7 (seven) (D)

		71 to 80 points	8 (eight) (C)
		81 to 90 points	9 (nine) (B)
		91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam	60% success from all pre exam activities i.e. 42 points from two mid-term exams , seminar paper, attendance of lectures and exercises	
20.	Language of teaching / study	Macedonian	
21.	Method of monitoring the quality of teaching	Self-evaluation	

22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.	Zoran Anisic	Production technologies	Visa Tehnicka Skola	2003
		2.				
		3.				
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year
		1.				
		2.				
		3.				

Annex No.3		Program of the Course - first cycle studies	
1.	Title of the Course	Mathematics II	
2.	Code	2FI100412	
3.	Study Program	Production Engineering / Transport, Organization and Logistics	

4.	Organizer of the study program (unit or institute, Faculty, department)	University Goce Delcev-Stip Faculty of mechanical engineering -Vinica			
5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	First/II	7.	Number of credits	8
8.	Professor (s)	Prof. Martin Lukarevski PhD / Prof. Jordan ZivanovikPhD			
9.	Requirements for enrollment the Course	Enrollment of the first cycle study program			
10.	Purposes of the curriculum (competencies): Knowledge and understanding of the basic mathematical concepts and theories, knowledge of ICT in mathematics, flexible use of knowledge in practice.				
11.	Content of the course program: 13. The concept of Integral Calculus: Indefinite integral – integration by substitution and integration by parts, fundamental integration formulas, Definite integral-concept, properties and applications. 14. Infinite series: Criteria for convergence, alternating series, Conditional and absolute convergence. Sequences and series of functions. Power series. Circle of convergence. 15. Multivariate Calculus: definition, properties and graphics of functions with several variables; Partial derivatives; Maximum and minimum values; The total differential. 16. Multiple integrals. 17. Introduction of differential equations: Terminology and notation; A first-order differential equation for the exponential function; First-order linear differential equations and other types of first-order differential equations.				
12.	Learning methods: – Lectures, – e-learning, – individual and team projects – Consultations.				
13.	Total available time	216			
14.	Distribution of available time	3+2+2 / per week			
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching,		3

			e-teaching	
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	2
16.	Other forms of activities	16.1.	Project tasks	1 hours
		16.2.	Individual tasks	1 hours
		16.3.	Home learning	hours
17.	Method of assessment			
	17.1.	Tests / oral exams		70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10 points
	17.3.	Activity and participation		20 points
18.	Assessment Criteria (points / score)		up 50 points	5(five) (F)
			51 to 60 points	6(six) (E)
			61 to 70 points	7 (seven) (D)
			71 to 80 points	8 (eight) (C)
			81 to 90 points	9 (nine) (B)
			91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam		60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions	
20.	Language of teaching / study		Macedonian	
21.	Method of monitoring the quality of teaching		Self-evaluation	

22.	Literature					
		Required literature				
	22.1.	No.	Author	Title	Publisher	Year
		1.	Glyn James	Modern engineering mathematics	Translation of the Government	2009

					of R.Macedonia	
		2.	Milan Merkle	Matematička analiza	Racunarski Fakultet - Beograd	2007
		3.	Tatjana Atanasova Pacemska	Matematika 2	Avtorizirani predavanja	2011
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year
		1.	Nikita Sekutkovski	Matematička analiza 1	Prosvetno delo - Skopje	2008
		2.	Boro Piperevski	Matematika 2	FEIT - Skopje	2008
		3.				

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course	Engineering graphics			
2.	Code	2FP100912			
3.	Study Program	Production Engineering /Transport, Organization and Logistics			
4.	Organizer of the study program (unit or institute, Faculty, department)	University Goce Delcev-Stip Faculty of mechanical engineering -Vinica			
5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	First / second semester	7.	Number of credits	6
8.	Professor (s)	Assi. Prof. Slavco Cvetkov, Ph.D.			
9.	Requirements for enrollment the Course	None			
10.	Purposes of the curriculum (competencies): Training in drawing and reading technical drawings of machine parts. Training in drawing machine parts in the program package Auto CAD.				

11.	Content of the course program:			
	Technical drawing. Views - basic, special and abbreviated views. Standards. Formats, naming and sizes of technical drawings. Types of lines and their application. Technical Letter. Sections and types of intersections. Marking and hatching at intersections. Labeling and types of quotation. Longitudinal tolerances. The shape and position tolerance. Designation of the quality of surface processing. To put position on machined parts. Listing of the thread. Modeling of parts. Workshop drawing. Formation of the mechanical drawing workshop part given the spatial layout and the orthogonal view. Formation of the mechanical drawing workshop part of assembled drawing. Technical Documentation			
12.	Learning methods:			
	Lectures, exercises, individual works, home learning, consultations.			
13.	Total available time		156 hours	
14.	Distribution of available time		2+2+1 / per week	
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	2 hours
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	2 hours
16.	Other forms of activities	16.1.	Project tasks	
		16.2.	Individual tasks	1 hours
		16.3.	Home learning	
17.	Method of assessment			
	17.1.	Tests / oral exams		70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10 points
	17.3.	Activity and participation		20 points
18.	Assessment Criteria (points / score)		up 50 points	5(five) (F)
			51 to 60 points	6(six) (E)
			61 to 70 points	7 (seven) (D)
			71 to 80 points	8 (eight) (C)
			81 to 90 points	9 (nine) (B)

		91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam	60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions	
20.	Language of teaching / study	Macedonian	
21.	Method of monitoring the quality of teaching	Self-evaluation	

22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.	Risto Taškovski	Engineering Graphics	Mechanical faculty, Skopje	2008
		2.				
		3.				
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year
		1.				
		2.				
		3.				

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course	Technical Mechanics I (statics)			
2.	Code	2MF100212			
3.	Study Program	Production Engineering /Transport, Organization and Logistics			
4.	Organizer of the study program (unit or institute, Faculty, department)	University "Goce Delcev" - Stip. Faculty of Mechanical Engineering -Vinica			
5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	First / second	7.	Number of credits	6

8.	Professor (s)	Assi. Prof. Slavco Cvetkov, Ph.D		
9.	Requirements for enrollment the Course	No		
10.	Purposes of the curriculum (competencies): Students are introduced to statics: forces, moments, carriers, equilibrium of bodies, friction, centre of gravity;			
11.	Content of the course program: 1.System of forces acting in the plane, composition and decomposition of forces acting at a point; 2.Momentof force about a point, Varignon’s theorem; 3.System of forces attacking panel und various counts; 4. Graphic alignment of forces, equilibrium of forces; 5. Planar carriers, transverse and axial forces; 6.Simple beam loaded with concentrated forces; 7.Simple beam loaded with a continuous load, coupling forces; Console; 8.Beam with overhangs; Gerber carrier-beam; 9. Statically determined framework supports; Lattice girders; 10.Statics in space; Spatial carriers; 11.Sliding friction, rolling friction, friction of the rope; 12.Centre of gravity line, surface and body; Guldin’s theorems;			
12.	Learning methods: Lectures, Laboratory exercises, e-learning, individual and team projects, consultations.			
13.	Total available time		156 hours	
14.	Distribution of available time		2 +2 +1/ per week	
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	2hours
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	2hours
16.	Other forms of activities	16.1.	Project tasks	
		16.2.	Individual tasks	1 hour

		16.3.	Home learning			
17.	Method of assessment					
	17.1.	Tests / oral exams			70	
	17.2.	Seminars (paper / project - presentation: written and/or oral)			10	
	17.3.	Activity and participation			20	
18.	Assessment Criteria (points / score)		to 50 points		5(five) (F)	
			from 51 to 60 points		6(six) (E)	
			from 61 to 70 points		7 (seven) (D)	
			from 71 to 80 points		8 (eight) (C)	
			from 81 to 90 points		9 (nine) (B)	
			from 91 to 100 points		10 (ten) (A)	
19.	Signature requirement and passing the final exam		60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions			
20.	Language of teaching / study		Macedonian			
21.	Method of monitoring the quality of teaching		Self-evaluation			
22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.	Simeon Simeonov	Technical mechanics 1(peer reviewed script)	UGD-Stip	2012
		2.	Z.Petrevski, V. Gavrilovski, M. Mickovski	Tasks from Statics	Mechanical faculty Skopje	2008
		3.	R.Josifova	Technical mechanics 1	Principal -Skopje	1981
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year
		1.	B. Andonovic	Technical mechanics 1	Technical Faculty-Bitola	2006

		2.	E. Bahtovska	Mechanics	Technical Faculty- Bitola	2007
		3.				

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course	The modern mechanical materials			
2.	Code	2MF101912			
3.	Study Program	Production engineering/Transport Organization and Logistics			
4.	Organizer of the study program (unit or institute, Faculty, department)	University Goce Delcev-Stip Faculty of mechanical engineering -Vinica			
5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	First/I semester	7.	Number of credits	4
8.	Professor (s)	Slavco Cvetkov, PhD, Assi. Professor			
9.	Requirements for enrollment the Course	No			
10.	Purposes of the curriculum (competencies): At the end of the course, students will have competences obtained through the necessary fund of theoretical, methodological and applicative studying in the area of the mechanical materials.				
11.	Content of the course program: 1. Introduction to the newest materials				

	2. The modern engineering materials			
	3. Composites			
	4. Introduction to fullerenes			
	5. Biomaterials and their usage			
	6. Polymers			
	7. Smart materials			
	8. Cellular materials			
	9. Nanomaterials			
	10. Ceramics			
	11. Wood, paper and glues			
	12. The procedure of material selection			
12.	Learning methods: - Teaching, exercises, projects assignment			
13.	Total available time		120	
14.	Distribution of available time		2 + 1 + 1 / per week	
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	2
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	1
16.	Other forms of activities	16.1.	Project tasks	
		16.2.	Individual tasks	1 hour
		16.3.	Home learning	
17.	Method of assessment			
	17.1.	Tests / oral exams		70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10 points
	17.3.	Activity and participation		20 points

18.	Assessment Criteria (points / score)	up 50 points	5(five) (F)
		51 to 60 points	6(six) (E)
		61 to 70 points	7 (seven) (D)
		71 to 80 points	8 (eight) (C)
		81 to 90 points	9 (nine) (B)
		91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam	60% success from all pre exam activities i.e. 42 points from two mid-term exams, seminar paper, attendance of lectures and exercises	
20.	Language of teaching / study	Macedonian	
21.	Method of monitoring the quality of teaching	Self-evaluation	

22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.	Angel Tasevski, PhD; Vladan Andonovic, MsC	The modern mechanical materials	UGD - Stip	2011
		2.				
		3.				
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year
		1.				
		2.				
		3.				

Annex No.3	
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		Program of the Course - first cycle studies			
1.	Title of the Course	Engineering logistics			
2.	Code	2MF106712			
3.	Study Program	Production engineering/Transport, organization and logistics			
4.	Organizer of the study program(unit or institute, Faculty, department)	University Goce Delcev-Stip Faculty of mechanical engineering -Vinica			
5.	Cycle (first, second and third cycle)	First cycle studies (Bachelor studies)			
6.	Academic year / semester	First/Second semester	7.	ECTS	4
8.	Professor (s)	Prof. Zoran Despodov			
9.	Requirements for enrollment the Course	No			
10.	Purposes of the curriculum(competencies): Familiarize students with the fundamentals of Engineering logistics, practical application and ways of making a better use of the resources				
11.	Content of the course program: 13. Introduction to logistics. 2. Logistics systems in industrial enterprises. 3. Engineering Logistics and organization of production. 4. Supply of materials. 5. Storage for materials. 6. Inter operational transport. 7. Packaging and storage. 8. Means of transport in the system of engineering logistics. 9. Transportation problems. 10. Information systems and the activities of the logistic system. 11. Logistics support of the flexible manufacturing. 12. Distribution of the final products.				
12.	Learning methods: -Theory, practical teaching and auditory exercises				
13.	Total available time		120		
14.	Distribution of available time		2+1+1		
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching		2
		15.2.	theoretical and practical exercises,		1

			e-exams, preparation of independent seminar work	
16.	Other forms of activities	16.1.	Project tasks	
		16.2.	Individual tasks	1
		16.3.	Home learning	
17.	Method of assessment			
	17.1.	Tests / oral exams		70 points
	17.2.	Seminars (paper/project - presentation: written and/or oral)		10 points
	17.3.	Activity and participation		20 points
18.	Assessment Criteria (points /score)		up 50 points	5 (five) (F)
			51 to 60 points	6 (six) (E)
			61 to 70 points	7 (seven) (D)
			71 to 80 points	8 (eight) (C)
			81 to 90 points	9 (nine) (B)
			91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam		60% success from all pre exam activities i.e. 42 points from two mid-term exams, seminar paper, attendance of lectures and exercises	
20.	Language of teaching / study		Macedonian	
21.	Method of monitoring the quality of teaching		Self-evaluation	

22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.	T. Pantelic	Industrial logistics	ICIM, Krusevac	2001
		2.	V. Jocik	Technical logistics	Nis	2001
		3.				
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year

		1.				
		2.				
		3.				

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course	Thermodynamics			
2.	Code	2MF100312			
3.	Study Program	Production engineering / Transport, organization and logistics			
4.	Organizer of the study program (unit or institute, Faculty, department)	University Goce Delcev-Stip Faculty of mechanical engineering -Vinica			
5.	Cycle (first, second and third cycle)	first cycle			
6.	Academic year / semester	2/III	7.	Number of credits	8
8.	Professor (s)	Assistant Prof. Radomir Cvetanovski, PhD			
9.	Requirements for enrollment the Course	non			
10.	Purposes of the curriculum (competencies):Introducing the values of condition and their changes, the basic gas laws, equation of condition of ideal gases, internal energy, entropy, heat diagram; humid air				
11.	Content of the course program: 1. Introductory terms and values of condition; Basic gas laws; Concept of ideal gas and equation of condition of an ideal gas; The main laws of thermodynamics; Specific heat capacity; Changes of condition of ideal gases; 2. Circular process; Recoverable and irreversible processes; Entropy; Double phased fixtures; Real gases; Humid air;				

12.	Learning methods: Lectures with presentations through slides, exercises, independent preparation and presentation of the project assignment			
13.	Total available time		216	
14.	Distribution of available time		3+2+2 / per week	
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	3
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	2
16.	Other forms of activities	16.1.	Project tasks	1 hours
		16.2.	Individual tasks	1 hours
		16.3.	Home learning	hours
17.	Method of assessment			
	17.1.	Tests / oral exams		70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10 points
	17.3.	Activity and participation		20 points
18.	Assessment Criteria (points / score)		up 50 points	5(five) (F)
			51 to 60 points	6(six) (E)
			61 to 70 points	7 (seven) (D)
			71 to 80 points	8 (eight) (C)
			81 to 90 points	9 (nine) (B)
			91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam		60% from pre-exam activities or 42 points from the two tests, seminar papers, attendance of lectures and exercises	
20.	Language of teaching / study		Macedonian	
21.	Method of monitoring the quality of teaching		Self-evaluation	

22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.	Atanas Blazeovski	Termodinamika I	UKIM,	1994
		2.	Atanas Blazeovski	Zbirka reseni zadaci po Termodinamika I	UKIM	1996
		3.				
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year
		1.	NedjeljkaPetric, Ivo Vojnović, VanjaMartinac	Tehnicka Termodinamika	Kemisko-tehnoloskiFakultet - Split	2007
		2.				
		3.				

Annex No.3		Program of the Course - first cycle studies				
1.	Title of the Course		Strength of materials			
2.	Code		2MF100412			
3.	Study Program		Production Engineering /Transport, Organization and Logistics			
4.	Organizer of the study program (unit or institute, Faculty, department)		University “Goce Delcev” - Stip. Faculty of Mechanical Engineering -Vinica			
5.	Cycle (first, second and third cycle)		First cycle			
6.	Academic year / semester		second / third	7.	Number of credits	8
8.	Professor (s)		Assi. Prof. Simeon Simeonov, Ph.D			
9.	Requirements for enrollment the Course		Attended course of technical mechanics 1			
10.	Purposes of the curriculum (competencies): Students are introduced to the moments of inertia, the types of stresses, dimensioning					
11.	Content of the course program:					

	Geometric features of planar sections: static moment, the moment of inertia, Steiner's theorem; Tensile and compressive: axial stresses, dependence of the stress on the deformation -Hooke's law. Plane stress condition; Shear and torsion; Bending: pure bending, bending from forces, strength calculation, uniform strength, major stresses at the bent beam; Elastic deformations at linear carriers; Statically indeterminate frameworks and carriers ; Buckling: Euler and Tetmayer methods ; Complex stresses: hypotheses of strength ,obliquely bending; Complex stresses of tensile (compressive) and torsion , Complex stresses of tensile (compressive) and bending, Complex stresses of bending and torsion ; Cylinder with a thick wall, Tank with thin wall; Strength of the material under dynamic load effect.			
12.	Learning methods: Lectures, Laboratory exercises, e-learning, individual and team projects, consultations.			
13.	Total available time		216 hours	
14.	Distribution of available time		3 +2 +2/ per week	
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	3 hours
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	2hours
16.	Other forms of activities	16.1.	Project tasks	1hour
		16.2.	Individual tasks	1 hour
		16.3.	Home learning	
17.	Method of assessment			
	17.1.	Tests / oral exams		70
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10
	17.3.	Activity and participation		20
18.	Assessment Criteria (points / score)		to 50 points	5(five)(F)
			from 51 to 60 points	6(six) (E)
			from 61 to 70 points	7 (seven) (D)
			from 71 to 80 points	8 (eight) (C)
			from 81 to 90 points	9 (nine) (B)
			from 91 to 100 points	10 (ten) (A)

19.	Signature requirement and passing the final exam		60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions			
20.	Language of teaching / study		Macedonian			
21.	Method of monitoring the quality of teaching		Self-evaluation			
22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.	Simeon Simeonov	Strength of material (script)	UGD-Stip	2011
		2.	A.Ilievski, Lj.Todorovska-Azievska, N.Babamov	Strength of material	Dgitprint -Skopje	2008
		3.	Lj.Trajkovska	Strength of material1	UKIM -Skopje	1993
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year
		1.	Lj.Trajkovska	Strength of material1 Collection tasks ,	UKIM -Skopje	1993 1993
		2.	K.Angjusev, D.Korunovski, Z.Petreski,G.Tasevski	Strength of material1 Collection tasks ,	Mechanical faculty Skopje	2008 2008
3.						

Annex No.3		Program of the Course - first cycle studies	
1.	Title of the Course	Technical Mechanics 2(kinematics, dynamics, oscillations)	
2.	Code	2MF100612	
3.	Study Program	Production Engineering /Transport, Organization and Logistics	

4.	Organizer of the study program (unit or institute, Faculty, department)	University “Goce Delcev” - Stip. Faculty of Mechanical Engineering -Vinica			
5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	Second/ third	7.	Number of credits	6
8.	Professor (s)	Assi. Prof. Simeon Simeonov, Ph.D			
9.	Requirements for enrollment the Course	No			
10.	Purposes of the curriculum (competencies): Students are introduced to the movement of bodies, kinematics, dynamics and oscillations				
11.	Content of the course program: 1.Introduction to kinematics, motion particle, velocity, acceleration; 2.Types of motion: rectilinear, harmonic, circle, oblique angle shot; 3.Kinematics of a rigid body, translational motion, rotational motion and plane motion; 4.Composed motion of a rigid body, composition of translations, composition of rotations, composition of translation and rotation of a rigid body; 5. Introduction to dynamics, dynamics of particle, differential equation of motion, types of motion; 6.Laws of mechanics, impulse and work of force, amount of motion, kinetic energy, potential energy.... ; 7.Dynamics of material systems, principles of mechanics: Lagrange-D’Alembert principle; 8.Moments of inertia of a body, 9.Rigid body dynamics, translation motion, rotation motion, plane motion; 10.Oscillations general, free oscillations, Free damped (with resistance) oscillations , resistance of oscillations is proportional to the first degree of speed, force is constant; 11. Forced oscillations without resistance ,forced oscillations with resistance (damped); 12Application of oscillations in a technique.				
12.	Learning methods: Lectures, Laboratory exercises, e-learning, individual and team projects, consultations.				
13.	Total available time		156 hours		
14.	Distribution of available time		2 +2 +1/ per week		
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching,		2 hours

			e-teaching			
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	2hours		
16.	Other forms of activities	16.1.	Project tasks			
16.2.		Individual tasks	1 hour			
16.3.		Home learning				
17.	Method of assessment					
	17.1.	Tests / oral exams		70		
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10		
	17.3.	Activity and participation		20		
18.	Assessment Criteria (points / score)		to 50 points	5(five)(F)		
from 51 to 60 points			6(six) (E)			
from 61 to 70 points			7 (seven) (D)			
from 71 to 80 points			8 (eight) (C)			
from 81 to 90 points			9 (nine) (B)			
from 91 to 100 points			10 (ten) (A)			
19.	Signature requirement and passing the final exam		60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions			
20.	Language of teaching / study		Macedonian			
21.	Method of monitoring the quality of teaching		Self-evaluation			
22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.	S.Simeonov Z.Sovreski	Technical mechanics 1(peer reviewed script)	UGD-Stip	2011
		2.	E,Vetijakoska	Kinematics, dynamics, oscillations	Mechanical faculty-Skopje	2008

		3.	E,Vetijakoska	Kinematics	Mechanical faculty-Skopje	2009
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year
		1.	B. Andonovic	Technicalmechanics1 collection of solved problems	Technical Faculty-Bitola	1996
		2.	S. Guric	Dynamics and theory of oscillation	Mechanical faculty-beograd	1981
		3.	I . Mickovski Lj. Azievska	Mechanisms and oscillations	Mechanical faculty-Skopje	2001

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course	Corrosion and corrosion protection			
2.	Code	2MF102112			
3.	Study Program	Production engineering/Transport Organization and Logistics			
4.	Organizer of the study program (unit or institute, Faculty, department)	University Goce Delcev-Stip Faculty of mechanical engineering -Vinica			
5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	Second/IIIsemester	7.	Number of credits	4
8.	Professor (s)	Assi. Professor Slavco Cvetkov, PhD			
9.	Requirements for enrollment the Course	No			
10.	Purposes of the curriculum (competencies): At the end of the course, students will have competences obtained through the necessary fund of theoretical, methodological and applicative studying in the area of the materials corrosion and protection.				
11.	Content of the course program:				

	<div>1. Introduction to the corrosion</div> <div>2. Corrosion in water solutions</div> <div>3. Pitting corrosion</div> <div>4. Contact corrosion</div> <div>5. Corrosion under mechanical factors</div> <div>6. Procedures for metals protection</div> <div>7. Protection with electrode potential</div> <div>8. Anode protection</div> <div>9. Protection with surface coating</div> <div>10. Electrochemical procedures for metals protection</div> <div>11. Coating metals protection</div> <div>12. Constructive methods for metals protection</div>			
12.	Learning methods: -Teaching, exercises, projects assignment			
13.	Total available time		120	
14.	Distribution of available time		2 + 1 + 1 / per week	
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	2
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	1
16.	Other forms of activities	16.1.	Project tasks	
		16.2.	Individual tasks	1 hour
		16.3.	Home learning	
17.	Method of assessment			
	17.1.	Tests / oral exams		70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10 points
	17.3.	Activity and participation		20 points

18.	Assessment Criteria (points / score)	up 50 points	5(five) (F)
		51 to 60 points	6(six) (E)
		61 to 70 points	7 (seven) (D)
		71 to 80 points	8 (eight) (C)
		81 to 90 points	9 (nine) (B)
		91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam	60% success from all pre exam activities i.e. 42 points from two mid-term exams , seminar paper, attendance of lectures and exercises	
20.	Language of teaching / study	Macedonian	
21.	Method of monitoring the quality of teaching	Self-evaluation	

22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.	H.J. Svetomir	Corrosion and protection	Skopje - TMF	1989
		2.	M. Milenkovic	Corrosion and protection	Belgrade	1966
		3.				
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year
		1.				
		2.				
		3.				

Annex No.3		Program of the Course - first cycle studies	
1.	Title of the Course	Probability and statistics	

2.	Code	2FI130712			
3.	Study Program	Production Engineering /Transport, Organization and Logistics			
4.	Organizer of the study program (unit or institute, Faculty, department)	University Goce Delcev - Stip Faculty of mechanical engineering-Vinica			
5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	Second/IV	7.	Number of credits	4
8.	Professor (s)	Prof. Tatjana Atanasova Pacemska, Ph.D			
9.	Requirements for enrollment the Course	Enrollment of the first cycle study program			
10.	Purposes of the curriculum (competencies): Knowledge and understanding of the basic concepts and theories of probability and statistics and their flexible use in practice.				
11.	Content of the course program: Basic concepts of the probability theory. Random Experiment. Random event. Probability space. The axioms of probability. Classical definition of probability. Geometric definition of probability. Conditional probability. Total probability. Bayes' theorems or rule. Bernoulli' scheme. Approximate theorems of the Bernoulli' scheme. Discrete and continuous random variables. Random vectors. Definition of the mathematical expectation, variance and standard deviation. Functions of random variables. Law of large numbers. Chebyshev' Inequality. Central limit theorem. Descriptive statistics. Confidence intervals. Tests of hypothesis.				
12.	Learning methods: – Lectures, – e-learning, – individual and team projects – Consultations.				
13.	Total available time	120			
14.	Distribution of available time	2+1+1 / per week			
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching		2

		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	1
16.	Other forms of activities	16.1.	Project tasks	hours
		16.2.	Individual tasks	1 hours
		16.3.	Home learning	hours
17.	Method of assessment			
	17.1.	Tests / oral exams		70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10 points
	17.3.	Activity and participation		20 points
18.	Assessment Criteria (points / score)		up 50 points	5(five) (F)
			51 to 60 points	6(six) (E)
			61 to 70 points	7 (seven) (D)
			71 to 80 points	8 (eight) (C)
			81 to 90 points	9 (nine) (B)
			91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam		60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending oflectures and discussions	
20.	Language of teaching / study		Macedonian	
21.	Method of monitoring the quality of teaching		Self-evaluation	

22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.	Risto Malceski	Voved vo teorijata na verojatnosta	FON	2006
		2.	Željko Pauše	Uvod u matematičku statistiku	Školska knjiga, Zagreb	1993

		3.	Nikola Tuneski, Biljana Jolevska-Tuneska	Zbirka reseni zadaci po Verojatnost i statistika	Masinski Fakultet - Skopje	2011
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year
		1.				
		2.				
		3.				

Annex No.3		Program of the Course - first/second/third cycle studies			
1.	Title of the Course	Ergonomics			
2.	Code	2MF106812			
3.	Study Program	Production engineering/Transport, organization and logistics			
4.	Organizer of the study program(unit or institute, Faculty, department)	University Goce Delcev-Stip Faculty of mechanical engineering -Vinica			
5.	Cycle (first, second and third cycle)	First cycle studies (Bachelor studies)			
6.	Academic year / semester	Second /third semester	7.	ECTS	4
8.	Professor (s)	Assi. Prof. Dejan Mirakovski, PhD			
9.	Requirements for enrollment the Course	No			
10.	Purposes of the curriculum(competencies): Introduction to ergonomics and its principles, ergonomic design of the workspace, work place, characteristics of the work place and organization.				
11.	Content of the course program: 1.Introduction to ergonomics, 2. Anthropometric aspect of the man-machine system, 3. Ergonomic principles, 4. Ergonomics as a field for quality improvement, 5. Ergonomic design of the workspace in modern offices, 6. Ambient perception, 7. Impact of lighting in working conditions, 8. Presentation of visual information, 9. Workplace and its organization, 10.				

	Design for special groups of people, 11. Human errors, accidents and safety at work, 12. Rhythm of the body, working ability and effects of the alcohol.		
12.	Learning methods: – Lectures, exercises, individual tasks		
13.	Total available time	120	
14.	Distribution of available time	2+1+1 / per week	
15.	Forms of teaching / learning activities	15.1. lectures / theoretical - contact teaching, e-teaching	2
		15.2. theoretical and practical exercises, e-exams, preparation of independent seminar work	1
16.	Other forms of activities	16.1. Project tasks	hours
		16.2. Individual tasks	1 hours
		16.3. Home learning	hours
17.	Method of assessment		
	17.1.	Tests / oral exams	70 points
	17.2.	Seminars (paper/project - presentation: written and/or oral)	10 points
	17.3.	Activity and participation	20 points
18.	Assessment Criteria (points / score)	up 50 points	5 (five) (F)
		51 to 60 points	6 (six) (E)
		61 to 70 points	7 (seven) (D)
		71 to 80 points	8 (eight) (C)
		81 to 90 points	9 (nine) (B)
		91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam	60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions	
20.	Language of teaching / study	Macedonian	

21.	Method of monitoring the quality of teaching	Self-evaluation
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22.	Literature				
22.1.	Required literature				
	No.	Author	Title	Publisher	Year
	1.	Prof. R. Polenakovik	"Ergonomics" (customized lectures)	UKIM, Faculty of Mechanical Engineering, Skopje	2007
	2.				
	3.				
	Additional literature				
	No.	Author	Title	Publisher	Year
22.2.	1.				
	2.				
	3.				

Annex No.3		Program of the Course - first cycle studies	
1.	Title of the Course	Industrial Management	
2.	Code	2MF106912	
3.	Study Program	Production Engineering /Transport, Organization and Logistics	
4.	Organizer of the study program (unit or institute, Faculty, department)	University Goce Delcev-Stip Faculty of mechanical engineering -Vinica	
5.	Cycle (first, second and third cycle)	First cycle	

6.	Academic year / semester	Second/Third semester	7.	Number of ECTS credits	4
8.	Professor (s)	Assi. Prof. Misko Dzidrov, Ph.D			
9.	Requirements for enrollment the Course	No			
10.	Purposes ofthe curriculum(competencies):Learning of managerial functions: planning, organizing and staffing, leadership, controlling.				
11.	Contents of the course program: 1. Introduction to Management 2. Problem solving and decision making 3. Information and information systems 4. Fundamentals of organizational communication 5. Organizational communication - flows, networks and types 6. Management by objectives and managerial function of planning 7. Managerial function of organizing: division and grouping of work 8. Managerial function of organization: coordination, management range and organizational design 9. Organizational conflicts 10. Staffing and Motivating 11. Styles of leadership and types of managers 12. Systems and processes in controlling				
12.	Learning methods: Interactive teaching, exercises, individual and/or team work on projects, consultations and individual-study.				
13.	Total availabletime		120 hours		
14.	Distribution of availabletime		2 +1 +1		
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	2	
		15.2.	theoretical andpractical exercises, e-exams, preparationofindependentseminar work	1	

16.	Other forms of activities		16.1.	Project tasks	
			16.2.	Individual tasks	1
			16.3.	Home learning	
17.	Method of assessment				
	17.1.	Tests / oral exams			70 points
	17.2.	Seminars (paper/project - presentation: written and/or oral)			10 points
	17.3.	Activity and participation			20 points
18.	Assessment Criteria(points /score)		up 50points		5(five) (F)
			51 to 60 points		6(six) (E)
			61 to 70 points		7 (seven) (D)
			71 to 80 points		8 (eight) (C)
			81 to 90 points		9 (nine) (B)
			91 to 100 points		10 (ten) (A)
19.	Signature requirementandpassingthefinal exam		60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions		
20.	Language ofteaching / study		Macedonian		
21.	Method ofmonitoringthe quality of teaching		Self-evaluation		

22.	Literature				
	22.1.	Required literature			
		Order No.	Author	Title	Publisher Year
		1.	T. Krlev	Management Principles Part 1	CIM 2001
		2.			
		3.			
	22.2.	Additional literature			
		Order	Author	Title	Publisher Year

		No.				
		1.	T. Krlev	Management Principles Part 1	CIM	2005
		2.	T. Krlev	Management Principles Handbook	CIM	2005
		3.	V. Bulat	Industrial Management	Faculty for Industrial Management - Kruševac	2007

Annex No.3		Program of the Course - first cycle studies				
1.	Title of the Course		Machine elements			
2.	Code		2MF100712			
3.	Study Program		Production Engineering /Transport, Organization and Logistics			
4.	Organizer of the study program (unit or institute, Faculty, department)		University “Goce Delcev”- Stip. Faculty of Mechanical Engineering -Vinica			
5.	Cycle (first, second and third cycle)		First cycle			
6.	Academic year / semester		second / fourth	7.	Number of credits	8
8.	Professor (s)		Assi. Prof. Ph.D Simeon Simeonov			
9.	Requirements for enrollment the Course		Attended course of Strength of material			
10.	Purposes of the curriculum (competencies): Students are introduced to the properties of machine elements, their dimensioning and constructing;					
11.	Content of the course program: Elements for joining. Separable threaded fasteners, types, threaded transmitters, threaded fasteners, material, calculation; Wedges, serrated joints, pins. Inseparable fasteners (rivets, welded connections); Springs, flexible springs, spirally screw springs, construction and calculation; Bearing, ball bearing (rolling bearings), sleeve bearing (slide bearings), construction and calculation; Clutches, constantly engaged, engaged-disengaged manageable clutches, automatic clutches. Installation of pipes; Gears, cylindrical gears, construction and calculation. Conical gears ,					

	construction and calculation; Worm and gear sets; Belts transmitters; Friction transmitters; Chains.			
12.	Learning methods: Lectures, Laboratory exercises, e-learning, individual and team projects, consultations.			
13.	Total available time		216 hours	
14.	Distribution of available time		3 +2 +2/ per week	
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	3 hours
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	2hours
16.	Other forms of activities	16.1.	Project tasks	1hour
		16.2.	Individual tasks	1 hour
		16.3.	Home learning	
17.	Method of assessment			
	17.1.	Tests / oral exams		70
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10
	17.3.	Activity and participation		20
18.	Assessment Criteria (points / score)		to 50 points	5(five)(F)
			from 51 to 60 points	6(six) (E)
			from 61 to 70 points	7 (seven) (D)
			from 71 to 80 points	8 (eight) (C)
			from 81 to 90 points	9 (nine) (B)
			from 91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam		60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions	
20.	Language of teaching / study		Macedonian	
21.	Method of monitoring the quality of teaching		Self-evaluation	

22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.	Simeon Simeonov	Strength of material (script)	UGD-Stip	2011
		2.	D.Stamboliev	Machine elements ,1,2	UKIM Skopje	1975
		3.	K.Trimcevski	Machine elements	Mechanical faculty - Skopje	
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year
		1.	M. Ognjanovik	Mechanical elements	Mechanical faculty - Beograd	2008
		2.	S.Simeonov	Mechanical elements-collection tasks	UGD -Stip	2011
		3.				

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course		Fluid Mechanics		
2.	Code		2MF100812		
3.	Study Program		Production Engineering /Transport, Organization and Logistics		
4.	Organizer of the study program (unit or institute, Faculty, department)		University Goce Delcev-Stip Faculty of mechanical engineering -Vinica		
5.	Cycle (first, second and third cycle)		First cycle		
6.	Academic year / semester		II/IV semester	7. Number of credits	6
8.	Professor (s)		Assi. Prof. Radomir Cvetanoski, Ph.D		

9.	Requirements for enrollment the Course	none		
10.	Purposes of the curriculum (competencies): Introducing students to the mechanics of fluids, and training for calculations and practical application of the laws of fluid mechanic			
11.	Content of the course program: Tasks and application of fluid mechanics; most important thermodynamic and physical properties of gases; most important thermodynamic and physical properties of liquids; Statics of fluids; Kinematics flow; ideal fluid dynamics; Some elementary flows ideal fluid through electrical flow; two-dimensional potential flow; convection viscous fluid; Methods of application of fluid mechanics (hydraulics); laminar flow through circular pipes; Hydraulic shock.			
12.	Learning methods: Theoretical lectures, auditory exercises, lectures with presentations through slides, exercises, independent elaboration and defense of the project task			
13.	Total available time		156 hours	
14.	Distribution of available time		2+2+1 / per week	
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	2
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	2
16.	Other forms of activities	16.1.	Project tasks	hours
		16.2.	Individual tasks	1 hours
		16.3.	Home learning	hours
17.	Method of assessment			
	17.1.	Tests / oral exams		70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10 points
	17.3.	Activity and participation		20 points
18.	Assessment Criteria (points / score)		up 50 points	5(five) (F)

		51 to 60 points	6(six) (E)
		61 to 70 points	7 (seven) (D)
		71 to 80 points	8 (eight) (C)
		81 to 90 points	9 (nine) (B)
		91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam	60% of pre-exam activities i.e. 42 points from two mid-term exams , seminar paper, attendance of lectures and exercises	
20.	Language of teaching / study	Macedonian language	
21.	Method of monitoring the quality of teaching	Self-evaluation	

22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.	Ass. Prof. Ph.D Radomir Cvetanoski	Fluid Mechanics	UGD	2009
		2.	Frank White	Fluid Mechanics	Ars Lamina Skopje	2009
		3.	Ilija Mijakovski	Fluid Mechanics-collection solution tasks	Technical Faculty - Bitola	1994
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year
		1.				
		2.				
		3.				

Annex No.3	Program of the Course - first cycle studies
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1.	Title of the Course	Numerical methods			
2.	Code	2FP101512			
3.	Study Program	Production Engineering /Transport, Organization and Logistics			
4.	Organizer of the study program (unit or institute, Faculty, department)	University Goce Delcev-Stip Faculty of mechanical engineering -Vinica			
5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	Second/Fourth	7.	Number of credits	6
8.	Professor (s)	Prof. Blagoj Golomeov, Ph.D.			
9.	Requirements for enrollment the Course	No			
10.	Purposes of the curriculum (competencies): Students are introduced to the basics of numerical mathematics.				
11.	Content of the course program: Introduction. Basic concepts of error estimation. Approximately solving equations with one unknown. Method of halving. Newton-Rafson method. Secant method. Interpolation. Polynomial interpolation. Lagrange formula. Newton interpolation’s formula back and forth. Two-dimensional interpolation. Numerical differentiation, Newton interpolation. Numerical integration. Newton IP. Trapeze and Simpson’s rule. Gaussian elimination, Jakob and Gauss Zajdelov method. Numerical solution of ordinary differential equations. Taylor series methods. Euler method. Higher-order methods. Runge-Kuta method. Polynomial regression. Method of least squares. Techniques for network planning. Project, activity, event. Presentation of addicted activities. Fulkler rule. PERT method- time analysis. Method CPM-critical path.				
12.	Learning methods: Lectures, e-learning, individual and team projects, consultations.				
13.	Total available time		156		
14.	Distribution of available time		2+2+1 / per week		
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching		2
		15.2.	theoretical and practical exercises,		2

			e-exams, preparation of independent seminar work	
16.	Other forms of activities	16.1.	Project tasks	
		16.2.	Individual tasks	1
		16.3.	Home learning	
17.	Method of assessment			
	17.1.	Tests / oral exams		70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10 points
	17.3.	Activity and participation		20 points
18.	Assessment Criteria (points / score)		up 50 points	5(five) (F)
			51 to 60 points	6(six) (E)
			61 to 70 points	7 (seven) (D)
			71 to 80 points	8 (eight) (C)
			81 to 90 points	9 (nine) (B)
			91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam		60% of pre-examactivities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions	
20.	Language of teaching / study		Macedonian	
21.	Method of monitoring the quality of teaching		Self-evaluation	

22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.	Blagoj Golomeov	Numerical methods in mining and geology	Faculty of Natural and Technical Sciences	2009
		2.				
		3.				
	22.2.	Additional literature				

		No.	Author	Title	Publisher	Year
		1.				

Annex No.3		Program of the Course - first/second/ third cycle studies				
1.	Title of the Course		Measurement and measuring instruments			
2.	Code		2MF102212			
3.	Study Program:		Production Engineering /Transport, Organization and Logistics			
4.	Organizer of the study program (unit or institute, Faculty, department)		University Goce Delcev-Stip Faculty of mechanical engineering -Vinica			
5.	Cucle (first, second, third cycle)		First cycle			
6.	Academic year / semester		Second / fourth semester	7.	Number of ECTS credits	4
8.	Professor (s)		Assi. Prof. Bratica Temelkoska, Ph.D			
9.	Requirements for enrolment the Course		No			
10.	Purposes of the curriculum (competencies):Students are introduced to the types of measuring instruments and their application.					
11.	Content of the course program: Basic and general terms in metrology; Measurement and measurement concept, defined in terms of metrology; Measuring instruments; caliper rule and micrometers; comparators; yardsticks for measuring angles and cones; Methods for measurement and control coils; measuring machines; Measuring instruments based on optical measurements; pressure measurement. Temperature measurement; Instruments for measuring flow; Measuring force. Instruments for measuring deformations.					
12.	Learning methods;					

	Theoretical lectures, laboratory exercises			
13.	Total available time		120 hours	
14.	Distribution of the available time		2+1+1	
15.	Forms of teaching/ Learning activities	15.1	Lectures - theoretical contact teaching/e-teaching	2
		15.2	Theoretical and practical exercises, e-exams, preparation of independent seminar work	1
16.	Other forms of activities	16.1	Projects tasks	
		16.2	Individual tasks	1
		16.3	Home learning	
17.	Method of assessment			
	17.1.	Tests / oral exams,		70 points
	17.2.	Seminars (paper /project - presentation ; written and /or oral		10 points
	17.3.	Activity and participacion		20 points
18.	Assessment Criteria (points / score)		to 50 points	5(five) (F)
			from 51 to 60 points	6(six) (E)
			from 61 to 70 points	7(seven) (D)
			from 71 to 80 points	8(eight) (C)
			from 81 to 90 points	9(nine) (B)
			from 91 to 100 points	10(ten) (A)
19.	Signature requirement and passing tne final exam		60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions	
20.	Language of teaching/study		Macedonian	
21.	Method of monitoring the quality of teaching		Self-evaluation	

22.	Literature					
	22.1	Required literature				
		Order	Author	Title	Publisher	Year

		No.				
		1.	Bratica Temelkoska	Measurement and measuring instruments-textbook	University "Goce Delcev"- Stip. Faculty of Mechanical Engineering -Vinica	2009
		2.				
		3.				
	22.2	Additional literature				
		Order No.	Author	Title	Publisher	Year
		1.				
		2.				
		3.				

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course	Heat transfer			
2.	Code	MF102312			
3.	Study Program	Production Engineering /Transport, Organization and Logistics			
4.	Organizer of the study program (unit or institute, Faculty, department)	University Goce Delcev Faculty of Mechanical Engineering			
5.	Cycle (first, second and third cycle)	first cycle			
6.	Academic year / semester	II/IV semester	7.	Number of credits	4
8.	Professor (s)	Assi. Prof. Radomir Cvetanoski, Ph.D			
9.	Requirements for enrollment the Course	No			
10.	Purposes of the curriculum (competencies): Introduction to basic concepts of heat and temperature, the basic types of heat transfer, conduction, convection and radiation, heat transfer devices, Heat and types of Heat, efficiency and design.				

11.	Content of the course program: 1.Temperature and heat; Transmission of heat; conduction heat transfer; Convective heat tranfer; Radiation heat transfer; Heat; 2. Efficiency of heat exchangers; Classification of heat exchangers; Tubular heat exchangers; Plate heat echangers; Regenerativeheat exchangers; Designing heat exchangers;			
12.	Learning methods: Lectures with presentations through slides, exercises, independent elaboration and defense of the project task			
13.	Total available time		120 hours	
14.	Distribution of available time		2 +1+1 / per week	
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	2
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	1
16.	Other forms of activities	16.1.	Project tasks	hours
		16.2.	Individual tasks	1 hours
		16.3.	Home learning	hours
17.	Method of assessment			
	17.1.	Tests / oral exams		70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10 points
	17.3.	Activity and participation		20 points
18.	Assessment Criteria (points / score)		up 50 points	5(five) (F)
			51 to 60 points	6(six) (E)
			61 to 70 points	7 (seven) (D)
			71 to 80 points	8 (eight) (C)
			81 to 90 points	9 (nine) (B)
			91 to 100 points	10 (ten) (A)

19.	Signature requirement and passing the final exam	60% of pre-exam activities i.e. 42 points from two mid-term exams , seminar paper, attendance of lectures and exercises
20.	Language of teaching / study	Macedonian language
21.	Method of monitoring the quality of teaching	Self-evaluation

22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.	A. Mojsovski	Heat transfer and mass	UKIM	1992
		2.				
		3.				
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year
		1.	Schlunder E. U	Heat Exchanger Design Handbook	Hamisphere Publishing Corporation, Washington, USA	1987
		2.	John H. Lienhard	A heat transfer textbook	Philogiston press	2011
		3.				

Annex No.3		Program of the Course - first cycle studies	
1.	Title of the Course	Thermo-technical machines	
2.	Code	2MF100912	
3.	Study Program	Production engineering	

4.	Organizer of the study program (unit or institute, Faculty, department)	University Goce Delcev-Stip Faculty of Mechanical Engineering -Vinica			
5.	Cycle (first, second and third cycle)	first cycle			
6.	Academic year / semester	3/V	7.	Number of credits	8
8.	Professor (s)	Assistant Prof. Zlatko Sovreski, PhD			
9.	Requirements for enrollment the Course	none			
10.	Purposes of the curriculum (competencies): Introduction to basic thermo technical machines, steam boilers, thermal turbines, steam turbines, heating appliances and air conditioning, cooling units, engine SVS.				
11.	Content of the course program: 1.Types of energy; Energy sources; Steam boilers; Heat balance and heat losses; Coefficient of efficiency; Construction of steam boilers; Thermal turbines and plants. 2.Basic elements and classification of steam turbine units; Heating and cooling; ventilation plants; Refrigerating plants; Motor SVS; engine cycle in SVS.				
12.	Learning methods: Lectures with presentations through slides, exercises, independent preparation and presentation of the project assignment				
13.	Total available time		216		
14.	Distribution of available time		3+2+2 / per week		
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching		3
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work		2
16.	Other forms of activities	16.1.	Project tasks		1 hours
		16.2.	Individual tasks		1 hours
		16.3.	Home learning		hours
17.	Method of assessment				
	17.1.	Tests / oral exams			70 points

	17.2.	Seminars (paper / project - presentation: written and/or oral)	10 points	
	17.3.	Activity and participation	20 points	
18.	Assessment Criteria (points / score)		up 50 points	5(five) (F)
			51 to 60 points	6(six) (E)
			61 to 70 points	7 (seven) (D)
			71 to 80 points	8 (eight) (C)
			81 to 90 points	9 (nine) (B)
			91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam		60% of pre-examactivities or 42 points from the two mid-term exams, seminar papers, attendance of lectures and exercises	
20.	Language of teaching / study		Macedonian	
21.	Method of monitoring the quality of teaching		Self-evaluation	

22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.	Armenski Slave	Termodinamicki masini I uredi	UKIM	1995
		2.				
		3.				
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year
		1.	Petrovski Ilija	Parni kotli	UKIM	2004
		2.	Dimitrovski Mile	Motori SVS-teorija I sovremena oprema	UKIM	2001
3.						

Annex No.3		Program of the Course - first cycle studies				
1.	Title of the Course		Processing using cutting and plastic deformation			
2.	Code		2MF101012			
3.	Study Program		Production Engineering			
4.	Organizer of the study program (unit or institute, Faculty, department)		University Goce Delcev-Stip Faculty of Mechanical Engineering - Vinica Department of Production Engineering			
5.	Cycle (first, second and third cycle)		First cycle			
6.	Academic year / semester		Third year/ Fifth semester	7.	Number of credits	8
8.	Professor (s)		Assi. Prof. Slavco Cvetkov, Ph.D.			
9.	Requirements for enrollment the Course		None			
10.	Purposes of the curriculum (competencies): Training and running processes by grinding, processing sheet with plastic deformation and processing technologies using spatial plastic deformation.					
11.	Content of the course program: 1. Processing using grinding: Basics of the theory of processing using cutting. The quality of processing and economical cutting. Processing using cutting: production operations, the basic elements of the processed piece, cutting tool, resistance to cutting, speed cutting, sweep, the number of rotation, allowances for processing. Processing by milling, Saw logs, drilling, insertion, planning, grinding. Preparation of gears. 2. Processing using plastic deformation: Elementary theoretical basis. Technology of processing metal sheets using cutting.					
12.	Learning methods: Lectures, exercises, individual works, practical classes, home learning, consultations.					
13.	Total available time			216 hours		
14.	Distribution of available time			3+2+2 / per week		
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching		3 hours	
		15.2.	theoretical and practical exercises,		2 hours	

			e-exams, preparation of independent seminar work	
16.	Other forms of activities	16.1.	Project tasks	1hours
		16.2.	Individual tasks	
		16.3.	Home learning	1 hours
17.	Method of assessment			
	17.1.	Tests / oral exams		70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10 points
	17.3.	Activity and participation		20 points
18.	Assessment Criteria (points / score)		up 50 points	5(five) (F)
			51 to 60 points	6(six) (E)
			61 to 70 points	7 (seven) (D)
			71 to 80 points	8 (eight) (C)
			81 to 90 points	9 (nine) (B)
			91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam		60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions	
20.	Language of teaching / study		Macedonian	
21.	Method of monitoring the quality of teaching		Self-evaluation	

22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.	Slavco Cvetkov	Processing using cutting and plastic deformation- script	UGD-Stip Mechanical faculty-Vinica	2013
		2.				
		3.				

	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year
		1.	Milisav Kalajdžić	Technology of machine construction	Mechanical faculty, Belgrade	2006
		2.	Joko Stanić	Processing theory of processes	Mechanical faculty, Belgrade	1994
		3.	J. Lazarev, V. Strezov	Machines and processing using deformation	Mechanical faculty, Skopje	2001
		4	D. M. Nikolić	Theory of processing II Theory of processing metals using deformation	Mechanical faculty, Belgrade	1999
		5	D. M. Nikolić	Theory of processing II Theory of processing metals using deformation	Mechanical faculty, Belgrade	1999

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course	CAD technology			
2.	Code	2MF101112			
3.	Study Program	Production Engineering			
4.	Organizer of the study program (unit or institute, Faculty, department)	University “Goce Delcev” - Stip. Faculty of Mechanical Engineering -Vinica			
5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	third / fifth	7.	Number of credits	6
8.	Professor (s)	Assi. Prof. Simeon Simeonov, Ph.D			
9.	Requirements for enrollment the Course	No			
10.	Purposes of the curriculum (competencies): Students are introduced to the basics and application of CAD technology in mechanical engineering				
11.	Content of the course program:				

	Introduction to CAD technology, 2D documentation, Dimensions, Making templates, Primitives obtained by extruding, Primitives obtained by rotation, Primitives obtained by translation along the path, Modeling ribs, Sketched primitives modeling, Creating assemblies of primitives.			
12.	Learning methods: Lectures, Laboratory exercises, e-learning, individual and team projects, consultations.			
13.	Total available time		156 hours	
14.	Distribution of available time		2 +2 +1/ per week	
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	2 hours
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	2hours
16.	Other forms of activities	16.1.	Project tasks	
		16.2.	Individual tasks	1 hour
		16.3.	Home learning	
17.	Method of assessment			
	17.1.	Tests / oral exams		70
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10
	17.3.	Activity and participation		20
18.	Assessment Criteria (points / score)		to 50 points	5(five)(F)
			from 51 to 60 points	6(six) (E)
			from 61 to 70 points	7 (seven) (D)
			from 71 to 80 points	8 (eight) (C)
			from 81 to 90 points	9 (nine) (B)
			from 91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam		60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions	
20.	Language of teaching / study		Macedonian	

21.	Method of monitoring the quality of teaching			Self-evaluation		
22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.		SolidWorks –software And a book		
		2.				
		3.				
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year
		1.	G. Devedzik	CAD/CAM technology	Mechanical faculty Kraguevac	2004
		2.				
		3.				

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course		Sustainable energy systems		
2.	Code		2MF102412		
3.	Study Program		Production Engineering		
4.	Organizer of the study program (unit or institute, Faculty, department)		University Goce Delcev-Stip Faculty of mechanical engineering -Vinica		
5.	Cycle (first, second and third cycle)		first cycle		
6.	Academic year / semester		III/V semester	7. Number of credits	4
8.	Professor (s)		Assi. Prof. Radomir Cvetanoski, Ph.D		
9.	Requirements for enrollment the Course		No		

10.	Purposes of the curriculum (competencies): Introduction to sustainable energy systems, solar energy, geothermal energy, biomass, wind energy.			
11.	Content of the course program: 1.Introduction; Classification of sustainable energy systems; Solar energy - features; Devices and application of solar energy for hot water; Devices and application of solar energy for electricity; General geothermal energy; 2.Application of geothermal energy; Energy from biomass - potential sources; obtaining fuel from biomass; devices for obtaining fuel from biomass; wind energy; wind turbines and their application			
12.	Learning methods: Lectures with presentations through slides, exercises, independent elaboration and defense of the project task			
13.	Total available time		120 hours	
14.	Distribution of available time		2+1+1 / per week	
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	2
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	1
16.	Other forms of activities	16.1.	Project tasks	hours
		16.2.	Individual tasks	1 hours
		16.3.	Home learning	hours
17.	Method of assessment			
	17.1.	Tests / oral exams		70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10 points
	17.3.	Activity and participation		20 points
18.	Assessment Criteria (points / score)		up 50 points	5(five) (F)
			51 to 60 points	6(six) (E)
			61 to 70 points	7 (seven) (D)

		71 to 80 points	8 (eight) (C)
		81 to 90 points	9 (nine) (B)
		91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam	60% of pre-exam activities i.e. 42 points from two mid-term exams , seminar paper, attendance of lectures and exercises	
20.	Language of teaching / study	Macedonian language	
21.	Method of monitoring the quality of teaching	Self-evaluation	

22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.	S. Armenski	Renewable energy sources	NIP Student comes Skopje	2007
		2.				
		3.				
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year
		1.	G. Kanevce	Sustainable energy systems lectures	Bitola	
		2.	A.M.Laughton	Renewable Energy Sources	Taylor&Francis , London	2003
		3.				

Annex No.3		Program of the Course - first cycle studies	
1.	Title of the Course	Machinery for transport	
2.	Code	2MF109512	
3.	Study Program	Production Engineering	

4.	Organizer of the study program (unit or institute, Faculty, department)	University “Goce Delcev” - Stip. Faculty of Mechanical Engineering -Vinica			
5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	third /fifth	7.	Number of credits	4
8.	Professor (s)	Assi. Prof. Simeon Simeonov, Ph.D			
9.	Requirements for enrollment the Course	No			
10.	Purposes of the curriculum (competencies): Students are introduced to the types of means of transportation, calculation and application.				
11.	Content of the course program: Introduction; Machinery for transport with cyclic work: simple mechanisms, cranes and hoists; Cranes’ features: capacity, relative time of work; types of loads. Mechanisms of cranes; Resistances and power of cranes; Elements for carrying the load: ropes, chains, chain wheels, rope drums. Elements for holding the load; Brakes, elements for raising, clutches, safety devices, Elements for retention, lifts, skippers; Transportation vehicles: carts, tractors, forklifts; Machines for continuous transport, conveyors with traction components: Conveyor belts; Conveyors with: plates, harrow. Elevators; Machines without traction components: roller conveyors, oscillatory conveyors, screw conveyors, hydraulic and pneumatic conveyors.				
12.	Learning methods: Lectures, Laboratory exercises, e-learning, individual and team projects, consultations.				
13.	Total available time	120 hours			
14.	Distribution of available time	2 +1 +1/ per week			
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	2 hours	
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	1hours	
16.	Other forms of activities	16.1.	Project tasks		
		16.2.	Individual tasks	1 hour	
		16.3.	Home learning		
17.	Method of assessment				

	17.1.	Tests / oral exams			70	
	17.2.	Seminars (paper / project - presentation: written and/or oral)			10	
	17.3.	Activity and participation			20	
18.	Assessment Criteria (points / score)		to 50 points	5(five)(F)		
			from 51 to 60 points	6(six) (E)		
			from 61 to 70 points	7 (seven) (D)		
			from 71 to 80 points	8 (eight) (C)		
			from 81 to 90 points	9 (nine) (B)		
			from 91 to 100 points	10 (ten) (A)		
19.	Signature requirement and passing the final exam		60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions			
20.	Language of teaching / study		Macedonian			
21.	Method of monitoring the quality of teaching		Self-evaluation			
22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.	S.Simeonov	Machinery for transport (script)	UGD -Stip	2011
		2.	J.Jancevski	Transporting appliances	Mechanical faculty Skopje	2003
		3.				
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year
		1.	Sava Dedier	Transporting appliances	Mechanical faculty - Beograd	1971
		2.	Sotir Panovski	Transferred processes	Technical faculty - Bitola	2009
		3.				

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course	Engineering economics			
2.	Code	2MF107012			
3.	Study Program	Production Engineering /Transport, Organization and Logistics			
4.	Organizer of the study program (unit or institute, Faculty, department)	University Goce Delcev-Stip Faculty of mechanical engineering -Vinica			
5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	Third/sixth	7.	Number of ECTS credits	4
8.	Professor (s)	Assi. Prof. Misko Dzidrov, Ph.D			
9.	Requirements for enrollment the Course	No			
10.	Purposes of the curriculum (competencies): Learning in the field of engineering economic, the methods and analysis, as well as making investment decisions among project alternatives. Strengthening analytical skills related to financial information.				
11.	Contents of the course program: 1. Introduction to the economic methods applied in engineering 2. Decision-making methods 3. Studying of cash flow concepts 4. Rate of return, return of investments, 5. Financial indicators for profitability, effectiveness, efficiency, 6. Cost analysis, revenue, profits, 7. Balance sheet and income statement 8. Studying of basic economic value analysis (present value, annual analysis, incremental analysis, cost/ benefit analysis) 9. Methods for calculating of depreciation 10. Techniques for estimating of equipment replacement 11. Making investment decisions among project alternatives				

	12. Learning techniques for preparation of a business plan and feasibility study			
12.	Learning methods: Interactive teaching, exercises, individual and/or team work on projects, consultations and individual learning			
13.	Total available time		120 hours	
14.	Distribution of available time		2 +1 +1	
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	2
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	1
16.	Other forms of activities	16.1.	Project tasks	
		16.2.	Individual tasks	1
		16.3.	Home learning	
17.	Method of assessment			
	17.1.	Tests / oral exams		70
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10
	17.3.	Activity and participation		20
18.	Assessment Criteria (points / score)		to 50 points	5(five)(F)
			from 51 to 60 points	6(six) (E)
			from 61 to 70 points	7 (seven) (D)
			from 71 to 80 points	8 (eight) (C)
			from 81 to 90 points	9 (nine) (B)
			from 91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam		60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions	
20.	Language of teaching / study		Macedonian	
21.	Method of monitoring the quality of teaching		Self-evaluation	

22.	Literature					
	22.1.	Required literature				
		Order No.	Author	Title	Publisher	Year
		1.	V. Gecevska	Engineering Economics	Faculty of Mechanical Engineering, UKIM, Skopje	2010
		2.	D. Bojadzhioski	Enterprise Economics	Economic Faculty Skopje	1999
		3.				
	22.2.	Additional literature				
		Order No.	Author	Title	Publisher	Year
		1.	Michael R. Baye	Managerial Economics & Business Strategy	McGraw-Hill College	2007
		2.				
		3.				

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course		Machines and tools for plastic processing		
2.	Code		2MF101212		
3.	Study Program		Production Engineering		
4.	Organizer of the study program (unit or institute, Faculty, department)		University Goce Delcev-Stip Faculty of Mechanical Engineering - Vinica Department of Production Engineering		
5.	Cycle (first, second and third cycle)		First cycle		
6.	Academic year / semester		Third / Sixth	7. Number of credits	8

		semester			
8.	Professor (s)	Assi. Prof. Slavco Cvetkov, Ph.D			
9.	Requirements for enrollment the Course	Passed exam of Processing using cutting and plastic deformation			
10.	Purposes of the curriculum (competencies): Training to use treatment processes of plastic deformation and processing machines as well as design and construction of tools for plastic deformation processing.				
11.	Content of the course program: 1. Machines for plastic processing. Machines for sheet metal processing, crank and hydraulic presses. Angle bending presses and crank scissors for cutting sheet metal. Hammers and forging presses. 2. Tools for plastic processing. Basic elements, components and materials for construction. Constructing tools for sheet metal piercing, punching, bending and drawing. Forging tools for hammers and forging presses.				
12.	Learning methods: Lectures, exercises, individual work, practical classes, home learning, consultations.				
13.	Total available time		216 hours		
14.	Distribution of available time		3+2+2 / per week		
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	3 hours	
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	2 hours	
16.	Other forms of activities	16.1.	Project tasks	1 hours	
		16.2.	Individual tasks	1 hours	
		16.3.	Home learning		
17.	Method of assessment				
	17.1.	Tests / oral exams			70 points

	17.2.	Seminars (paper / project - presentation: written and/or oral)	10 points	
	17.3.	Activity and participation	20 points	
18.	Assessment Criteria (points / score)		up 50 points	5(five) (F)
			51 to 60 points	6(six) (E)
			61 to 70 points	7 (seven) (D)
			71 to 80 points	8 (eight) (C)
			81 to 90 points	9 (nine) (B)
			91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam		60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending to lectures and discussions	
20.	Language of teaching / study		Macedonian	
21.	Method of monitoring the quality of teaching		Self-evaluation	

22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.	Slavco Cvetkov	Machines and tools for plastic processing - script	UGD-Stip Mechanical faculty-Vinica	2013
		2.				
		3.				
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year
		1.	J, Lazarev V, Strezov.	Machines and processing with deformation	Mechanical faculty, Skopje	1994
		2.	M. Jovičić, Lj. Tanović	Tools and equipment - Design and construction tools for making metal sheet parts	Mechanical faculty, Belgrade	2007

		3.	B. Musafija	Metal processing using plastic deformation	Svjetlost Sarajevo	2001
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Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course	Basics of internal combustion engines			
2.	Code	2MF109112			
3.	Study Program	Production Engineering			
4.	Organizer of the study program (unit or institute, Faculty, department)	University “Goce Delcev”- Stip, Faculty of Mechanical Engineering -Vinica			
5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	third / fifth	7.	Number of ECTS credits	5
8.	Professor (s)	Assi. Prof. Zlatko V. Sovreski, Ph.D			
9.	Requirements for enrollment the Course	No			
10.	Content of the course program: Introduction to basic Thermotechnical machines - steam boilers, thermal turbines, steam turbines, devices heating and air conditioning, refrigeration plants, internal combustion engines				
11.	Contents of the course program: Types of energy; energy sources; steam boilers; Heat balance and heat losses; Useful coefficient; construction of steam boilers; Thermal turbines and plants. Basic elements and classification steam turbines plants; Heating and cooling; ventilation plants; Refrigerating plants; Motor cycles in engines internal combustion				
12.	Learning methods: Lectures, Laboratory exercises, e-learning, individual and team projects, consultations.				
13.	Total available time	120 hours			
14.	Distribution of available time	2+1+1			

15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching		2	
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work		1	
16.	Other forms of studying activities	16.1.	Project tasks			
		16.2.	Individual tasks		1	
		16.3.	Home learning			
17.	Method of assessment					
	17.1.	Tests / oral exams			70 points	
	17.2.	Seminars (paper / project - presentation: written and/or oral)			10 points	
	17.3.	Activity and participation			20 points	
18.	Assessment Criteria (points / score)		up 50 points		5(five) (F)	
			51 to 60 points		6(six) (E)	
			61 to 70 points		7 (seven) (D)	
			71 to 80 points		8 (eight) (C)	
			81 to 90 points		9 (nine) (B)	
			91 to 100 points		10 (ten) (A)	
19.	Signature requirement and passing the final exam		60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions			
20.	Language of teaching / study		Macedonian			
21.	Method of monitoring the quality of teaching		Self-evaluation			
22.	Literature					
	22.1.	Required literature				
		Order	Author	Title		Publisher

		No.				
		1.	S. Armenski	Thermotechnical machinery and devices	University "Ss. Cyril and Methodius " Skopje	1995
		2.				
		3.				
	22.2.	Additional literature				
		Order No.	Author	Title	Publisher	Year
		1.	I. Petreski	Steam turbines	University "Ss. Cyril and Methodius " Skopje	2004
		2.	M. Dimitrovski	Engines internal combustion	University "Ss. Cyril and Methodius " Skopje	2001
		3.				

Annex No.3		Program of the Course - first cycle studies	
1.	Title of the Course	Metalcutting machines and devices	
2.	Code	2MF101312	
3.	Study Program	Production Engineering	
4.	Organizer of the study program (unit or institute, Faculty, department)	University Goce Delcev-Štip Faculty of Mechanical Engineering - Vinica Department of Production Engineering	

5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	Third year/ Sixth semester	7.	Number of credits	6
8.	Professor (s)	Assi. Prof. Slavco Cvetkov, Ph.D.			
9.	Requirements for enrollment the Course	Passed exam of Processing using cutting and plastic deformation			
10.	Purposes of the curriculum (competencies): Training to use processing machines for cutting (metalcutting machines) as well as design and construction of devices for metalcutting machines				
11.	Content of the course program: 1. Metalcutting machines. Basic parts (construction) of the metalcutting machines. Lathes, milling machines, cutting machines, boring mills, grinding machines (grinders), insertion machines, mill drill, machines for fine processing and processing centers. 2. Devices of metalcutting machines. Constriction devices, based on processed parts, elements and constriction mechanism, components. Universal assembling devices. Performing special construction of devices for metalcutting machines.				
12.	Learning methods: Lectures, exercises, individual work, practical classes, home learning, consultations.				
13.	Total available time		156 hours		
14.	Distribution of available time		2+2+1 / per week		
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching		2 hours
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work		2 hours
16.	Other forms of activities	16.1.	Project tasks		
		16.2.	Individual tasks		1 hours
		16.3.	Home learning		
17.	Method of assessment				
	17.1.	Tests / oral exams			70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)			10 points

	17.3.	Activity and participation	20 points	
18.	Assessment Criteria (points / score)		up 50 points	5(five) (F)
			51 to 60 points	6(six) (E)
			61 to 70 points	7 (seven) (D)
			71 to 80 points	8 (eight) (C)
			81 to 90 points	9 (nine) (B)
			91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam		60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions	
20.	Language of teaching / study		Macedonian	
21.	Method of monitoring the quality of teaching		Self-evaluation	

22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.	Slavco Cvetkov	Metalcutting machines and devices- script	UGD-Stip Mechanical faculty-Vinica	2011
		2.				
		3.				
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year
		1.	Slavco Cvetkov	Metalcutting machines and devices- script	UGD-Stip Mechanical faculty-Vinica	2011
		2.	Tanovic LJ., Jovicic M.	Tools and devices - design, calculation and construction of auxiliary equipment	Mechanical faculty Belgrade	2008
		3.				

Annex No.3		Program of the Course - first cycle studies				
1.	Title of the Course		Mechatronics			
2.	Code		2MF102612			
3.	Study Program		Production Engineering			
4.	Organizer of the study program (unit or institute, Faculty, department)		University “Goce Delcev”- Stip, Faculty of Mechanical Engineering -Vinica			
5.	Cycle (first, second and third cycle)		First cycle			
6.	Academic year / semester		Third/sixth	7.	Number of ECTS credits	4
8.	Professor (s)		Assi. Prof. Zlatko V.Sovreski, Ph.D			
9.	Requirements for enrollment the Course		No			
10.	Purposes of the curriculum (competencies): Introducing Mechatronics and mechatronic components to students					
11.	Contents of the course program: Introduction to Mechatronics; Collecting data; Sensors; Electric actuators systems; Mechanical actuators systems; Management Theory: modeling; Control Theory: analyses; robotic systems; Reliability concept of mechatronic Systems; research studies: CNC machines and robotic arm; design of mechatronic systems;					
12.	Learning methods: Lectures, Laboratory exercises, e-learning, individual and team projects, consultations.					
13.	Total available time			120		
14.	Distribution of available time			2+1+1		
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching		2	
		15.2.	theoretical and practical exercises,		1	

			e-exams, preparation of independent seminar work			
16.	Other forms of activities		16.1.	Project tasks		
			16.2.	Individual tasks	1	
			16.3.	Home learning		
17.	Method of assessment					
	17.1.	Tests / oral exams			70 points	
	17.2.	Seminars (paper / project - presentation: written and/or oral)			10 points	
	17.3.	Activity and participation			20 points	
18.	Assessment Criteria (points / score)		up 50 points		5(five) (F)	
			51 to 60 points		6(six) (E)	
			61 to 70 points		7 (seven) (D)	
			71 to 80 points		8 (eight) (C)	
			81 to 90 points		9 (nine) (B)	
			91 to 100 points		10 (ten) (A)	
19.	Signature requirement and passing the final exam		60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions			
20.	Language of teaching / study		Macedonian			
21.	Method of monitoring the quality of teaching		Self-evaluation			
22.	Literature					
	22.1.	Required literature				
		Order No.	Author	Title	Publisher	Year
		1.	Godfrej C.Onvubolu	Mechatronics - Principles and Applications	United King down,	2005
		2.				
		3.				

	22.2.	Additional literature				
		Order No.	Author	Title	Publisher	Year
		1.				
		2.				
		3.				

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course	Waste management			
2.	Code	2MF107212			
3.	Study Program	Production Engineering			
4.	Organizer of the study program (unit or institute, Faculty, department)	University Goce Delcev-Stip Faculty of mechanical engineering -Vinica			
5.	Cycle (first, second and third cycle)	1 st cycle			
6.	Academic year / semester	3 rd / 6 th	7.	Number of credits	4
8.	Professor (s)	Prof. Orce Spasovski, PhD			
9.	Requirements for enrollment the Course	none			
10.	Purposes of the curriculum (competencies): Students are introduced to the characteristics of the waste collection, transportation and recycling.				
11.	Content of the course program: Sources, properties and types of solid waste; Determination of physical, chemical and biological characteristics of the solid waste; Factors affecting the occurrence of solid waste; Waste collection and transport, handling, storage and solid waste compression; Dangerous radioactive wastes; medical waste; Solid waste recycling; Biological Treatment of solid Waste; thermal treatment of waste; burning and the use of heat, gasification and plasma				

	technique; Application of different methods of energy use during heat treatment; sanitary storage of waste.			
12.	Learning methods: Lecturing, exercises			
13.	Total available time		120	
14.	Distribution of available time		2+2+1 / per week	
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	2
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	1
16.	Other forms of studying activities	16.1.	Project tasks	hours
		16.2.	Individual tasks	1 hours
		16.3.	Home learning	hours
17.	Method of assessment			
	17.1.	Tests / oral exams		70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10 points
	17.3.	Activity and participation		20 points
18.	Assessment Criteria (points / score)		up 50 points	5(five) (F)
			51 to 60 points	6(six) (E)
			61 to 70 points	7 (seven) (D)
			71 to 80 points	8 (eight) (C)
			81 to 90 points	9 (nine) (B)
			91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam		60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions	
20.	Language of teaching / study		Macedonian	
21.	Method of monitoring the quality of teaching		Self-evaluation	

22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year
		1.	Ilik	Upravljanjem cvrstim otpadom	Institut za ispitivanje materijala Beograd	1998
		2.				
		3.				

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course	Welding and assembly			
2.	Code	2MF101412			
3.	Study Program	Production Engineering			
4.	Organizer of the study program (unit or institute, Faculty, department)	University “Goce Delcev”- Stip. Faculty of Mechanical Engineering -Vinica			
5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	third/ sixth	7.	Number of ECTS credits	6
8.	Professor (s)	Assi. Prof. Bratica Temelkoska, Ph.D			
9.	Requirements for enrollment the Course	No			
10.	Purposes of the curriculum (competencies): Students are introduced to the types of welding, technologies and their application				

11.	Content of the course program: Introduction to Welding Technology; Gas welding; arc welding; gas arc welding protection; arc welding; resistance welding, Special welding procedures; Related welding procedures: build-up welding, brazing, soldering; Procedures of merging new materials: welding composites, ceramic materials and plastics; Welding other metal materials. Structure and properties of metals. Structure of the welded junction; corrosion of welded junction. Heat treatment of the base fabric and welded junction; Installation of welded constructions.			
12.	Learning methods: Theory, practical teaching and auditory exercises			
13.	Total available time		156 hours	
14.	Distribution of available time		2+2+1	
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	2
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	2
16.	Other forms of activities	16.1.	Project tasks	
		16.2.	Individual tasks	1
		16.3.	Home learning	
17.	Method of assessment			
	17.1.	Tests / oral exams		70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10 points
	17.3.	Activity and participation		20 points
18.	Assessment Criteria (points / score)		up 50 points	5(five) (F)
			51 to 60 points	6(six) (E)
			61 to 70 points	7 (seven) (D)
			71 to 80 points	8 (eight) (C)
			81 to 90 points	9 (nine) (B)
			91 to 100 points	10 (ten) (A)

19.	Signature requirement and passing the final exam	60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions
20.	Language of teaching / study	Macedonian
21.	Method of monitoring the quality of teaching	Self-evaluation

22.	Literature				
	22.1	Required literature			
		Order No.	Author	Title	Publisher Year
		1.	B.Temelkoska	Merging materials-textbook	University "Goce Delcev"- Stip. Faculty of Mechanical Engineering - Vinica 2010
		2.			
		3.			
		Additional literature			
	22.2	Order No.	Author	Title	Publisher Year
		1.			
		2.			
		3.			

Annex No.3		Program of the Course - first cycle studies	
1.	Title of the Course	Hydraulic machinery and components	

2.	Code	2MF101512			
3.	Study Program	Production Engineering			
4.	Organizer of the study program (unit or institute, Faculty, department)	University "Goce Delcev" - Stip Faculty of Mechanical Engineering-Vinica			
5.	Cycle (first, second and third cycle)	first cycle			
6.	Academic year / semester	IV/VII semester	7.	Number of credits	8
8.	Professor (s)	Assi. Prof. Radomir Cvetanoski, Ph.D			
9.	Requirements for enrollment the Course	No			
10.	Purposes of the curriculum (competencies): Introduction to hydraulic machines and components, their characteristics, construction, and manner of application.				
11.	Content of the course program: 1.Working fluids and their characteristics; Hydraulic volume machines. Gear pumps and hydraulic motors; Vane and radial piston pumps and hydraulic motors; Axial-priston pumps and hydraulic motors. Low-speed hydraulic motors; Hydraulic cylinders; Check and push valves; Hydraulic distributors; flow regulators. Proportional and servo hydraulics; Hydraulic accumulators and filters; Additional equipment and accessories for hydraulic systems; Tech connecting and bonding. Hydraulic aggregates; Designing of hydraulic systems. 2. Examples of systems with hydraulic machines and components; Selection and influence of working fluid operation on the hydraulic system; Calculation of fluid compressibility module; Calculation and selection of pump; Calculation and celection of hydraulic motorr and cylinder; Construction and application of Grants and push valves; Construction and application of deployed valves; Calculation, selection and manner of installation of the hydraulic accumulator system; Calculation and design of hydraulic aggregate; Calculation of hydraulic systems; Performance of hydraulic systems.				
12.	Learning methods: Lectures with presentations through slides, exercises, independent elaboration and defense of the project task				
13.	Total available time		216 hours		
14.	Distribution of available time		3+2+2/ per week		
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching		3

		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	2
16.	Other forms of activities	16.1.	Project tasks	1 hours
		16.2.	Individual tasks	1 hours
		16.3.	Home learning	hours
17.	Method of assessment			
	17.1.	Tests / oral exams		70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10 points
	17.3.	Activity and participation		20 points
18.	Assessment Criteria (points / score)	up 50 points		5(five) (F)
		51 to 60 points		6(six) (E)
		61 to 70 points		7 (seven) (D)
		71 to 80 points		8 (eight) (C)
		81 to 90 points		9 (nine) (B)
		91 to 100 points		10 (ten) (A)
19.	Signature requirement and passing the final exam		60% success from all pre-exma activities i.e. 42 points from two mid-term exams , seminar paper, attendance of lectures and exercises	
20.	Language of teaching / study		Macedonian language	
21.	Method of monitoring the quality of teaching		Self-evaluation	

22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.	Zvonimir Kostic	Hydraulic machinery and equipment-script	Mechanical Engineering - Skopje	
		2.				
		3.				

	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year
		1.	John Cundiff	Fluid Power Circuits and Controls	CRC Press	2002
		2.				
		3.				

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course	Heating, air conditioning and heat systems			
2.	Code	2MF101612			
3.	Study Program	Production Engineering			
4.	Organizer of the study program (unit or institute, Faculty, department)	University "Goce Delcev" - Stip Faculty of Mechanical Engineering-Vinica			
5.	Cycle (first, second and third cycle)	first cycle studies			
6.	Academic year / semester	IV/VII semester	7.	Number of credits	8
8.	Professor (s)	Assi. Prof. Radomir Cvetanoski, Ph.D			
9.	Requirements for enrollment the Course	No			
10.	Purposes of the curriculum (competencies): Operation and basic design principles of the elements of heating and air conditioning systems.				
11.	Content of the course program: 13. Introductory lecture.Bases of calculation of heat transfer systems.Bases. Classification of heating systems.Local heating.Central heating devices. Kettles Pipe network and heating elements.Systems. Water heating.Central heating.Panel heating. Air heaters and ventilation.Air-conditioning				

12.	Learning methods: Lectures with presentations through slides, exercises, independent elaboration and defense of the project task			
13.	Total available time		216 hours	
14.	Distribution of available time		3+2+2 / per week	
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	3
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	2
16.	Other forms of activities	16.1.	Project tasks	1 hours
		16.2.	Individual tasks	1 hours
		16.3.	Home learning	hours
17.	Method of assessment			
	17.1.	Tests / oral exams		70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10 points
	17.3.	Activity and participation		20 points
18.	Assessment Criteria (points / score)		up 50 points	5(five) (F)
			51 to 60 points	6(six) (E)
			61 to 70 points	7 (seven) (D)
			71 to 80 points	8 (eight) (C)
			81 to 90 points	9 (nine) (B)
			91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam		60% success from all pre-exam activities i.e. 42 points from two mid-term exams , seminar paper, attendance of lectures and exercises	
20.	Language of teaching / study		Macedonian language	
21.	Method of monitoring the quality of teaching		Self-evaluation	

22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.	S. Armenski	Termotehnick machinery and equipment	UKIM	1995
		2.				
		3.				
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year
		1.	S.J.Zrnic	Heating and Air Conditioning	Beograd	1978
		2.	M. Radonic	Heating and ventilation	Beograd	1976
		3.				

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course	Basics of automatic control			
2.	Code	2MF101712			
3.	Study Program	Production Engineering			
4.	Organizer of the study program (unit or institute, Faculty, department)	University Goce Delcev -Stip Faculty of Mechanical engineering, Vinica Department of Production Engineering			
5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	fourth/seventh	7.	Number of credits	6
8.	Professor (s)	Assi. Prof. Saso Gelev, Ph.D.			
9.	Requirements for enrollment the Course	No			
10.	Purposes of the curriculum (competencies):	Students are introduced to the basics of Automation and Automatic Control.			

11.	1.Content of the course program: 1.Introduction. Introduction to the basic concepts of Automatic Control 2.Mathematical models of physical systems 3.Time turnout. Linearization 4.Laplace transformation and its application 5.Stability of systems 6.Presentation of systems with block diagrams 7.Reviewing of specific examples 8.Constant of the error. Sensitivity of the systems 9. Analysis of linear systems with Nykvist method 10.Analysis of linear systems with method of traces of roots. Analysis of second-order systems 11. Synthesis of linear systems using the method of traces of roots 12. Analysis of systems with Bode method.			
12.	Learning methods: Lectures, e-learning, individual and team projects, consultations.			
13.	Total available time		156	
14.	Distribution of available time		2+2+1 / per week	
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	2
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	2
16.	Other forms of activities	16.1.	Project tasks	
		16.2.	Individual tasks	1
		16.3.	Home learning	
17.	Method of assessment			
	17.1.	Tests / oral exams		70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10 points
	17.3.	Activity and participation		20 points
18.	Assessment Criteria (points / score)		up 50 points	5(five) (F)
			51 to 60 points	6(six) (E)
			61 to 70 points	7 (seven) (D)
			71 to 80 points	8 (eight) (C)
			81 to 90 points	9 (nine) (B)
			91 to 100 points	10 (ten) (A)

19.	Signature requirement and passing the final exam	60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions
20.	Language of teaching / study	Macedonian
21.	Method of monitoring the quality of teaching	Self-evaluation

22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.	Panoski S.	Automatic Control Systems	Uni."Sv. Kliment Ohridski" Bitola	2008
		2.				
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year
		1.	V.Bulat, Z.Gavric	Automatic control	Faculty of Mechanical Engineering Belgrade	1981

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course	Design of technological processes			
2.	Code	2MF102712			
3.	Study Program	Production Engineering			
4.	Organizer of the study program (unit or institute, Faculty, department)	University Goce Delcev-Stip Faculty of Mechanical Engineering - Vinica Department of Production Engineering			
5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	Fourth/ Seventh semester	7.	Number of credits	4
8.	Professor (s)	Assi. Prof. Slavco Cvetkov, Ph.D			

9.	Requirements for enrollment the Course	1.Processing using cutting and plastic deformation, 2.Metalcutting machines and devices and 3.Machines and tools for plastic deformation		
10.	Purposes of the curriculum (competencies): Training for designing technological processes for processing metals using grinding			
11.	Content of the course program: Basics of design of technological processes (TP): Systems and processes in machine construction, forms of production and characteristics of the TP, technological preparation of production. Design of the TP: designing and designer’s tasks, basic cases, principles and methods for designing the TP. Conventional designing of the TP: designing of separate TP, content of the project, the technological analysis of the technical drawing and construction, starting material, drawing of starting materials, supplements and methods for defining them, choosing technological bases, defining the order of operations, designing the TP and control of quality, designing TP by types and groups. Automatic designing of the TP. Basics of automatic designing, systems and design of TP, mathematical models, technological unification, the iteration methods for designing the TP. Techno-economic assessment of the TP: Time needed for the execution of the process, time funds, defining the necessary number of processed systems (OS) and the number of workers, designing scheme for the preparation of the OS. Technological documentation.			
12.	Learning methods: Lectures, exercises, individual work, practical classes, home learning, consultations.			
13.	Total available time		120 hours	
14.	Distribution of available time		2+1+1 / per week	
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	2 hours
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	1 hours
16.	Other forms of activities	16.1.	Project tasks	1 hours
		16.2.	Individual tasks	
		16.3.	Home learning	

17.	Method of assessment		
	17.1.	Tests / oral exams	70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)	10 points
	17.3.	Activity and participation	20 points
18.	Assessment Criteria (points / score)		up 50 points
			5(five) (F)
			51 to 60 points
			6(six) (E)
			61 to 70 points
			7 (seven) (D)
			71 to 80 points
			8 (eight) (C)
			81 to 90 points
			9 (nine) (B)
			91 to 100 points
			10 (ten) (A)
19.	Signature requirement and passing the final exam		60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions
20.	Language of teaching / study		Macedonian
21.	Method of monitoring the quality of teaching		Self-evaluation

22.	Literature				
	22.1.	Required literature			
		No.	Author	Title	Publisher
		1.	Slavco Cvetkov	Design of technological processes	UGD-Stip Mechanical faculty-Vinica
		2.			
		3.			
	22.2.	Additional literature			
		No.	Author	Title	Publisher
		1.	D. M. Nikolić	Design of technological processes using metalcutting	Mechanical faculty, Beograd

		2.	D. M. Nikolić	Design of technological processes using metalcutting	Mechanical faculty, Beograd	1997
		3.	K. Ruškovski, D. Jovanovski	Preparation of a manufacture	Mechanical faculty, Skopje	1982

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course	Programming of Computer Numerical Control (CNC) machines			
2.	Code	2MF102812			
3.	Study Program	Production Engineering			
4.	Organizer of the study program (unit or institute, Faculty, department)	University “Goce Delcev”- Stip. Faculty of Mechanical Engineering -Vinica			
5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	fourth/ seventh	7.	Number of credits	4
8.	Professor (s)	Assi. Prof. Slavco Cvetkov, Ph.D			
9.	Requirements for enrollment the Course	Attended course of: -Processing using cutting and plastic deformation -Metal cutting machines and devices			
10.	Purposes of the curriculum (competencies): Programming of numerically controlled machines				
11.	Content of the course program: Introduction. Basic features of CNC machines; Technological preparation for programming; Defining the coordinated system and zero point; Processing plan, tightening and repositioning; Determining the tools and modes of processing; Defining tolerances and constraints. Design of road (movements) of executive tools; Programming, programming cycles and subprograms; Simulation of work on the machine.				
12.	Learning methods: Lectures, Laboratory exercises, e-learning, individual and team projects, consultations.				
13.	Total available time	120 hours			
14.	Distribution of available time	2 +1 +1/ per week			

15.	Forms of teaching / learning activities		15.1.	lectures / theoretical - contact teaching, e-teaching	2 hours	
			15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	1 hours	
16.	Other forms of activities		16.1.	Project tasks		
			16.2.	Individual tasks	1 hour	
			16.3.	Home learning		
17.	Method of assessment					
	17.1.	Tests / oral exams			70	
	17.2.	Seminars (paper / project - presentation: written and/or oral)			10	
	17.3.	Activity and participation			20	
18.	Assessment Criteria (points / score)		to 50 points		5(five)(F)	
			from 51 to 60 points		6(six) (E)	
			from 61 to 70 points		7 (seven) (D)	
			from 71 to 80 points		8 (eight) (C)	
			from 81 to 90 points		9 (nine) (B)	
			from 91 to 100 points		10 (ten) (A)	
19.	Signature requirement and passing the final exam		60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions			
20.	Language of teaching / study		Macedonian			
21.	Method of monitoring the quality of teaching		Self-evaluation			
22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.	P. Bojanic, R. Puzovic	Production systems APT-language programming	Mechanical faculty Beograd	2010

				numerically controlled machine tools		
		2.				
		3.				
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year
		1.	Manic M Spasic D	Numerically controlled machines	Mechanical faculty -Nis	1999
		2.	Smid P	CNC Programing Handbook	Industrial Press	2003
		3.				

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course	Modelling and simulations			
2.	Code	2MF102912			
3.	Study Program	Production Engineering			
4.	Organizer of the study program (unit or institute, Faculty, department)	University “Goce Delcev”- Stip. Faculty of Mechanical Engineering -Vinica			
5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	fourth/ seventh	7.	Number of credits	4
8.	Professor (s)	Assi. Prof. Simeon Simeonov, Ph.D			
9.	Requirements for enrollment the Course	No			
10.	Purposes of the curriculum (competencies): Students are introduced to the procedure of modelling and simulation				
11.	Content of the course program:				

	Introduction; Models, creating a model, types of models; Types of simulations, principles and application areas; Random numbers; Verification of the model; Validation; Analysis of the results; technique of simulating;			
12.	Learning methods: Lectures, Laboratory exercises, e-learning, individual and team projects, consultations.			
13.	Total available time		120 hours	
14.	Distribution of available time		2 +1 +1/ per week	
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	2 hours
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	1 hours
16.	Other forms of activities	16.1.	Project tasks	
		16.2.	Individual tasks	1 hour
		16.3.	Home learning	
17.	Method of assessment			
	17.1.	Tests / oral exams		70
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10
	17.3.	Activity and participation		20
18.	Assessment Criteria (points / score)		to 50 points	5(five)(F)
			from 51 to 60 points	6(six) (E)
			from 61 to 70 points	7 (seven) (D)
			from 71 to 80 points	8 (eight) (C)
			from 81 to 90 points	9 (nine) (B)
			from 91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam		60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions	
20.	Language of teaching / study		Macedonian	

21.	Method of monitoring the quality of teaching			Self-evaluation		
22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.	S.Simeonov	Industrial modelling (peer reviewed script)	UGD -Stip	2013
		2.	S.Simeonov	Simulations of processes in mechanical engineering (peer reviewed script)	UGD -Stip	2013
		3.				
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year
		1.	Christopher A. Chung	Simulation modelling handbook		2004
		2.	Antic D., Donkovic B.	Modelling and simulation of dynamic systems	University in Nis	
		3.				

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course	Industrial Ventilation			
2.	Code	2MF103012			
3.	Study Program	Production Engineering			
4.	Organizer of the study program (unit or institute, Faculty, department)	University "Goce Delcev" - Stip Faculty of Mechanical Engineering-Vinica			
5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	IV/ VII semester	7.	Number of credits	4
8.	Professor (s)	Assistant Professor Dejan Mirakovski, PhD			
9.	Requirements for enrollment the Course	Enrolled semester			

10.	Purposes of the curriculum (competencies): Introduction to the ventilation systems, design, calculation and regulation of ventilation systems			
11.	Content of the course program: <ol style="list-style-type: none"> 1. Introduction 2. Ventilation Principles 3. Natural Ventilation 4. Artificial Ventilation 5. Local ventilation systems 6. General Industrial Ventilation 7. Microclimate conditions 8. Gases in working environment 9. Dust in working environment 10. Air purification systems 11. Dimensioning of channels 12. Cooling and Drying 			
12.	Learning methods: <ul style="list-style-type: none"> – Lectures, – theoretical and practical exercises, – e-teaching, – seminar paper – consultation 			
13.	Total available time		120 hours	
14.	Distribution of available time		2+2+1	
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	2
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	1
16.	Other forms of activities	16.1.	Project tasks	

		16.2.	Individual tasks	1
		16.3.	Home learning	
17.	Method of assessment			
	17.1.	Tests / oral exams		70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10 points
	17.3.	Activity and participation		20 points
18.	Assessment Criteria (points / score)		up 50 points	5(five) (F)
			51 to 60 points	6(six) (E)
			61 to 70 points	7 (seven) (D)
			71 to 80 points	8 (eight) (C)
			81 to 90 points	9 (nine) (B)
			91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam		60% success of all pre-exam activities i.e. 42 points from two mid-term exams , seminar work and presence of lectures and exercises	
20.	Language of teaching / study		Macedonian	
21.	Method of monitoring the quality of teaching		Self-evaluation	

22.	Literature				
22.1.	Required literature				
	No.	Author	Title	Publisher	Year
	1.	Dejan Mirakovski Marija Hadzi-Nikolova	Authorized lectures		
	2.	Howard D. Goodfellow	Industrial Ventilation Design Guidebook	University of Toronto, Canada	2002
	3.				
	22.2.	Additional literature			

		No.				
		1.	Howard D. Goodfellow Enco Tähti	Industrial Ventilation	University of Toronto, Canada	
		2.				
		3.				

Annex No.3		Program of the Course - first cycle studies			
1.	Title of the Course	Quality management			
2.	Code	2MF106612			
3.	Study Program	Production Engineering / Transport, Organization and Logistics			
4.	Organizer of the study program (unit or institute, Faculty, department)	University "Goce Delcev" - Stip Faculty of Mechanical Engineering-Vinica			
5.	Cycle (first, second and third cycle)	1 st cycle			
6.	Academic year / semester	4 th / 3 rd	7.	Number of credits	6
8.	Professor (s)	Professor Mikolaj Kuzinovski, PhD			
9.	Requirements for enrollment the Course	none			
10.	Purposes of the curriculum (competencies): Quality management in the modern organization. Customer loyalty. Creating a competitive market organizations. Role, importance and implementation of the ISO 9001 family of standards.				
11.	Content of the course program: 1. Introduction to quality management (quality as a strategic goal and utility organizations for competitiveness).				

	<div>2. Quality management system (general requirements related to the ISO 9001:2008 Quality Management System).</div> <div>3. Management responsibility (item 5 of the standard ISO 9001:2008).</div> <div>4. Resource management (item 6 of the standard ISO 9001:2008).</div> <div>5. Production (item 7.1, 7.2 and 7.3 of the standard ISO 9001:2008).</div> <div>6. Realization of the product (see section 7.4, 7.5 and 7.6 of the standard ISO 9001:2008).</div> <div>7. Measurement, analysis and improvement (item 8 of the standard ISO 9001:2008).</div> <div>8. Introducing the standard ISO 17025, competence of testing and calibration laboratories.</div> <div>9. Introduction to ISO 27001, Information Security Management Systems.</div> <div>10. Introduction to ISO 14001, Environmental Management.</div> <div>11. Introducing the standard OHSAS 18001 health and safety management.</div> <div>12. Introduction to ISO 22000 Food Safety Management System.</div>			
12.	Learning methods: Lecturing, exercises			
13.	Total available time		156	
14.	Distribution of available time		2+2+1 / per week	
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	2
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	2
16.	Other forms of studying activities	16.1.	Project tasks	hours
		16.2.	Individual tasks	1 hours
		16.3.	Home learning	hours
17.	Method of assessment			
	17.1.	Tests / oral exams		70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10 points

	17.3.	Activity and participation	20 points	
18.	Assessment Criteria (points / score)		up 50 points	5(five) (F)
			51 to 60 points	6(six) (E)
			61 to 70 points	7 (seven) (D)
			71 to 80 points	8 (eight) (C)
			81 to 90 points	9 (nine) (B)
			91 to 100 points	10 (ten) (A)
19.	Signature requirement and passing the final exam		60% of pre-exam activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions	
20.	Language of teaching / study		Macedonian	
21.	Method of monitoring the quality of teaching		Self-evaluation	

22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.	Standardization institute of RM	ISO 17025, ISO 27001, ISO 14001, ISO 22000, ISO 18001	ISRM	
		2.	Standardization institute of RM	Quality Management Systems – Requests (Identical to EN ISO 9001:2008)	ISRM	2010
		3.	Prof. d-r. Sc. Hrvoje Skoko	Upravljanje kvalitetom	Sinergija, Zagreb	2000
		4.	David Hoyle	Quality Systems Handbook (4th edition)	Butterworth-Heinemann, A member of the Reed Elsevier plc group	2001
	22.2.	Additional literature				
		No.	Author	Title	Publisher	Year

		1.				
		2.				
		3.				

Annex No.3		Program of the Course - first cycle studies				
1.	Title of the Course		Occupational Safety and Health			
2.	Code		2FP123212			
3.	Study Program		Production engineering			
4.	Organizer of the study program (unit or institute, Faculty, department)		University "Goce Delcev" - Stip Faculty of Mechanical Engineering-Vinica			
5.	Cycle (first, second and third cycle)		First cycle			
6.	Academic year / semester		IV VIII semester	7.	Number of credits	6
8.	Professor (s)		Assistant Professor Dejan Mirakovski, PhD			
9.	Requirements for enrollment the Course		Enrolled semester			
10.	Purposes of the curriculum (competencies): Introducing to the fundamental provisions of the Occupational Safety and Health Law, hazards and risks on the workplace.					
11.	Content of the course program: 1. Introduction 2. Legislation in the field of Occupational Safety and Health 3. Role of International Labour Organization 4. Occupational Risk Assessment 5. Ergonomics 6. Injuries at work, etiological factors for injuries and occupational diseases 7. Gasses in working environment 8. Dust and measurement methods of dust in the working environment 9. Fires, exogenous, endogenous fires, fire prevention and fire-fighting procedures 10. Explosions, explosive mixtures of gas and air, technical protection measures					

	11. Microclimate conditions, noise and vibrations in working environment			
	12. Personal Protective Equipment, Rescue services and plans for defense and rescue			
12.	Learning methods: <ul style="list-style-type: none">– Lectures,– theoretical and practical exercises,– e-teaching,– seminar work– consultation			
13.	Total available time		120 hours	
14.	Distribution of available time		2+1+1	
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	2
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	1
16.	Other forms of activities	16.1.	Project tasks	
		16.2.	Individual tasks	1
		16.3.	Home learning	
17.	Method of assessment			
	17.1.	Tests / oral exams		70 points
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10 points
	17.3.	Activity and participation		20 points
18.	Assessment Criteria (points / score)		up 50 points	5(five) (F)
			51 to 60 points	6(six) (E)
			61 to 70 points	7 (seven) (D)
			71 to 80 points	8 (eight) (C)
			81 to 90 points	9 (nine) (B)
			91 to 100 points	10 (ten) (A)

19.	Signature requirement and passing the final exam	60% success of all pre-exam activities i.e. 42 points from two mid-term exams , seminar work and presence on lectures and exercises
20.	Language of teaching / study	Macedonian
21.	Method of monitoring the quality of teaching	Self-evaluation

22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.	Dejan Mirakovski Marija Hadzi-Nikolova	Occupational Safety and Health ISBN 978-608-4504-98-6	University Goce Delcev	2012
		2.				
		3.				
		22.2.	Additional literature			
	No.		Author	Title	Publisher	Year
	1.		Bengamin O Ali	Fundamentals principles of Occupatinal Safety and Health	International Labour Office Geneva	2011
	2.					
	3.					

Annex No.3		Program of the Course - first cycle studies	
1.	Title of the Course	Computer Aided Manufacturing (CAM)	
2.	Code	2MF103112	
3.	Study Program	Production Engineering	
4.	Organizer of the study program (unit or institute, Faculty, department)	University "Goce Delcev"- Stip. Faculty of Mechanical Engineering -Vinica	

5.	Cycle (first, second and third cycle)	First cycle			
6.	Academic year / semester	fourth/ eighth	7.	Number of credits	4
8.	Professor (s)	Assi. Prof. Simeon Simeonov, Ph.D			
9.	Requirements for enrollment the Course	Attended course of: -CAD technology -Programming Numerically controlled machines (CNC)			
10.	Purposes of the curriculum (competencies): Students are introduced to making programs for management of manufacturing process, especifically with CNC machines				
11.	Content of the course program: Introduction; CAM basic knowledge; Geometric elements; Milling components; Modelling; Final operations; Turning; Processes of wire erosion.				
12.	Learning methods: Lectures, Laboratory exercises, e-learning, individual and team projects, consultations.				
13.	Total available time		120 hours		
14.	Distribution of available time		2 +1 +1/ per week		
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching	2 hours	
		15.2.	theoretical and practical exercises, e-exams, preparation of independent seminar work	1hours	
16.	Other forms of activities	16.1.	Project tasks		
		16.2.	Individual tasks	1 hour	
		16.3.	Home learning		
17.	Method of assessment				
	17.1.	Tests / oral exams			70
	17.2.	Seminars (paper / project - presentation: written and/or oral)			10
	17.3.	Activity and participation			20

18.	Assessment Criteria (points / score)	to 50 points		5(five)(F)		
		from 51 to 60 points		6(six) (E)		
		from 61 to 70 points		7 (seven) (D)		
		from 71 to 80 points		8 (eight) (C)		
		from 81 to 90 points		9 (nine) (B)		
		from 91 to 100 points		10 (ten) (A)		
19.	Signature requirement and passing the final exam	60% of pre-exma activities or minimum 42 points from 2 midterm exams, project activities and attending of lectures and discussions				
20.	Language of teaching / study	Macedonian				
21.	Method of monitoring the quality of teaching	Self-evaluation				
22.	Literature					
	22.1.	Required literature				
		No.	Author	Title	Publisher	Year
		1.	O. Karavasilev, K.Vasilev, I.Atanasov	Feature Cam (translation)	Delcam USA Технологика-ДиТра-Скопје	2009
		2.				
		3.				
		22.2.	Additional literature			
	No.		Author	Title	Publisher	Year
	1.		G.Devedzik	CAD/CAM technology	Mechanical faculty Kraguevac	2004
	2.					
	3.					

Annex No.3	Program of the Course - first/second/third cycle studies
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1.	Title of the Course		Energy Efficiency			
2.	Code		2MF103212			
3.	Study Program		Production Engineering			
4.	Organizer of the study program (unit or institute, Faculty, department)		University “Goce Delcev” - Stip Faculty of Mechanical Engineering -Vinica			
5.	Cycle (first, second and third cycle)		First cycle			
6.	Academic year / semester		4 year / semester 7	7.	Number of ECTS credits	4
8.	Professor (s)		Ass. Prof. Bratica Temelkoska, PhD			
9.	Requirements for enrollment the Course		No			
10.	Purposes of the curriculum (competencies): lintrroduction to types of energy, energy efficiency, energy efficiency modelling and management of energy efficiency.					
11.	Content of the course program: 1. Energy: Forms, features and sizes; energy conservation; energy sources; Energy; Energy Saving; In general for Energy Efficiency; Energy Efficiency in Buildings 2. Energy efficiency in industry; Energy efficiency in thermal power plants; Energy efficiency of non-conventional energy sources and facilities; Energy efficiency in transport; Modelling and analysis of energy efficient systems; Energy Management.					
12.	Learning methods: Lectures with slide presentations , exercises, independent elaboration and defense of the project task					
13.	Total available time			120 hours		
14.	Distribution of available time			2+1+1		
15.	Forms of teaching / learning activities	15.1.	lectures / theoretical - contact teaching, e-teaching		2	
		15.2.	theoretical and practical exercises,		1	

			e-exams, preparation of independent seminar work	
16.	Other forms of activities	16.1.	Project tasks	
		16.2.	Individual tasks	1
		16.3.	Home learning	
17.	Method of assessment			
	17.1.	Tests / oral exams		70points
	17.2.	Seminars (paper / project - presentation: written and/or oral)		10points
	17.3.	Activity and participation		20points
18.	Assessment Criteria (points / score)	up 50 points		5 (five) (F)
		51 to 60 points		6 (six) (E)
		61 to 70 points		7 (seven) (D)
		71 to 80 points		8 (eight) (C)
		81 to 90 points		9 (nine) (B)
		91 to 100 points		10 (ten) (A)
19.	Signature requirement and passing the final exam		60% success from all activities before exam i.e. 42 points from two mid-term exams, seminar paper, attendance of lectures and exercises	
20.	Language of teaching / study		Macedonian	
21.	Method of monitoring the quality of teaching		Self-evaluation	

22.	Literature				
	22.1	Required literature			
		Order No.	Author	Title	Publisher Year
		1.	D.Tashevski	energy Efficiency	Draft 2010
		2.			
		3.			
	22.2	Additional literature			

		Order No.	Author	Title	Publisher	Year
		1.	ENSI	Energy Efficiency in Buildings	ENSI- Norway	2006
		2.	D.R. Wulfinghoff	Energy efficiency	energy institute	1999
		3.				