



UNIVERSITY OF NOVI SAD

FACULTY OF TECHNICAL SCIENCES 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 6



Study Programme Accreditation

SPECIALISED ACADEMIC STUDIES

Energy Efficiency in Buildings

STUDY PROGRAMME ACCREDITATION MATERIAL:

ENERGY EFFICIENCY IN BUILDINGS

SPECIALISED ACADEMIC STUDIES

Novi Sad

2012.

Prevod sa srpskog jezika:

Jelisaveta Šafranj

Ivana Mirović

Marina Katić

Vesna Bodganović

Dragana Gak

Ličen Branislava



Content

<u>00. Introduction</u>	3
<u>01. Programme Structure</u>	4
<u>02. Programme Objectives</u>	5
<u>03. Programme Goals</u>	6
<u>04. Graduates` Competencies</u>	7
<u>05. Curriculum</u>	8
<u>Table 5.2 Course specification</u>	9
<u>Scientific Research Method</u>	9
<u>Energy Efficiency and Certification of Buildings</u>	10
<u>Energy Efficiency of Heating and Air Conditioning Systems</u>	11
<u>Renewable Energy in Civil Engineering</u>	12
<u>Bioclimatic Architecture</u>	13
<u>Contemporary recording methods of energy losses of buildings</u>	14
<u>Intelligent Buildings</u>	15
<u>Special topics of building physics and thermodynamics</u>	16
<u>Energy-efficient materials and diagnostic of building thermotechnical performances</u>	17
<u>The design of energy efficient buildings</u>	18
<u>Professional Practice</u>	19
<u>Specialist Thesis – Study and Research on Theoretical Bases</u>	20
<u>Specialist Thesis – Elaboration and Defence</u>	21
<u>Energy revitalization of buildings</u>	22
<u>Selected Chapters in Mathematics</u>	23
<u>The application of information technologies in energy efficiency</u>	25
<u>Lighting in Buildings</u>	26
<u>06. Programme Quality, Contemporaneity and International Compliance</u>	27
<u>07. Student Enrollment</u>	28
<u>08. Student Evaluation and Progress</u>	29
<u>09. Teaching Staff</u>	30
<u>Bjelaković M. Radivoje</u>	30
<u>9.1. Science, arts and professional qualifications</u>	30



Content

<u>Bjelaković M. Radivoje</u>	31
<u>Dragutinović D. Gordan</u>	32
<u>Đaković D. Damir</u>	34
<u>Folić J. Radomir</u>	36
<u>Gvozdenac Urošević D. Branka</u>	38
<u>Kovačević M. Ilija</u>	40
<u>Kovačević D. Aleksandar</u>	42
<u>Malešev M. Mirjana</u>	44
<u>Ninkov Đ. Toša</u>	46
<u>Oros V. Đura</u>	48
<u>Perišić R. Branko</u>	50
<u>Radeka M. Miroslava</u>	53
<u>Radonjanin S. Vlastimir</u>	54
<u>Ristanović R. Milan</u>	56
<u>Stankovski V. Stevan</u>	57
<u>Šumarac M. Dragoslav</u>	60
<u>Vukajlov D. Ljiljana</u>	61
<u>10. Organizational and Material Resources</u>	63
<u>11. Quality Control</u>	64
<u>12. Distance Education</u>	65



Study Programme Accreditation

SPECIALISED ACADEMIC STUDIES

Energy Efficiency in Buildings

Programme name	Energy Efficiency in Buildings
Independent higher education institution where the programme is being executed	University of Novi Sad
Higher education institution where the programme is being executed	Faculty of Technical Sciences
Educational-scientific/educational-art field	Interdisciplinary
Scientific, professional or art field	Energy Efficiency: Technical Sciences
Type of studies	Specialised Academic Studies
Study scope, expressed in ECTS	60
Academic degree, abbreviation	Specialist in Energy Efficiency in Buildings, Spec.Ener.Eff.Build.
Study length	1
Programme implementation starting year	2011
Future course implementation starting year (for new programme)	
Number of students attending this programme	0
Planned number of students to be enrolled in this programme	32
Programme approval date (state the approval issuer)	14.11.2012 - Science Education Council 29.11.2012 - University of Novi Sad Senate
Programme language	Serbian, English
Programme accreditation year	2011
Web address containing programme information	http://www.ftn.uns.ac.rs



Study Programme Accreditation

SPECIALISED ACADEMIC STUDIES

Energy Efficiency in Buildings

Standard 00. Introduction

Study program of specialized academic study "Energy Efficiency in Buildings" is a continuation of the study of the MA-academic studies in the field of civil engineering and architecture at the Faculty of Technical Sciences in Novi Sad. Three departments establish it: Department of Civil Engineering and Geodesy, Department of Architecture and the Department of Energy and Process Engineering.

Improving the energy efficiency of existing buildings and designing new energy-efficient buildings is one of the priorities of modern society. The main objectives of the strategy of energy efficiency is reducing energy consumption for heating and cooling of buildings, conservation of non-renewable energy sources and reducing carbon dioxide emissions. These goals can be achieved primarily by proper design and selecting appropriate materials for construction, taking into account local climatic conditions and the use of renewable energy sources.

Therefore, energy efficiency in buildings in terms of education should be viewed as a study program created in response to the practical needs. This program should enable students to further concretize the knowledge that is based on an understanding of the basic principles of energy efficiency in various fields of technology, acquire additional expertise in energy efficient buildings, acquire the ability to integrate knowledge, and also, to enable students to take part into research work.



Study Programme Accreditation

SPECIALISED ACADEMIC STUDIES

Energy Efficiency in Buildings

Standard 01. Programme Structure

The name of the study program of these specialized academic studies is "Energy Efficiency in Buildings". Acquired academic title is Specialist civil engineer - energy efficiency in buildings. The outcome of the learning process is the knowledge that enables students to use literature, the application of knowledge for problems that arise in the profession, and to ensure the continuation of the study if student decide to do so.

Requirements for admission to the program are completed Master studies with at least 300 ECTS, primarily in the field of civil engineering and architecture and passed the entrance exam. The entrance examination is in the form of knowledge test from the field of energy efficiency in buildings (maximum 60 points) and it is considered to be passed if the candidate achieves at least 14 points.

For specialized academic studies Energy Efficiency in Buildings, which last one year, classes are organized if there are enough students. If there are not enough candidates, classes are not organized or Faculty Management brings a special decision on the organization of teaching (mentoring students).

Classes are organized as mandatory and elective courses. Elective courses are selected from the group of proposed courses, but students have the opportunity to, according to own preferences and desires, choose a certain number of courses from FTS, UNS or any other university in the country or abroad, with the approval of the Head of the study program. In doing so, the courses should be selected to allow expansion of knowledge in areas that are directly or indirectly linked to the energy efficiency of buildings, while at the same time, conditions determined for attendance of selected courses must be satisfied.

Teaching is organized through lectures and exercises. During the teaching process, accent is placed on independent research student work, as well as increased students involvement in the learning process. Courses are conducted by using appropriate didactic materials with direct reference to the research trends in the subject area. Exercises, which follow the lectures, cover concrete problems and examples that further illustrate the material. On exercises is additionally explained material from the lectures. Exercises can be auditory, laboratory, informatical or calculus. Number of exercises can be performed in other institutions or on site.

Group size is determined depending on the nature of the exercises. Student obligations on exercises may include the writing of seminar papers and homework, project assignments, semester and graphic works, while every activity of students during the teaching process is monitored and evaluated according to the rules, which are adopted at the Faculty level. Number of points is expressed by a unique methodology and reflects student workload.

Each course carries a certain number of ECTS, and the entire study is considered complete when a student fulfill all obligations under the program of study, and when it accumulates at least 60 ECTS.



UNIVERSITY OF NOVI SAD

FACULTY OF TECHNICAL SCIENCES 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 6



Study Programme Accreditation

SPECIALISED ACADEMIC STUDIES

Energy Efficiency in Buildings

Standard 02. Programme Objectives

The purpose of the study program is to educate students for the profession of specialist engineers for the construction industry - energy efficiency in buildings, according to the needs of society.

Study program "Energy Efficiency in Buildings" is designed to ensure the acquisition of competencies that are socially justified and useful. The Faculty of Technical Sciences has defined specialized tasks and objectives to educate highly competent personnel in the field of technical sciences. The purpose of the study program "Energy Efficiency in Buildings" is fully consistent with specialized tasks and objectives of the Faculty of Technical Sciences.

With realization of this kind of study program are educated specialist engineers for energy efficiency in buildings with competence in the European and world scale.



Study Programme Accreditation

SPECIALISED ACADEMIC STUDIES

Energy Efficiency in Buildings

Standard 03. Programme Goals

The aim of the study program is to achieve competence and academic skills in the field of "Energy Efficiency in Buildings". This means, among other things, the development of creative abilities to consider the problem, critical thinking, developing skills, teamwork and mastery of specific practical skills needed for the profession.

The aim of the study program is to educate professionals who have profound knowledge sufficient in energy efficiency of buildings, applied to the field of sustainable architecture and construction, improving HVAC performance of buildings, the introduction of renewable energy sources for heating and cooling of building and automation of technical systems in buildings.

One of the specific objectives, consistent with the goals of education of experts on the Faculty of Technical Sciences, is to develop in students the awareness of the need for permanent education, the development of society and the environmental protection. The aim of the study is to educate students in the field of teamwork, and also to develop communicational and professional skills to present their results.



Study Programme Accreditation

SPECIALISED ACADEMIC STUDIES

Energy Efficiency in Buildings

Standard 04. Graduates` Competencies

Graduates of specialized academic study "Energy Efficiency in Buildings" are competent to deal with the real problems of practice and continue their education if they choose to do so. Competencies include, above all, the development of critical thinking skills, ability to analyze problems, synthesis solutions, predicting the behavior of the chosen solution with a clear idea of what is good and what is bad in the chosen solution.

Qualifications gained through completion of specialized academic studies have students that:

- Shows profound knowledge, understanding and skills in selected research fields of specialization, based on knowledge and skills acquired in graduate academic studies and research relevant to the given research fields of study;
- Are able to apply in-depth knowledge and skills acquired during specialist studies for successful solving of complex problems in new or unfamiliar conditions, in the research fields of study;
- Have an increased ability to link knowledge and solve complex problems and based on available information make conclusions that also include consideration of the social and ethical responsibilities linked to the application of their knowledge and judgments;
- Are able to effectively monitor and acquire new trends and research results in the field of specialization and in a clear and unambiguous manner present their conclusions, knowledge and reasoning process to professional and general public.

In terms of specific students skills, by mastering the program of specialized academic studies, students gain a thorough knowledge and understanding of all disciplines of study program, as well as the ability to solve practical problems with the use of scientific methods and procedures. Graduates of the study program "Energy Efficiency of Buildings" are able to properly write and to present the results of their work. During the study, it is insisted on the intensive use of modern laboratory and field equipment and related software.

Graduates of this level of study have competence to monitor the implementation and innovation in the profession, as well as to cooperate with local and international environment.

Students are able to analyze all the parameters of energy efficiency in buildings, to design energy-efficient buildings and to organize and manage the process of construction of such facilities. During courses, student gains the ability to independently perform experiments, statistical analysis of results, and to formulate and adopt appropriate conclusions.

Graduates of the study program "Energy Efficiency of Buildings" gain knowledge on how to cost-effectively use natural resources of the Republic of Serbia, in accordance with the principles of sustainable development.

Special attention is paid to the development of skills for teamwork and the development of professional ethics.



Study Programme Accreditation

SPECIALISED ACADEMIC STUDIES

Energy Efficiency in Buildings

Standard 05. Curriculum

Curriculum of specialized academic study "Energy Efficiency in Buildings" is formed to meet all of our goals. The structure of the study program is to provide elective courses with at least 30% of the credits.

Through elective courses, students meet their preferences, which crystallize during the study.

All courses last one semester and carry an appropriate number of ECTS credits, where one credit equals approximately 30 hours of student activities.

In the curriculum are defined descriptions of each course that contains the name, type of course and semester, the number of ECTS credits, name of the teacher, the course aims with appropriate outcomes, skills and competencies, prerequisites for attending the course, course content, suggested references, teaching methods, the method of assessment and evaluation, and other data.

The study program is compliant with the European standards in terms of admission requirements, length of study, graduation and modes of study.

An integral part of the curriculum "Energy Efficiency in Buildings" is a professional practice and practical work for 45 hours organized in the relevant scientific research institutions, organizations for innovation activities, in organizations for providing infrastructural support to innovation activities in companies and in public institutions.

A student finishes studies with specialist thesis that consists of theoretical and methodological preparation necessary for in-depth understanding of the area from which the specialist work is and with preparation of the specialist thesis.

Prior to the finalization of specialist thesis, the candidate takes exam on the theoretical and methodological foundations. The final grade of the thesis is based on the grade achieved on the theoretical and methodological part of the exam and grade of the thesis. Final thesis is defended before a committee consisting of at least three teachers, with at least one from another department or faculty.

	UNIVERSITY OF NOVI SAD FACULTY OF TECHNICAL SCIENCES 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 6	
	Study Programme Accreditation SPECIALISED ACADEMIC STUDIES Energy Efficiency in Buildings	

Table 5.2 Course specification

Course:		<h2 style="margin: 0;">Scientific Research Method</h2>				
Course id:	GS015					
Number of ECTS:	2					
Teacher:	Folić J. Radomir					
Course status:	Mandatory					
Number of active teaching classes (weekly)						
Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:		
3	0	0	0	0		
Precondition courses		None				
1. Educational goal: Educate students to successfully write research papers.						
2. Educational outcomes (acquired knowledge): <ul style="list-style-type: none"> - The ability to understand different scientific methods used in the scientific literature - Ability to successfully manage in the literature - Ability to successfully writing scientific papers in the field of interest - Ability to successfully design and completion of thesis 						
3. Course content/structure: The definition of science. The development of science throughout history. The methodology of scientific research. General and specific research methods. The structure of scientific work. Types of scientific results. Writing and publishing scientific work. Evaluation of scientific results.						
4. Teaching methods: Lectures. Consultation. Essay.						
Knowledge evaluation (maximum 100 points)						
Pre-examination obligations		Mandatory	Points	Final exam	Mandatory	Points
Term paper		Yes	50.00	Lecture attendance	Yes	10.00
Oral part of the exam					Yes	40.00
Literature						
Ord.	Author	Title		Publisher	Year	
1,	Karl Popper	Logika naučnog otkrića		Nolit, Beograd	1973	

	UNIVERSITY OF NOVI SAD FACULTY OF TECHNICAL SCIENCES 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 6	
	Study Programme Accreditation SPECIALISED ACADEMIC STUDIES Energy Efficiency in Buildings	

Table 5.2 Course specification

Course:		<h2 style="margin: 0;">Energy Efficiency and Certification of Buildings</h2>				
Course id:	GS001					
Number of ECTS:	5					
Teachers:	Šumarac M. Dragoslav, Radeka M. Miroslava					
Course status:	Mandatory					
Number of active teaching classes (weekly)						
Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:		
3	1	0	0	0		
Precondition courses		None				
1. Educational goal:						
Acquiring knowledge and skills necessary for the design and construction of energy efficient buildings.						
2. Educational outcomes (acquired knowledge):						
The gained knowledge will be used for the energy certification of buildings. Candidates will be trained in the analysis of urban and bioclimatic aspects of energy efficiency in buildings. Students will learn the methodology and calculation methods of energy use for heating and cooling of buildings, as well as methods of calculating emissions of CO ₂ .						
3. Course content/structure:						
EU Directive (ERVD in 2002. And 2010. G.). The experience of European countries. Architecture and urban planning aspects of the energy efficiency of buildings: site selection, building orientation, the influence of wind, greens (bioclimatic architecture). Energy gains: Trombus-Misel wall, skylights. The basic laws of thermodynamics. Heat conduction in bodies. Building physics. Methodology for calculating the energy needed for heating and cooling (SRPS EN ISO 13790). Examples of calculations for specific objects. Example of making of Elaborate energy efficiency for a specific plant. Example of passports of energy efficiency of a new or existing facility.						
4. Teaching methods:						
Lectures, laboratory exercises and auditory; Consultation.						
Exam (which includes all materials) consists of three homework assignments (work), seminar (tests) which represents the Study of energy efficiency of given the object and final exam. Students who do not pass the oral exam over homework and tests, take oral part of the examination. grading of exam is based on attendance of lectures and exercises, grades of homeworks and success in examinations.						
Knowledge evaluation (maximum 100 points)						
Pre-examination obligations		Mandatory	Points	Final exam	Mandatory	Points
Exercise attendance		Yes	5.00	Oral part of the exam	Yes	70.00
Lecture attendance		Yes	5.00			
Term paper		Yes	20.00			
Literature						
Ord.	Author	Title		Publisher	Year	
1,	4.D. Šumarac, M. Todorović, M. Đurović-Petrović. N. Trišović	„Energy efficiency of residential buildings in Serbia“		Thermal Science Vol.14, pp.97-113,	2010	
2,	D. Šumarac	Energetska efikasnost zgrada		Građevinski fakultet, Beograd	2005	

	UNIVERSITY OF NOVI SAD FACULTY OF TECHNICAL SCIENCES 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 6	
	Study Programme Accreditation SPECIALISED ACADEMIC STUDIES Energy Efficiency in Buildings	

Table 5.2 Course specification

Course:		<h2 style="margin: 0;">Energy Efficiency of Heating and Air Conditioning Systems</h2>				
Course id:	GS002					
Number of ECTS:	5					
Teacher:	Bjelaković M. Radivoje					
Course status:	Mandatory					
Number of active teaching classes (weekly)						
Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:		
3	1	0	0	0		
Precondition courses		None				
1. Educational goal:						
<p>Knowledge gain about thermal environment parameters, comfort conditions, district heating systems, air-conditioning and sanitary hot water, and also about calculation methodology of annual energy consumption needed for building technical systems operation.</p>						
2. Educational outcomes (acquired knowledge):						
<p>Gained knowledge is used in engineering practice. Student is competent for use of calculation methodology of energy needs for heating, cooling, air-conditioning and production of sanitary hot water, as well as for application of improvement measures of energy efficiency technical systems.</p>						
3. Course content/structure:						
<p>Thermal comfort: environment parameters, conditions of comfort, meteorological and climate conditions and solar radiation, project conditions. Heat transfer through building envelope: transmission, radiation and ventilation and air-conditioning; heat bridges, condensation appearance. District heating systems: system types, elements and additional equipment, central and local regulation of system operation, measurement of heat used for heating and calculation methods of annual needed heating energy. Systems of ventilation and air-conditioning: individual central devices for air preparation; elements and equipment of air and water air-conditioning systems, calculation of heat load and needed air flow for air-conditioning, protection of solar radiation during the summer periods. Systems of SHW preparation: project conditions and dynamic of SHW consumption, system losses; solar systems for SHW preparation. Annual energy consumption for cooling and air-conditioning: cooling heat and cooling machines, coefficient of energy efficiency, final and primary energy. Optimization of thermal systems operation: use of recovery heat, regeneration, recuperation, adiabatic cooling, passive cooling and night air-conditioning; maintenance and control of system operation.</p>						
4. Teaching methods:						
<p>Lectures; Laboratory and auditory exercises; Consultation. Exam (including the whole lecture material) is consisting of oral exam (theoretical and calculations). During the semester of course lectures, oral exam could be passed through two colloquiums. Students who did not pass oral exam through the colloquiums, are obliged to pass oral exam at exam periods. Course mark is formed on presence at lectures and exercises, mark of self example and success on colloquiums, i.e. the exam.</p>						
Knowledge evaluation (maximum 100 points)						
Pre-examination obligations		Mandatory	Points	Final exam	Mandatory	Points
Exercise attendance		Yes	5.00	Oral part of the exam	Yes	70.00
Lecture attendance		Yes	5.00			
Term paper		Yes	20.00			
Literature						
Ord.	Author	Title		Publisher	Year	
1,	B. Todorović	Projektovanje postrojenja za centralno grejanje		MF u Beogradu	2000	
2,	B. Todorović	Klimatizacija		SMEITS, Beograd	1998	
3,	M. Todorović	Energetska efikasnost sistema grejanja i klimatizacije, skripta sa predavanja i vežbi sa prilogom iz priručnika			2010	

	UNIVERSITY OF NOVI SAD FACULTY OF TECHNICAL SCIENCES 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 6	
	Study Programme Accreditation SPECIALISED ACADEMIC STUDIES Energy Efficiency in Buildings	

Table 5.2 Course specification

Course:		<h2>Renewable Energy in Civil Engineering</h2>				
Course id:	GS003					
Number of ECTS:	4					
Teachers:	Gvozdenac Urošević D. Branka, Bjelaković M. Radivoje					
Course status:	Mandatory					
Number of active teaching classes (weekly)						
Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:		
2	2	0	0	0		
Precondition courses		None				
1. Educational goal:						
Training to work on following tasks: design, construction, operation, engineering and consulting services for the use of renewable energy sources in building sector.						
2. Educational outcomes (acquired knowledge):						
Gaining of basic knowledge about renewable energy sources and its use in building sector. Using gained knowledge in further education and engineering practice.						
3. Course content/structure:						
Introductory considerations. Primary and secondary energy sources. Renewable energy types and energy resources, space requirements, regulations. Solar power, directly or indirectly, active and passive use of solar energy, the sanitary hot-water preparation and heating requirements for the building, budget and equipment selection. Ground and surface water, soil (horizontal and vertical heat exchangers), outside air, geothermal water: systems, calculation and equipment selection. Heat load facility, share of renewable energy in the building heat load. Heat pump, the principle of work, the coefficient of heat, monovalent and bivalent mode, the choice of a heat pump. Biomass, wind energy. Cost-benefit analysis of the use of renewable energy in construction, energy savings, investments, assessment of economic feasibility, examples of calculations.						
4. Teaching methods:						
Lectures, exercises, consultations, mentoring. Visits to facilities with systems developed for the use of renewable energy sources. Testing knowledge on oral examination. Rating exam is based on attendance of lectures and exercises, reviews of the project work and the oral exam success.						
Knowledge evaluation (maximum 100 points)						
Pre-examination obligations		Mandatory	Points	Final exam	Mandatory	Points
Exercise attendance		Yes	5.00	Theoretical part of the exam	Yes	70.00
Lecture attendance		Yes	5.00			
Term paper		Yes	20.00			
Literature						
Ord.	Author	Title		Publisher	Year	
1,	Čenejac, A.	Analiza mogućnosti nekonvencionalnih sistema grejanja za poboljšanje energetske efikasnosti građevinskih objekata		FTN Novi Sad	2010	
2,	Despotović, M., Babić, M	Energija biomase		Mašinski fakultet Kragujevac	2007	
3,	Fox, U	Betriebkosten-und Wirtschaftlichkeitsrechnungen für Anlagen der technischen Gebaudeusrüstung		VDI-Verlag GmbH, Düsseldorf	1980	
4,	Gvozdenac, D., Nakomčić-Smaradakis, B., Gvozdenac, B	Obnovljivi izvori energije		Fakultet tehničkih nauka Novi Sad	2010	
5,	Gygax, P	Sonnenenergie in Theorie und Praxis		Verlag C.F. Müller, Karlsruhe	1980	
6,	Todorović, B	Projektovanje postrojenja za centralno grejanje		Mašinski fakultet, Beograd,	2009	
7,	Šamšalović, S	Toplotna pumpa		SMEITS, Beograd,	2009	

	UNIVERSITY OF NOVI SAD FACULTY OF TECHNICAL SCIENCES 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 6	
	Study Programme Accreditation SPECIALISED ACADEMIC STUDIES Energy Efficiency in Buildings	

Table 5.2 Course specification

Course:		Bioclimatic Architecture				
Course id:	GS004					
Number of ECTS:	3					
Teacher:	Vukajlov D. Ljiljana					
Course status:	Mandatory					
Number of active teaching classes (weekly)						
Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:		
2	2	0	0	0		
Precondition courses		None				
1. Educational goal:						
Acquiring knowledge about basic bioclimatic conditions relevant for energy efficient building and landscaping, as well as to assess the utilization of natural conditions in the already developed areas.						
2. Educational outcomes (acquired knowledge):						
The knowledge gained is applicable to engineering practice. The student is capable the proper approach to the organization of space and shape of objects with respect to bio-climatic conditions. He is capable of evaluating the condition of existing buildings in terms of application of bioclimatic conditions, and also has knowledge and giving guidance and suggestions for future interventions.						
3. Course content/structure:						
Natural forces such factor in the development and organization of space. Bio climatic parameters as a factor in the development of the settlements. Climatic conditions of the area. Micro climatic conditions as a result of the spatial organization and structure of the village. Interdependence and the need for harmonization of natural and man-made conditions. The choice of location and size of facilities (manufacturing, center, square, garden, residential building ...). Orientation of objects and surfaces. Criteria to build bio climatic principles. Criteria for evaluation of existing structures and surfaces in terms of bio-climatic conditions. Reconstruction of the space bio climatic aspects in order to create an energy efficient and rational structure and surface. Change of development, population density, levels, shapes and sizes of objects, setting protective green zone, quantitative and qualitative changes of space equipment ...						
4. Teaching methods:						
Lectures, graphic and auditory exercises; Consultation. During the semester in which hears the case, the exercises to prepare material for the final term study. Term paper covers two phases of work, both theoretical and practical part. After the completion of certain phases of work provides for the oral presentation of research results. At the end of the semester is taken and a written examination in the theoretical part of the material that is completing the class. The final grade in this course is based on regular attendance of lectures and exercises, reviews of the paper and oral presentations, as well as the written exam.						
Knowledge evaluation (maximum 100 points)						
Pre-examination obligations		Mandatory	Points	Final exam	Mandatory	Points
Exercise attendance		Yes	5.00	Test	Yes	30.00
Lecture attendance		Yes	5.00			
Project defence		Yes	20.00			
Term paper		Yes	40.00			
Literature						
Ord.	Author	Title		Publisher	Year	
1,	Pucar, M. Pajević, M. Jovanović-Popović, M.	Bioklimatsko planiranje i projektovanje		Zavet, Beograd	1994	
2,	Krnjetin, S.	Graditeljstvo i zaštita životne sredine		Prometej, Novi Sad	2001	
3,	Terzić, R	Bioizgradnja		Ekostan, Beograd	1997	

	UNIVERSITY OF NOVI SAD FACULTY OF TECHNICAL SCIENCES 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 6	
	Study Programme Accreditation SPECIALISED ACADEMIC STUDIES Energy Efficiency in Buildings	

Table 5.2 Course specification

Course:		<h2 style="margin: 0;">Contemporary recording methods of energy losses of buildings</h2>				
Course id:	GS005					
Number of ECTS:	3					
Teacher:	Ninkov Đ. Toša					
Course status:	Mandatory					
Number of active teaching classes (weekly)						
Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:		
2	0	2	0	0		
Precondition courses		None				
1. Educational goal:						
<p>Gaining knowledge about the basic aspects of the detection and quantification of energy losses of buildings and building up a database necessary for their recovery projects and rehabilitation.</p>						
2. Educational outcomes (acquired knowledge):						
<p>The knowledge gained is used in engineering practice. The student is competent to independently produced programs of identification and quantification of energy losses based on the use of satellite multispectral detection, air recording infrared sensors and mobile systems integrated GPS, inertial and thermal technologies and sensors. Students will be competent to independently create and use database objects energy loss in the process of recovery projects and the issuance of passports energy.</p>						
3. Course content/structure:						
<p>Subjects like basic principles of satellite remote sensing, computer processing of multispectral images with classifications. Case studies will be different satellite systems that are currently on the market. Content classification methods of satellite images and aerial thermal cameras performed during operation of the heating system in the urban areas will be determined the existence of energy losses and their quantification. The same methodology is used for data collection and recording video and thermal cameras integrated into the system with GPS technology and inertial systems (INS). The system is mobile (mounted on a vehicle or helicopter) and to collect a lot of information on the energy losses through the facade of objects and their parts. The technology of GPS and INS allows georeferencing losses for each object individually. These data can be organized according to the principles of Geographic Information Systems (GIS) and put at the disposal of the users in the process of project rehabilitation, reconstruction and development of energy passports of individual objects or large urban areas. The technologies of gathering and processing information on the energy losses of facilities for the urban complex will be illustrated by its applications to concrete examples.</p>						
4. Teaching methods:						
<p>Lectures; Laboratory exercises and auditory; Consultation. Prerequisites: 30% of points should be provided through the partial examination and obligatory tasks, during the teaching process. Exam (which includes all materials) consists of an oral part (theoretical and practical). During the semester in which hears the case, the oral exam can pass through two tests. The practical part of the exam will be taken in the examination periods. Students who do not pass the oral exam through tests, will have oral exams in examination periods. Rating exam is based on attendance of lectures and exercises, essay reviews and success in examinations, ie. examination.</p>						
Knowledge evaluation (maximum 100 points)						
Pre-examination obligations		Mandatory	Points	Final exam	Mandatory	Points
Exercise attendance		Yes	5.00	Coloquium exam	Yes	35.00
Lecture attendance		Yes	5.00	Theoretical part of the exam	Yes	35.00
Term paper		Yes	20.00			
Literature						
Ord.	Author	Title		Publisher	Year	
1,	T. Ninkov	GPS tehnologija i primena - predavanja			2010	
2,	T. Ninkov	Daljinska detekcija i primena - predavanja			2010	
3,	T. Ninkov	Lidar tehnologija i primena - predavanja			2010	
4,	T. Ninkov	GIS tehnologija i primena - predavanja			2010	

	UNIVERSITY OF NOVI SAD FACULTY OF TECHNICAL SCIENCES 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 6	
	Study Programme Accreditation SPECIALISED ACADEMIC STUDIES Energy Efficiency in Buildings	

Table 5.2 Course specification

Course:		Intelligent Buildings					
Course id:	GS006						
Number of ECTS:	3						
Teachers:	Ristanović R. Milan, Stankovski V. Stevan						
Course status:	Elective						
Number of active teaching classes (weekly)							
Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:			
2	0	1	0	0			
Precondition courses		None					
1. Educational goal: Introduce students to the concept of intelligent buildings, technical systems in modern buildings and technology management.							
2. Educational outcomes (acquired knowledge): The student is able to understand the technical subsystems in modern buildings, their configuration and mutual integration of electro-mechanical systems and control concepts. The knowledge is used in engineering practice.							
3. Course content/structure: The definition of intelligent buildings. Technological systems in intelligent buildings. Introduction to digital control systems, analogue / digital input / output values, sensors, actuators, digital controllers. Control algorithms and regulator adjustment. Computational Intelligence. Basic communication standards and their characteristics. Management in boiler rooms and mechanical rooms. Control of central heating systems, cooling and ventilation. Control of central air conditioning systems. The integration of electromechanical systems. Lighting and blinds control systems. Measuring energy consumption (smart networks). Monitoring and control systems.							
4. Teaching methods: Teaching is conducted through lectures and exercises. During the exercises the student is required to do practice-oriented tasks. Evaluation of knowledge is carried out through the subject project and the final exam. The requirement for taking the final exam is that the student must successfully complete the project. The final exam is in written form.							
Knowledge evaluation (maximum 100 points)							
Pre-examination obligations		Mandatory	Points	Final exam	Mandatory	Points	
Project		Yes	50.00	Written part of the exam - tasks and theory	Yes	50.00	
					Oral part of the exam	No	20.00
Literature							
Ord.	Author	Title		Publisher	Year		
1,	Shengwei Wang	Intelligent Buildings and Building Automation		Spon Press, New York,/eng>	2010		
2,	H. Merz, T. Hansemann, C. Huebner	Building Automation		Springer-Verlag, Berlin Heidelberg	2009		
3,	C.F. Mueller	Regelungs- und Steuerungstechnik in der Versorgungstechnik		???	2002		

	UNIVERSITY OF NOVI SAD FACULTY OF TECHNICAL SCIENCES 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 6	
	Study Programme Accreditation SPECIALISED ACADEMIC STUDIES Energy Efficiency in Buildings	

Table 5.2 Course specification

Course:		Special topics of building physics and thermodynamics				
Course id:	GS013					
Number of ECTS:	3					
Teachers:	Dragutinović D. Gordan, Radeka M. Miroslava					
Course status:	Elective					
Number of active teaching classes (weekly)						
Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:		
2	1	0	0	0		
Precondition courses		None				
1. Educational goal: The aim of the subject is to provide basic understanding of the main principles of thermodynamics and building physic.						
2. Educational outcomes (acquired knowledge): The students will be qualified for practical application of knowledge related to thermodynamics and building physics topics contained in other subjects as well as in calculation of energy efficiency.						
3. Course content/structure: The selected chapters from thermodynamics and building physics which enable analysis and designing of energy performance of buildings.						
4. Teaching methods: Lectures, consultations and exercises.						
Knowledge evaluation (maximum 100 points)						
Pre-examination obligations		Mandatory	Points	Final exam	Mandatory	Points
Exercise attendance		Yes	5.00	Oral part of the exam	Yes	70.00
Lecture attendance		Yes	5.00			
Project task		Yes	20.00			
Literature						
Ord.	Author	Title		Publisher	Year	
1,	Hens, H.	Building Physics – Heat, Air and Moisture: Fundamentals and Engineering Methods with Examples and Exercises		Ernst & Sohn, Germany	2007	
2,	Straube, J.F. and Burnett, E.F.P.	Building Science for Building Enclosures		Building Science Press Inc., Westford, Massachusetts	2005	
3,	Hutcheon, N.B. and Handegord, G.O.P.	Building Science for a Cold Climate		National Research Council of Canada, Ottawa	1995	
4,	Hagentoft, Carl-Eric	Introduction to Building Physics		Studentlitteratur AB	2001	

	UNIVERSITY OF NOVI SAD FACULTY OF TECHNICAL SCIENCES 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 6	
	Study Programme Accreditation SPECIALISED ACADEMIC STUDIES Energy Efficiency in Buildings	

Table 5.2 Course specification

Course:		Energy-efficient materials and diagnostic of building thermotechnical performances			
Course id:	GS009				
Number of ECTS:	3				
Teachers:	Malešev M. Mirjana, Radonjanin S. Vlastimir				
Course status:	Mandatory				
Number of active teaching classes (weekly)					
Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:	
3	0	1	0	0	
Precondition courses		None			
1. Educational goal:					
<p>The goal of this course is to provide students with a fundamental understanding of the interdependence between the building envelope, environmental conditions within the building and energy performance of the building. The theoretical and physical mechanisms of heat conduction and diffusion of water vapor through the building envelope elements will be explained. The different types of building materials and their basic properties, the correct selection and qualitative evaluation of certain materials and structural systems will be studied. Students will learn the basic principles and features of field and laboratory equipment for testing the energy performance of buildings, as well as the basic properties of building materials.</p>					
2. Educational outcomes (acquired knowledge):					
<p>At the end of this course, students will be able, on the basis of analysis of properties of construction materials and the understanding of the physical processes that control the behavior of the building envelope, to choose the most energy efficient materials. By proper selection of the system for the building envelope (facades and external walls, roofs and roofing materials), students will be able to model the performance of thermotechnical performances of building in the design process of buildings. Based on the understanding of the basic principles of field and laboratory equipment, students will be able to perform field tests and measurements, to analyze and interpret the results and to diagnose the energy performance of buildings.</p>					
3. Course content/structure:					
<p>Basic physical and mechanical properties of building materials, which are important for building thermotechnical performances, their functionality and durability. Classification of materials pertaining to their insulating properties, vapor permeability, bulk density, porosity, water absorption, frost resistance, etc.. Types of traditional building materials that can be used for building facades, exterior walls, floors, ceilings floors, roofing, etc.. Modern building materials and the analysis of their properties, with emphasis on their ability to improve the energy performance of buildings and their environmental suitability. Methods and laboratory and field equipment for the diagnosis of building thermotechnical performance.</p>					
4. Teaching methods:					
<p>In the lectures, through presentations using images, tables, charts, formulas and accompanying text, matter that is provided in the curriculum, will be explained. There should also be discussion in which all students are actively involved, as well as participation of representatives of manufacturers of building materials and equipment for field testing. In the laboratory exercises, students will actively participate in the study of basic properties of building materials and become familiar with the application and the capabilities of laboratory and field equipment for testing of energy performance of buildings.</p>					
Knowledge evaluation (maximum 100 points)					
Pre-examination obligations		Mandatory	Points	Final exam	
Laboratory exercise attendance		Yes	5.00	Oral part of the exam	Mandatory
Lecture attendance		Yes	5.00		Yes
Term paper		Yes	20.00		70.00
Literature					
Ord.	Author	Title		Publisher	Year
1,	John Straube and Eric Burnett	Building Science for Building Enclosures		Building Science Press Inc.	2005
2,	Thomas Herzog, Roland Krippner and Werner Lang	Façade Construction Manual		Birkhäuser	2004
3,	Ulrich Knaack, Tillman Klein, Marcel Bilow and Thomas Auer	Façades – Principles of Construction		Birkhäuser	2007
4,	Andrew Watts	Modern Construction Handbook		Springer	2004
5,	Radonjanin Vlastimir, Mirjana Malešev	Građevinski materijali za spoljni omotač zgrada		Predmetni nastavnici	2011

	UNIVERSITY OF NOVI SAD FACULTY OF TECHNICAL SCIENCES 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 6	
	Study Programme Accreditation SPECIALISED ACADEMIC STUDIES Energy Efficiency in Buildings	

Table 5.2 Course specification

Course:		<h2 style="margin: 0;">The design of energy efficient buildings</h2>			
Course id:	GS010				
Number of ECTS:	3				
Teachers:	Radonjanin S. Vlastimir, Malešev M. Mirjana				
Course status:	Mandatory				
Number of active teaching classes (weekly)					
Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:	
1	0	3	0	0	
Precondition courses		None			
1. Educational goal:					
<p>The goal of this course is to provide students with an understanding of the basic principles and methods of calculation of energy efficient buildings. The features of various software packages for the analysis of the energy performance of buildings and the practical solution of the problem of providing of energy efficient buildings will be explained.</p>					
2. Educational outcomes (acquired knowledge):					
<p>At the end of this course, students will be able to perform the necessary calculations of those properties and performance of buildings and equipment, some of which directly influence the energy efficiency of new buildings. For existing buildings, students will be able to calculate all the parameters, based on which they can evaluate their level of energy efficiency.</p>					
3. Course content/structure:					
<p>Design measures to ensure the energy efficiency of buildings. Calculation of heat transfer through the building envelope elements. Calculation of water vapor diffusion. Calculation of heat losses. Calculation of ventilation losses. Calculation of the economic feasibility of investing in additional thermal insulation of the building, as well as the use of renewable energy sources. Calculation of the achieved energy efficiency of the building.</p>					
4. Teaching methods:					
<p>In the lectures, the matters envisaged by the curriculum, will be explained. There should also be discussion in which all students are actively involved, as well as participation of representatives of companies that develop software for calculating the energy efficiency of buildings. In the computer exercises, students will learn about the capabilities of the various software packages for the design of energy efficient buildings.</p>					
Knowledge evaluation (maximum 100 points)					
Pre-examination obligations		Mandatory	Points	Final exam	
Computer exercise attendance		Yes	5.00	Oral part of the exam	
Lecture attendance		Yes	5.00	Mandatory	Points
Project		Yes	60.00	Yes	30.00
Literature					
Ord.	Author	Title		Publisher	Year
1,	Grupa autora	Priručnici za korišćenje softvera za proračun EE zgrada			2011
2,	Predmetni nastavnici	Projektovanje energetski efikasnih zgrada		skripta sa predavanja	2011

	UNIVERSITY OF NOVI SAD FACULTY OF TECHNICAL SCIENCES 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 6	
	Study Programme Accreditation SPECIALISED ACADEMIC STUDIES Energy Efficiency in Buildings	

Table 5.2 Course specification

Course:		Professional Practice				
Course id:	GSSP1					
Number of ECTS:	3					
Teachers:						
Course status:		Mandatory				
Number of active teaching classes (weekly)						
Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:		
0	0	0	0	3		
Precondition courses		None				
1. Educational goal:						
Gaining direct knowledge of the functioning and organization of companies and institutions engaged in business within the profession for which the student qualifies and the potential application of previously acquired knowledge into practice.						
2. Educational outcomes (acquired knowledge):						
Training students to apply previously acquired theoretical and technical knowledge to solve practical engineering problems specific to the selected companies or institutions. Introduce students to the activities of the selected companies or institutions, ways of doing business, management, and the place and role of engineers in their organizational structures.						
3. Course content/structure:						
It is formed for each candidate individually, in consultation with management of companies or institutions in which professional practice is carried out and in accordance with the needs of the profession for which the student qualifies.						
4. Teaching methods:						
Consultation and writing professional practice diary in which a student describes the activities and tasks completed during the internship.						
Knowledge evaluation (maximum 100 points)						
Pre-examination obligations		Mandatory	Points	Final exam	Mandatory	Points
Project		Yes	50.00	Presentation	Yes	20.00
				Oral part of the exam	Yes	30.00
Literature						
Ord.	Author	Title		Publisher	Year	
1,	Grupa autora	Dnevnicu stručne prakse		FTN	2011	

	UNIVERSITY OF NOVI SAD FACULTY OF TECHNICAL SCIENCES 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 6	
	Study Programme Accreditation SPECIALISED ACADEMIC STUDIES Energy Efficiency in Buildings	

Table 5.2 Course specification

Course:		Specialist Thesis – Study and Research on Theoretical Bases			
Course id:	GSSPR1				
Number of ECTS:	4				
Teachers:					
Course status:	Mandatory				
Number of active teaching classes (weekly)					
Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:	
0	0	0	7	0	
Precondition courses		None			
1. Educational goal:					
<p>The application of basic theoretical, methodological, scientific, technical and professional knowledge and application of methods to solve specific problems within the selected area. In this part of the thesis, student analyzes the problem and the complexity of its structure and based on the analysis, draws conclusions on the possible ways of solving it. Through analysis of literature, students are introduced to the methods intended for solving similar tasks and engineering practice in solving them. The aim of the activities of students in this part of the research is to acquire the necessary experience in solving complex problems and tasks and to use previously acquired knowledge into practice.</p>					
2. Educational outcomes (acquired knowledge):					
<p>Training students to independently apply previously acquired knowledge in various areas that have been previously studied, in order to review the structure of the given problem and its system analysis in order to draw conclusions on possible directions for its solving. Through the use of literature independently, students expand their knowledge of the chosen field and study of various methods and papers relating to similar issues. In this way, the students develop the ability to conduct analysis and identify problems within the given topic. Practical application of acquired knowledge in different areas develops the student's ability to look at the place and role of engineers in the chosen field, the need to cooperate with other professions and teamwork.</p>					
3. Course content/structure:					
<p>It is formed in accordance with the individual needs of the preparing of a thesis, its complexity and structure. Students analyze literature, perform the analysis in order to find solutions to specific task which is defined by specialist thesis. Part of teaching at the course is conducted through independent study research. Study work includes active monitoring of the knowledge of primary area of thesis, organization and conduction of experiments, numerical simulation and statistical analysis of data, writing and / or disclosure of paper at the conference of specific scientific areas to which thesis belongs.</p>					
4. Teaching methods:					
<p>Mentor of thesis prepares the task and submit it to the student. The student is required to work within the framework of the given topic, using literature proposed by the mentor. During the development of specialist thesis, a mentor can give students more guidance, refer to specific literature and further directed him to the production of quality specialist thesis. In the research study, the student consults with the mentor, and if necessary, with other teachers who are dealing with the topics of the field of thesis. Within a given topic, the student, if necessary, perform certain measurements, tests, surveys and other research, statistical analysis, if it is provided by specialist thesis task.</p>					
Knowledge evaluation (maximum 100 points)					
Pre-examination obligations		Mandatory	Points	Final exam	
Writing the education specialist thesis with		Yes	50.00	Education specialist thesis defence	
				Mandatory	Points
				Yes	50.00

	UNIVERSITY OF NOVI SAD FACULTY OF TECHNICAL SCIENCES 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 6	
	Study Programme Accreditation SPECIALISED ACADEMIC STUDIES Energy Efficiency in Buildings	

Table 5.2 Course specification

Course:		<h2 style="margin: 0;">Specialist Thesis – Elaboration and Defence</h2>					
Course id:	GSSPR2						
Number of ECTS:	16						
Teachers:							
Course status:	Mandatory						
Number of active teaching classes (weekly)							
Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:			
0	0	0	0	8			
Precondition courses		None					
<p>1. Educational goal:</p> <p>Acquiring knowledge about the structure and form of writing reports after completing analyzes and other activities implemented within the given topic of thesis. Through creating a thesis, students gain experience in writing papers within which it is necessary to describe the problem, the implemented methods and procedures and obtained results. By addition, the goal of writing and defending thesis is to develop the ability to prepare results of independent work in a suitable form, publicly present, as well as to respond to comments and questions about a given topic.</p>							
<p>2. Educational outcomes (acquired knowledge):</p> <p>Training students for a systematic approach to solve the given problem, implement analysis, application of acquired and acceptance knowledge from other areas in order to find a solution for given problem. Self-studying and solving tasks in the field of a given topic, students gain knowledge of the complexity of the problems of their profession. Through creating thesis, students gain some experience that can be applied in practice in solving the problems of their profession. Through preparation of the results for public defense, answers to questions and comments of the committee, student acquires the necessary experience on the way to present the results of independent or collective work.</p>							
<p>3. Course content/structure:</p> <p>Formed in accordance with the individual needs of the area that is covered by a given specialist thesis. Student in consultation with the supervisor makes specialist thesis in written form in accordance with the prescribed rules of the Faculty of Technical Sciences. Students prepare and defend a specialist thesis in consultation with the supervisor and in accordance with the prescribed rules and procedures.</p>							
<p>4. Teaching methods:</p> <p>During the development of specialist thesis, student consults with mentor and, if necessary, other teachers who deal with the subject area of the thesis. Student makes specialist thesis and then after being approved by the Commission for assessment, deliver hardcopy of the thesis to the Commission. Defense of the specialist thesis is public, and the student is required to answers to the questions and comments after the presentation.</p>							
Knowledge evaluation (maximum 100 points)							
Pre-examination obligations		Mandatory	Points	Final exam		Mandatory	Points
Writing the education specialist thesis with		Yes	50.00	Education specialist thesis defence		Yes	50.00

	UNIVERSITY OF NOVI SAD FACULTY OF TECHNICAL SCIENCES 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 6	
	Study Programme Accreditation SPECIALISED ACADEMIC STUDIES Energy Efficiency in Buildings	

Table 5.2 Course specification

Course:		<h2 style="margin: 0;">Energy revitalization of buildings</h2>				
Course id:	GS011					
Number of ECTS:	3					
Teachers:	Malešev M. Mirjana, Radonjanin S. Vlastimir					
Course status:	Elective					
Number of active teaching classes (weekly)						
Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:		
2	1	0	0	0		
Precondition courses		None				
1. Educational goal:						
<p>The aim of the course is that students understand the importance of improving the thermotechnical and other performance of existing buildings to increase their energy efficiency. Through this course, students need to acquire the necessary knowledge about available methods and materials for thermal rehabilitation of buildings and their energy for revitalization.</p>						
2. Educational outcomes (acquired knowledge):						
<p>Students will be able to analyze the current state of energy inefficient buildings to choose and design effective techno-economic measures for energy rehabilitation of buildings.</p>						
3. Course content/structure:						
<p>The analysis of the characteristic systems of the buildings in Serbia, in terms of the used materials and structural solutions. Methods for assessing the thermotechnical performance of existing buildings and defining their deficiencies. Thermal rehabilitation techniques for building, with techno-economic analysis of the achieved heat gains. Examples of executed energy revitalizations of buildings.</p>						
4. Teaching methods:						
<p>In the lectures, students will be introduced to a substance which is intended by the curriculum. In the discussion on certain classes all students will actively participate. In the auditory and computer exercises, practical examples will be shown, and then students will independently analyze the performance of existing buildings and will propose solutions for buildings energy revitalization.</p>						
Knowledge evaluation (maximum 100 points)						
Pre-examination obligations		Mandatory	Points	Final exam	Mandatory	Points
Exercise attendance		Yes	5.00	Oral part of the exam	Yes	70.00
Lecture attendance		Yes	5.00			
Term paper		Yes	20.00			
Literature						
Ord.	Author	Title		Publisher	Year	
1,	Oesterle, Lieb, Lutz, Heusler	Double-skin facades. Integrated Planning. Building Physics, Construction, Air-Conditioning, Economic Viability		Munich: Prestel	2001	
2,	Bülow-Hübe H	Energy-Efficient Window Systems: Effects on Energy Use and Daylight in Buildings		Division of Energy and Building Design, Department of Const.	2001	
3,	Heerwagen D	Passive and active environmental controls. Informing the schematic designing of buildings		McGraw Hill	2004	
4,	Ching F D K & Adams C.	Building Construction Illustrated		John Wiley & Sons	2000	

	UNIVERSITY OF NOVI SAD FACULTY OF TECHNICAL SCIENCES 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 6	
	Study Programme Accreditation SPECIALISED ACADEMIC STUDIES Energy Efficiency in Buildings	

Table 5.2 Course specification

Course:		Selected Chapters in Mathematics				
Course id:	GS012					
Number of ECTS:	3					
Teacher:	Kovačević M. Ilija					
Course status:	Elective					
Number of active teaching classes (weekly)						
Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:		
2	1	0	0	0		
Precondition courses		None				
1. Educational goal:						
<p>Enabling students for abstract thinking and acquisition of basic knowledge in the field of Probability, Mathematical Statistics and Numerical Mathematics. The course objective is to develop special way of thinking in students while studying mass phenomena in the field of Civil Engineering. The course has an application character, and therefore the importance is placed on the knowledge able to explain quantitative approach to the problem in the field of study. Besides, students are trained to use statistical software. The objective is to enable students to choose adequate statistical methods, to perform statistical analysis and to essentially justify it. This knowledge is the base for better understanding of the professional literature and for successful advancement in the studies.</p>						
2. Educational outcomes (acquired knowledge):						
<p>The student should use acquired knowledge in further education, and in the professional courses he/she should make and solve mathematical models using the knowledge acquired in this course. Mastering the theoretical knowledge in the field of probability and mathematical statistics studied in this course and skills of calculating and analyzing the calculated statistical indicators.</p>						
3. Course content/structure:						
<p>Theoretical lectures: Probability: Axioms of probability. Conditional probabilities. Bayesian formula. Random variable of discrete and continuous type. Random vector of discrete type and joint distribution. Conditional distribution. Transformation of random variables. Mathematical expectation. The variance and standard deviation. Moments. Covariance, coefficient of correlation. Conditional expectations. Large number laws. Central limit theorems. Correlation and regression; linear regression. Sample distribution, mean value and dispersion. Statistics: basic concepts. Population, sample. Statistics. Descriptive statistical analysis (basic concepts, data editing, tabular and graphical data representation, data analysis by descriptive statistics methods, software support for statistical analysis). Evaluation of unknown parameters (dot estimates: Method of moments and method of maximum likelihood. Interval estimates). Parametric and nonparametric hypotheses and tests of importance. Numerical solution of the linear equation systems: direct methods, iterative methods. Numerical solution of nonlinear equations. Numerical solution of the nonlinear equation systems. Interpolation and approximation: interpolation methods, mean square approximation, approximation using spline, spectral approximation. Numerical integration: Newton-Coates formulas, quadrature formulas of Gaussian type. Practical lectures (Practice): During the practice, adequate examples from the theoretical lectures are solved, thus practicing the presented knowledge and also contributing to the better understanding of the knowledge</p>						
4. Teaching methods:						
<p>Lectures; Numerical Computing and Computer Practice. Consultations. Lectures are combined. During the lectures, theoretical part of the course is presented followed by the typical examples for better understanding of the knowledge. During the practice, which accompanies lectures, typical problems are solved and the lectured knowledge is deepened. During computer practice, processing of obtained data is carried out by using the statistical software. Besides lectures and practice, consultations are held on a regular basis. A part of the course, which represents a logical whole, can be passed during the teaching process in the form of the following 2 modules (the first module: Probability and mathematical statistics; the second module: Numerical mathematics.)</p>						
Knowledge evaluation (maximum 100 points)						
Pre-examination obligations		Mandatory	Points	Final exam	Mandatory	Points
Exercise attendance		Yes	5.00	Final exam - part one	No	35.00
Lecture attendance		Yes	5.00	Final exam - part two	No	35.00
Term paper		Yes	20.00	Written part of the exam - tasks and theory	Yes	70.00
Literature						
Ord.	Author	Title		Publisher	Year	
1,	V.Jevremović, J.Mališić	Statističke metode u meteorologiji i inženjerstvu		Savezni hidrometeorološki zavod, Beograd	2002	
2,	M. Novković, B.Carić, I.Kovačević	Zbirka rešenih zadataka iz verovatnoće i statistike			2012	
3,	Ortega J. M., Rheinboldt W. C.	Iterative Solution of Nonlinear Equations in Several Variables		Academic Press, New York	1970	
4,	Radunović,D.	Numeričke metode		Gradjevinska knjiga, Beograd	1995	



UNIVERSITY OF NOVI SAD
FACULTY OF TECHNICAL SCIENCES 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 6



Study Programme Accreditation
SPECIALISED ACADEMIC STUDIES Energy Efficiency in Buildings

Literature				
Ord.	Author	Title	Publisher	Year
5,	Herceg, D. Krejić, N.	Numerička analiza	Stylos, Novi Sad	1997

	UNIVERSITY OF NOVI SAD FACULTY OF TECHNICAL SCIENCES 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 6	
	Study Programme Accreditation SPECIALISED ACADEMIC STUDIES Energy Efficiency in Buildings	

Table 5.2 Course specification

Course:		The application of information technologies in energy efficiency			
Course id:	GS014				
Number of ECTS:	3				
Teachers:	Kovačević D. Aleksandar, Perišić R. Branko				
Course status:	Elective				
Number of active teaching classes (weekly)					
Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:	
2	1	0	0	0	
Precondition courses		None			
1. Educational goal:					
<p>Gaining direct knowledge in the domain of Software engineering and Information Systems Design. Enabling the students to understand the impact of different software development methods in complex business information system development and the role of software in the enterprise architecture of business systems. The special accent is given to the team based and project based learning.</p>					
2. Educational outcomes (acquired knowledge):					
<p>After successful completion of the course students acquire knowledge and skill concerning the organization and functionality of business information systems, analysis of business systems and underlining business logic, business logic modelling, business data modelling in the domain of energy efficiency.</p>					
3. Course content/structure:					
<p>The definitions and types of business systems. Organizational structure and the levels of business systems organization. Object modeling of business systems. The fundamentals of business informatics, Hierarchy of business information systems. Subsystem and standards. Business information systems development methodologies. Encapsulation of business information systems. Reengineering and reverse engineering of complex business information systems.</p>					
4. Teaching methods:					
<p>The complete programme is delivered via time based project on energy efficiency standards implementation, development.</p>					
Knowledge evaluation (maximum 100 points)					
Pre-examination obligations		Mandatory	Points	Final exam	
				Mandatory	Points
Lecture attendance		Yes	10.00	Theoretical part of the exam	
Project		Yes	40.00	Practical part of the exam - tasks	
				Yes	30.00
Literature					
Ord.	Author	Title		Publisher	Year
1,	Branko Perišić	Poslovna informatika		elektronski udžbenik	2010
2,	G. Curtis, D. Cobham	Business Information Systems, 4th ed.		Prentice-Hall, London	2002

	UNIVERSITY OF NOVI SAD FACULTY OF TECHNICAL SCIENCES 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 6	
	Study Programme Accreditation SPECIALISED ACADEMIC STUDIES Energy Efficiency in Buildings	

Table 5.2 Course specification

Course:		Lighting in Buildings				
Course id:	GS016					
Number of ECTS:	3					
Teacher:	Oros V. Đura					
Course status:	Elective					
Number of active teaching classes (weekly)						
Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:		
2	2	0	0	0		
Precondition courses		None				
1. Educational goal:						
Getting basic knowledge related to the problem of functional and decorative lighting in buildings.						
2. Educational outcomes (acquired knowledge):						
<p>The emphasis of the course is placed on the internal functional lighting as well as energy efficiency light sources. Also, the basis of internal and external decorative lighting will be presented. Students will gain basic knowledge about the types of light sources, the adequacy of their use in different situations, mutual benefits and disadvantages, their basic technical parameters of light, energy efficiency and so on. By studying the international standard about lightning, students will learn about the regulations in the field of lighting in the area of building construction. Students will be trained in using modern software tools DIALux or similar software tool to quickly determine / verify the parameters of the indoor lightning and thus propose an adequate solution.</p>						
3. Course content/structure:						
<p>- The concept of light - the light source types (principle, Illumination parameters, advantages and disadvantages), - Energy efficiency of different light sources - Introduction to standards in the field of lighting (Illumination parameters are recommended for specific purposes and the types of buildings and premises) - Introduction DIALux software tool or similar software tools</p>						
4. Teaching methods:						
Lectures, exercises and semester work.						
Knowledge evaluation (maximum 100 points)						
Pre-examination obligations		Mandatory	Points	Final exam	Mandatory	Points
Exercise attendance		Yes	5.00	Written part of the exam - tasks and theory	Yes	50.00
Graphic paper		Yes	30.00			
Lecture attendance		Yes	5.00			
Test		Yes	10.00			
Literature						
Ord.	Author	Title		Publisher	Year	
1,	Miomir Kostić	Vodič kroz svet tehnike osvetljenja		Minel-Schreder	2000	
2,	Philips	Lightning manual		Philips Lighting	2003	
3,	DiaLux	DiaLux Manual		Dial GmbH	2011	



UNIVERSITY OF NOVI SAD

FACULTY OF TECHNICAL SCIENCES 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 6



Study Programme Accreditation

SPECIALISED ACADEMIC STUDIES

Energy Efficiency in Buildings

Standard 06. Programme Quality, Contemporaneity and International Compliance

The study program is consistent with the modern world scientific developments and the state in the profession, and is comparable with similar programs at foreign universities.

Study program "Energy Efficiency in Buildings", designed at given way, is a complete and comprehensive and provides to students the latest scientific and technical knowledge in this field.

Study program "Energy Efficiency in Buildings" is comparable and compatible with:

1. University of Stanford, Department of Civil & Environmental Engineering, "Sustainable Design & Construction", http://cee.stanford.edu/programs/construction/documents/CEM-DCI-DC_Curriculum.pdf
2. University of Hong Kong, Department of Architecture, "Building Energy Efficiency", <http://www.arch.hku.hk/research/beer/>
3. University of Colorado, Department of Civil, Environmental, and Architectural Engineering, "Energy Efficient Buildings" http://rasei.colorado.edu/index.php?id=348&pid=348&page=Energy_Efficient_Buildings&parent=64
4. Concordia University, Faculty of Engineering and Computer Science, Building, Civil and Environmental Engineering, "Energy Conversion, Building Science, Building Environment", <http://graduatestudies.concordia.ca/publications/graduatecalendar/current/encs/bcee.php>



UNIVERSITY OF NOVI SAD

FACULTY OF TECHNICAL SCIENCES 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 6



Study Programme Accreditation

SPECIALISED ACADEMIC STUDIES

Energy Efficiency in Buildings

Standard 07. Student Enrollment

In accordance with social needs and resources, Faculty of Technical Sciences every year admit a number of budgetary financed and self-financing students on the specialized studies "Energy Efficiency in Buildings". The number of students is defined by a special decision of Scientific and Academic Council of FTS. Selection of students and enrollment of candidates is based on success in previous studies and achieved success on the entrance exam, which is defined in the Regulations on student enrollment in courses.

Students from other programs of study as well as those with completed studies may enroll in this program. In doing so, the evaluation committee (consisting of the heads of all departments involved in the implementation of the program study) evaluate all the activities of candidates for admission based on recognized total score and determines whether a student can be enrolled in specialized studies. The activities can be recognized in full, or may be recognized in part (Commission may require appropriate amendment) or not recognized.



Study Programme Accreditation

SPECIALISED ACADEMIC STUDIES

Energy Efficiency in Buildings

Standard 08. Student Evaluation and Progress

Continuous monitoring of the students work and results during the course and the final exam forms the final grade on each of the courses of this program.

In accordance with the program of study, every course in a program has a certain number of ECTS credits, and student acquire a number of ECTS credits when successfully passes the exam.

ECTS credits is determined based on student workload while working on certain course and applied uniform methodology of Faculty of Technical Sciences, for all study programs. Student success in mastering a particular course is continuously monitored during classes and is expressed in points. The maximum number of points that student can achieve is 100.

Student gets points through the work during course, exam prerequisites and by completing and passing the exam. The minimum number of points that a student can earn by completing exam prerequisites during classes is 30 and the maximum 70.

Each course in the study program has a clear and published way to score points. Way of gaining points during the course involves a number of points that the student receives based on each type of activity during classes or completing given prerequisites and taking exams.

Overall success of students is expressed with grades, 5 (failed) to 10 (excellent). The grading is based on the student's total number of points earned by a completing exam prerequisites and passing the exam, according to the quality of the acquired knowledge and skills.

In order to take the exam, student has to collect at least 15 ECTS from exam prerequisites during the semester. The additional requirements for the exam are defined separately for each course.

Progress of the student during program is defined by the rules of study.

**Study Programme Accreditation**

SPECIALISED ACADEMIC STUDIES

Energy Efficiency in Buildings

Standard 09. Teaching Staff

For the realization of the study program "Energy Efficiency in Buildings" are provided the teachers with the necessary professional and academic qualifications.

Number of teachers meets the needs of the study program and depends on the number of courses and the number of hours on these courses. The total number of teachers is sufficient to cover the total number of classes in the study program, so that the teacher achieves an average 180 hours per year (lectures, consultations, exercises, practical work ...), or 6 hours per week. Of the total number of teachers, more than 80% are full-time employed.

Number of associates meets the needs of the study program. The total number of associates on study program is sufficient to cover the total number of classes in this program, so that associates achieve an average of 300 hours of lectures per year and 10 hours per week.

Scientific and professional qualifications of the teaching staff are appropriate to the educational and scientific fields and their level of indebtedness. Every teacher has at least five references from specific scientific or technical fields in which teach in the study program.

Group size for the lecture is up to 32 students, group for exercises is up to 16 students and a group for laboratory exercises is to 8 students.

None of all teachers is loaded more than 12 hours per week. All data on teachers and associates (CV, elections in the title, references) are available to the public.

	UNIVERSITY OF NOVI SAD FACULTY OF TECHNICAL SCIENCES 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 6	
	Study Programme Accreditation SPECIALISED ACADEMIC STUDIES Energy Efficiency in Buildings	

Science, arts and professional qualifications

Name and last name:		Bjelaković M. Radivoje	
Academic title:		Full Professor	
Name of the institution where the teacher works full time and starting date:		Faculty of Technical Sciences - Novi Sad 25.09.1975	
Scientific or art field:		Thermal Energetics and Thermotechnics	
Academic carieer	Year	Institution	Field
Academic title election:	2004	Faculty of Technical Sciences - Novi Sad	Thermal Energetics and Thermotechnics
PhD thesis	1988	Faculty of Mechanical Engineering - Beograd	Thermal Energetics and Thermotechnics
Magister thesis	1982	Faculty of Technical Sciences - Novi Sad	Thermal Energetics and Thermotechnics
Bachelor's thesis	1972	Faculty of Mechanical Engineering - Beograd	Thermal Energetics and Thermotechnics
List of courses being held by the teacher in the accredited study programmes			
ID	Course name	Study programme name, study type	
1.	M3305 Heating, Ventilation and Air-Conditioning	(M30) Energy and Process Engineering, Undergraduate Academic Studies	
2.	Z412A Process apparatus for protecting the environment	(Z20) Environmental Engineering, Undergraduate Academic Studies	
3.	Z412 Procesni aparati za zaštitu okoline(uneti naziv na engleskom)	(Z20) Environmental Engineering, Undergraduate Academic Studies	
4.	M3048 Heating, Ventilation and Air-Conditioning	(ZC0) Clean Energy Technologies, Undergraduate Academic Studies	
5.	GS002 Energy Efficiency of Heating and Air Conditioning Systems	(G10) Energy Efficiency in Buildings, Specialised Academic Studies	
6.	GS003 Renewable Energy in Civil Engineering	(G10) Energy Efficiency in Buildings, Specialised Academic Studies	
7.	I070 Energy efficiency	(M50) Energy Management, Master Academic Studies	
8.	I939 Merenje, nadzor i upravljanje	(M50) Energy Management, Master Academic Studies	
9.	M3410 Unconventional systems for heating and cooling	(M30) Energy and Process Engineering, Master Academic Studies	
Representative references (minimum 5, not more than 10)			
1.	Supplement to the optimisation of district heating network for changeable hydraulic regimes,The Second word Congress on heating,ventilating,refrigerating and air conditioning-CLIMA 2000,Heating components and systems,PP 161-165,Sarajevo,1989.		
2.	Prilog odredjivanju optimalnih hidrauličkih parametara mreže daljinskog grejanja za promenljive protoke vode metodom dinamičkog programiranja,KGH,1/1194,s.25-28		
3.	Prilog odredjivanju optimalne raspodele raspoloživih napora mreže daljinskog grejanja sa više toplotnih izvora,KGH,1/1998,s.53-56.		
4.	Odredjivanje optimalnih gubitaka pritiska prstenaste mreže daljinskog grejanja,KGH,1/2000,s.75-80		
5.	Optimizacija mreže daljinskog grejanja,Fakultet tehničkih nauka,Novi Sad,2002.		
6.	Eksploatacija vrelvodnih mreža daljinskog grejanja sa više toplotnih izvora,Fakultet tehničkih nauka,Novi Sad,1981.		
7.	Odredjivanje optimalnih hidrauličkih parametara mreže daljinskog grejanja za promenljive režime,Mašinski fakultet, Beograd,1988.		
Summary data for teacher's scientific or art and professional activity:			
Quotation total :		0	
Total of SCI(SSCI) list papers :		0	
Current projects :		Domestic :	0 International : 0

	UNIVERSITY OF NOVI SAD FACULTY OF TECHNICAL SCIENCES 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 6	
	Study Programme Accreditation SPECIALISED ACADEMIC STUDIES Energy Efficiency in Buildings	

Science, arts and professional qualifications

Name and last name:	Dragutinović D. Gordan		
Academic title:	Associate Professor		
Name of the institution where the teacher works full time and starting date:	Faculty of Technical Sciences - Novi Sad 06.04.1980		
Scientific or art field:	Thermodynamics and Heat Transfer		
Academic career	Year	Institution	Field
Academic title election:	2010	Faculty of Technical Sciences - Novi Sad	Thermodynamics and Heat Transfer
PhD thesis	1987	Faculty of Technical Sciences - Novi Sad	Thermal Energetics and Thermotechnics
Magister thesis	1983	Faculty of Mechanical Engineering - Beograd	Thermal Energetics and Thermotechnics
Bachelor's thesis	1977	Faculty of Technical Sciences - Novi Sad	Thermal Energetics and Thermotechnics

List of courses being held by the teacher in the accredited study programmes

	ID	Course name	Study programme name, study type
1.	M203	Fundamentals of Thermodynamics	(Z01) Safety at Work, Undergraduate Academic Studies (ZC0) Clean Energy Technologies, Undergraduate Academic Studies (Z20) Environmental Engineering, Undergraduate Academic Studies
2.	M203L	Fundamentals in Thermodynamics	(M20) Mechanization and Construction Engineering, Undergraduate Academic Studies (M30) Energy and Process Engineering, Undergraduate Academic Studies (M40) Technical Mechanics and Technical Design, Undergraduate Academic Studies (MR0) Measurement and Control Engineering, Undergraduate Academic Studies (P00) Production Engineering, Undergraduate Academic Studies
3.	M210	Thermodynamics	(M30) Energy and Process Engineering, Undergraduate Academic Studies (M40) Technical Mechanics and Technical Design, Undergraduate Academic Studies
4.	M215	Fundamentals of Heat Transfer	(M30) Energy and Process Engineering, Undergraduate Academic Studies (M40) Technical Mechanics and Technical Design, Undergraduate Academic Studies (ZC0) Clean Energy Technologies, Undergraduate Academic Studies
5.	M3303	Fundamentals of Process Engineering	(M30) Energy and Process Engineering, Undergraduate Academic Studies
6.	URZP31	Fundamentals of Thermodynamics with Heat Transfer	(ZP0) Disaster Risk Management and Fire Safety, Undergraduate Academic Studies
7.	GS013	Special topics of building physics and thermodynamics	(G10) Energy Efficiency in Buildings, Specialised Academic Studies
8.	BMIM4A	Transport phenomena and Living systems	(BM0) Biomedical Engineering, Master Academic Studies
9.	M3508	Mass Transfer	(M30) Energy and Process Engineering, Master Academic Studies (M40) Technical Mechanics and Technical Design, Master Academic Studies
10.	DM307	Selected Chapters in Mass Transfer	(M00) Mechanical Engineering, Doctoral Academic Studies
11.	DM313	Process Kinetics	(M00) Mechanical Engineering, Doctoral Academic Studies

Representative references (minimum 5, not more than 10)

1.	Dragutinovic, G.D., Baclic, B.S. "Operation of Counterflow Regenerators", Book Vol. 4 in Series "Developments in Heat Transfer", Computational Mechanics Publications, Southampton, 1998.
2.	Baclic, B.S. and Dragutinovic, G.D., "Asymmetric-unbalanced Counterflow Thermal Regenerator Problem: Solution by the Galerkin Method and meaning of dimensional Parameters, Int. J. Heat Mass Transfer, Vol.34, No. 2, 1991, pp. 483-498.



UNIVERSITY OF NOVI SAD

FACULTY OF TECHNICAL SCIENCES 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 6

**Study Programme Accreditation**

SPECIALISED ACADEMIC STUDIES

Energy Efficiency in Buildings

Representative references (minimum 5, not more than 10)

3.	Dragutinovic, G.D., Baclic, B.S., "Interpolation and collocation methods for prediction of thermal regenerator performances", Thermal Science, Vol. 12, No. 4, 1996. pp. 307-327.
4.	Baclic, B.S., Heggs, P.J., and Dragutinovic, G.D., "Prediction of the Effectiveness of Unbalanced - Asymmetric Counterflow Regenerators", Publications of the Faculty of Technical Sciences, Vol. 15, 1984, pp. 1-15, University of Novi Sad.
5.	Baclic, B.S., Gvozdenac, D.D., and Dragutinovic, G.D., "Easy way to calculate the Amzelius-Schumann J function", Thermal Science, Vol. 1, No. 1, 1997, pp. 109-116.
6.	Dragutinović, D.G., Dimić, M., Sinteza optimalnih mreša toplotnih razmenjivača, Termotehnika, 1, 1998.
7.	Bašić, Đ., Petrović, J., Marić, M., Dragutinović, G., i dr., Mogućnost korišćenja energetskeg potencijala geotermalnih voda u Vojvodini, Novi Sad, Prometej, 2009
8.	Martinov, M., Dragutinović, G., i dr., Mogućnost kombinovane proizvodnje električne i toplotne energije iz biomase u AP Vojvodini, Novi Sad, PSEMR AP Vojvodina, 2008
9.	Nedeljkov, M., Dragutinović, G., Mathematical Simulation od Deep-Bed Drying of Grains - A numerical simulation, CHISA, Prag, avgust 1987
10.	Nedeljkov, M., Dragutinović, G., Mogućnosti i uslovi racionalizacije procesa konvektivnog sušenja zrnastih poljoprivrednih proizvoda, 7. simpozijum termičara, Ohrid, maj 1984.

Summary data for teacher's scientific or art and professional activity:

Quotation total :	11		
Total of SCI(SSCI) list papers :	2		
Current projects :	Domestic :	2	International : 0

	UNIVERSITY OF NOVI SAD FACULTY OF TECHNICAL SCIENCES 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 6	
	Study Programme Accreditation SPECIALISED ACADEMIC STUDIES Energy Efficiency in Buildings	

Science, arts and professional qualifications

Name and last name:		Đaković D. Damir	
Academic title:		Assistant Professor	
Name of the institution where the teacher works full time and starting date:		Faculty of Technical Sciences - Novi Sad 01.12.2001	
Scientific or art field:		Process Technics	
Academic carieer	Year	Institution	Field
Academic title election:	2012	Faculty of Technical Sciences - Novi Sad	Process Technics
PhD thesis	2011	Faculty of Technical Sciences - Novi Sad	Process Technics
Magister thesis	2007	Faculty of Technical Sciences - Novi Sad	Process Technics
Bachelor's thesis	2001	Faculty of Technical Sciences - Novi Sad	Mechanical Engineering
List of courses being held by the teacher in the accredited study programmes			
	ID	Course name	Study programme name, study type
1.	I079	Modern Energy Technologies	(M50) Energy Management, Master Academic Studies (ZC0) Clean Energy Technologies, Undergraduate Academic Studies
2.	M3303	Fundamentals of Process Engineering	(M30) Energy and Process Engineering, Undergraduate Academic Studies
3.	M3406	Heat Apparatus	(M30) Energy and Process Engineering, Undergraduate Academic Studies
4.	M3409A	Modern Energy Technologies	(M30) Energy and Process Engineering, Undergraduate Academic Studies
5.	M3507	Combustion Technology	(ZC0) Clean Energy Technologies, Undergraduate Academic Studies
6.	Z412A	Process apparatus for protecting the environment	(Z20) Environmental Engineering, Undergraduate Academic Studies
7.	Z412	Procesni aparati za zaštitu okoline(uneti naziv na engleskom)	(Z20) Environmental Engineering, Undergraduate Academic Studies
8.	M211	Measurement and Regulation	(M30) Energy and Process Engineering, Undergraduate Academic Studies (ZC0) Clean Energy Technologies, Undergraduate Academic Studies
9.	M3031	Engineering Calculations of Energy Technologies Apparatus and Equipment	(ZC0) Clean Energy Technologies, Undergraduate Academic Studies
10.	M3517	Construction in energy and process engineering	(M30) Energy and Process Engineering, Master Academic Studies (ZC0) Clean Energy Technologies, Undergraduate Academic Studies
11.	ZRI41A	Security and Safety at Work in Process Plants	(Z01) Safety at Work, Undergraduate Academic Studies
12.	I079	Modern Energy Technologies	(M50) Energy Management, Master Academic Studies (ZC0) Clean Energy Technologies, Undergraduate Academic Studies
13.	I915	Energy Transformations	(M30) Energy and Process Engineering, Master Academic Studies
14.	I916	Energy Management in Industry	(M50) Energy Management, Master Academic Studies
15.	GS002	Energy Efficiency of Heating and Air Conditioning Systems	(G10) Energy Efficiency in Buildings, Specialised Academic Studies
16.	I070	Energy efficiency	(M50) Energy Management, Master Academic Studies
17.	I915	Energy Transformations	(M50) Energy Management, Master Academic Studies
18.	M3503	Dinamika i modeliranje termoeenergetskih postrojenja(uneti naziv na engleskom)	(M30) Energy and Process Engineering, Master Academic Studies
19.	M3506	Drying Technique	(M30) Energy and Process Engineering, Master Academic Studies
20.	M3508	Mass Transfer	(M30) Energy and Process Engineering, Master Academic Studies (M40) Technical Mechanics and Technical Design, Master Academic Studies



Study Programme Accreditation

SPECIALISED ACADEMIC STUDIES

Energy Efficiency in Buildings

List of courses being held by the teacher in the accredited study programmes

ID	Course name	Study programme name, study type
21. M3515	Energy Systems	(M30) Energy and Process Engineering, Master Academic Studies (M50) Energy Management, Master Academic Studies
22. M3517	Construction in energy and process engineering	(M30) Energy and Process Engineering, Master Academic Studies (ZC0) Clean Energy Technologies, Undergraduate Academic Studies
23. DM307	Selected Chapters in Mass Transfer	(M00) Mechanical Engineering, Doctoral Academic Studies
24. DM313	Process Kinetics	(M00) Mechanical Engineering, Doctoral Academic Studies

Representative references (minimum 5, not more than 10)

1.	Đaković D.: Comments on 'Water sorption isotherms and thermodynamic properties of pearl millet grain', International Journal of Food Science and Technology, 2012, Vol. 47, No. 2, pp. 441-441, ISSN: 0950-5423.
2.	Spasojevic, M. D., Jankovic M.R., Djakovic D.D.: A New Approach to Entropy Production Minimization in Diabatic Distillation Column with Trays, Thermal Science, 2010, Vol. 14, No. 2, pp. 317-328, ISSN: 0354-9836.
3.	Djuric, S. N., Stanojevic, P. C., Djakovic, D. D., Jovic, A. M.: The Study on the Effect of Fractional Composition and Ash Particle Diameter on the Ash Collection Efficiency at the Electrostatic Precipitator, Chemical Industry & Chemical Engineering Quarterly, 2010, Vol. 16, No. 3, pp. 229-236, ISSN: 1451-9372.
4.	Anđelković A., Cvjetković T., Đaković D., Stojanović I.: Development of Simple Calculation Model for Energy Performance of Double Skin Façades, Thermal Science, 2012, Vol. 16, No Suppl 1, pp. 251-267, ISSN 0354-9836.
5.	Čenejac A., Bjelaković R., Anđelković A., Đaković D.: Covering of Heating Load of Object by Using ground heat as a Renewable Energy Source, Thermal Science, 2012, Vol. 16, No Suppl 1, pp. 225-235, ISSN 0354-9836
6.	Đaković D, Vujić G, Bašić Đ, Dimić M. "Several models of grain drying theory – principles and obstacles", PSU-UNS International Conference on Engineering and Environment - ICEE-2007, Phuket, Thailand: Prince of Songkla University, Faculty of Engineering, 10-11 May, 2007, pp. 614- 617
7.	Đaković D, Dimić M. "Poređenje nekih jednačina konvektivnog sušenja zrnastih materijala u nepokretnom tankom sloju", Zbornik apstrakata, ISBN 86-80587-70-2, s. 62, CD ISBN 978-86-80-587-80-6, 13. Simpozijum termičara Srbije, Sokobanja, Srbija, 16.10.-19.10.2007.
8.	Đaković D, Spasojević M, Štrbac D, Dimić M. "Primena eksergijske analize na proces sušenja kukuruza u tankom sloju", PTEP, 12(4), 233-235, 2008
9.	Đaković D, Dimić M, Spasojević M, Štrbac D, "Possibility of exergy analysis application on drying process", 4th International Conference on Engineering Technologies, ICET 2009, 28-30th April, 2009, ISBN: 978-86-7892-161-2, pp. 376-380, Novi Sad, Serbia
10.	Đaković D, Dimić M. "Pregled pristupa modelovanju fenomena prenosa u sušarama sa kombinovanim tokovima", PTEP, 13(3), 283-287, 2009



Summary data for teacher's scientific or art and professional activity:

Quotation total :	0
Total of SCI(SSCI) list papers :	5
Current projects :	Domestic : 2 International : 1

	UNIVERSITY OF NOVI SAD FACULTY OF TECHNICAL SCIENCES 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 6	
	Study Programme Accreditation SPECIALISED ACADEMIC STUDIES Energy Efficiency in Buildings	

Science, arts and professional qualifications

Name and last name:		Folić J. Radomir	
Academic title:		Emeritus Professor	
Name of the institution where the teacher works full time and starting date:		Faculty of Technical Sciences - Novi Sad 01.03.1980	
Scientific or art field:		Constructions in Civil Engineering	
Academic career	Year	Institution	Field
Academic title election:	2008	Faculty of Technical Sciences - Novi Sad	Constructions in Civil Engineering
PhD thesis	1983	Faculty of Civil Engineering - Beograd	Theory of Construction
Magister thesis	1974	Faculty of Civil Engineering - Zagreb	Theory of Construction
Bachelor's thesis	1963	Faculty of Civil Engineering - Beograd	Constructions in Civil Engineering
List of courses being held by the teacher in the accredited study programmes			
ID	Course name	Study programme name, study type	
1. A002S	Scientific Research Method	(A00) Architecture, Specialised Academic Studies (E11) Power, Electronic and Telecommunication Engineering, Specialised Academic Studies (G10) Geodesy and Geomatics, Specialised Academic Studies (I12) Industrial Engineering, Specialised Academic Studies (I22) Engineering Management, Specialised Academic Studies (Z00) Environmental Engineering, Specialised Academic Studies	
2. GG505	Concrete Bridges	(G00) Civil Engineering, Master Academic Studies	
3. GS015	Scientific Research Method	(G10) Energy Efficiency in Buildings, Specialised Academic Studies	
4. A120S	Proces, principi i tehnike naučnog istraživanja-odabrana poglavlja	(A00) Architecture, Specialised Academic Studies	
5. GG531	Odabrana poglavlja zidanih konstrukcija	(G00) Civil Engineering, Master Academic Studies	
6. DGI002	Selected Chapters in Engineering Geodesy	(G10) Geodesy and Geomatics, Doctoral Academic Studies	
7. DZ001	Scientific Research Method	(A00) Architecture, Doctoral Academic Studies (AS0) Scenic Design, Doctoral Academic Studies (E10) Power, Electronic and Telecommunication Engineering, Doctoral Academic Studies (E20) Computing and Control Engineering, Doctoral Academic Studies (F00) Graphic Engineering and Design, Doctoral Academic Studies (F20) Engineering Animation, Doctoral Academic Studies (G00) Civil Engineering, Doctoral Academic Studies (G10) Geodesy and Geomatics, Doctoral Academic Studies (H00) Mechatronics, Doctoral Academic Studies (I20) Industrial Engineering / Engineering Management, Doctoral Academic Studies (M00) Mechanical Engineering, Doctoral Academic Studies (M40) Technical Mechanics, Doctoral Academic Studies (OM1) Mathematics in Engineering, Doctoral Academic Studies (S00) Traffic Engineering, Doctoral Academic Studies (Z00) Environmental Engineering, Doctoral Academic Studies (Z01) Safety at Work, Doctoral Academic Studies	
8. A120	Proces, principi i tehnike naučnog istraživanja - odabrana poglavlja(uneti naziv na engleskom)	(A00) Architecture, Doctoral Academic Studies	
9. GD027	Process, principles and techniques of scientific research - selected chapters	(G00) Civil Engineering, Doctoral Academic Studies	
Representative references (minimum 5, not more than 10)			

	UNIVERSITY OF NOVI SAD FACULTY OF TECHNICAL SCIENCES 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 6		
	Study Programme Accreditation SPECIALISED ACADEMIC STUDIES Energy Efficiency in Buildings		
Representative references (minimum 5, not more than 10)			
1.	Folić, R. (1983): Spojevi i veze montažnih betonskih zgrada. U knjizi Montažni građevinski objekti, (Ed. B. Žeželj, A. Flašar) Ekonomika, Beograd, str. 117-167. (9 autorskih tabaka)		
2.	Folić, R. (1983): Statika konstrukcija - Zbirka rešenih zadataka. FTN IIG, Novi Sad, str. 1-486. II izdanje (1987). III izdanje Građevinska knjiga, Beograd (1991).		
3.	Folić, R., Tatomirović, M. (1999): Spregnute betonske konstrukcije-I deo. Građevinski kalendar, 1999. str. 289-386; II deo, Građevinski kalendar, 2001, str. 217-290		
4.	Folić, R. (1991): Classification of damage and its causes as applied to precast concrete buildings. Material and Structures. RILEM - Journal, Chapman & Hall, Vol. 24, pp. 276-285.		
5.	Folić, R., Ivanov, D. (1991): In situ behaviour of concrete structures deterioration of concrete, influence of earthquake and a fire in Diagnosis of Concrete Structures - State of the Art Report, Ed. by T. Javor, Expertcentrum, Bratislava, pp. 135-146.		
6.	Folić, R. (1985): Analiza aktivne širine ploče i graničnih stanja kod elemenata od armiranog i prethodno napregnutog betona. FTN IIG Posebno izdanje 7, Novi Sad, str. 1-193.		
7.	Folić, R., Radonjanin, V. (1998): Experimental research on polymer modified concrete, Materials Journal, ACI, VOL. 95 No. 4, July/August 1998, pp.463-470.		
8.	Folić, R. (1991): A classification of damage to concrete buildings in earthquakes, illustrated by examples. Material and Structures, RILEM - Journal, Chapman & Hall, Vol. 24, pp. 286-292.		
9.	Javor, T., Naus, D.J., Folić, R., Zakić, B.: (1992): Diagnosis of Concrete Structures. RILEM - Journal Materials and Structures, Chapman & Hall, Vol. 25, pp. 437-440.		
10.	Folić, R., Radonjanin, V. (1998): Experimental research on polymer modified concrete, Materials Journal, ACI, VOL. 95 No. 4, July/August 1998, pp.463-470.		
Summary data for teacher's scientific or art and professional activity:			
Quotation total :		11	
Total of SCI(SSCI) list papers :		8	
Current projects :		Domestic :	2
		International :	1

	UNIVERSITY OF NOVI SAD FACULTY OF TECHNICAL SCIENCES 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 6	
	Study Programme Accreditation SPECIALISED ACADEMIC STUDIES Energy Efficiency in Buildings	

Science, arts and professional qualifications

Name and last name:		Gvozdenac Urošević D. Branka	
Academic title:		Assistant Professor	
Name of the institution where the teacher works full time and starting date:		Faculty of Technical Sciences - Novi Sad 15.10.2004	
Scientific or art field:		Environment Protection Engineering	
Academic career	Year	Institution	Field
Academic title election:	2011		Environment Protection Engineering
PhD thesis	2011	Faculty of Technical Sciences - Novi Sad	Thermal Energetics and Thermotechnics
Magister thesis	2008	Faculty of Technical Sciences - Novi Sad	Thermal Energetics and Thermotechnics
Bachelor's thesis	2003	Faculty of Technical Sciences - Novi Sad	Production Systems, Organization and Management
List of courses being held by the teacher in the accredited study programmes			
	ID	Course name	Study programme name, study type
1.	I079	Modern Energy Technologies	(M50) Energy Management, Master Academic Studies (ZC0) Clean Energy Technologies, Undergraduate Academic Studies
2.	M119	Energy Transformations	(ZC0) Clean Energy Technologies, Undergraduate Academic Studies
3.	M222A	Energy System Engineering	(M30) Energy and Process Engineering, Undergraduate Academic Studies
4.	M3311	Renewable Energy Sources	(M30) Energy and Process Engineering, Undergraduate Academic Studies (ZC0) Clean Energy Technologies, Undergraduate Academic Studies
5.	Z453	Energy System Engineering	(ZC0) Clean Energy Technologies, Undergraduate Academic Studies
6.	OAS214	Integralni katastar zagađivača(uneti naziv na engleskom)	(Z20) Environmental Engineering, Undergraduate Academic Studies
7.	Z205	Održivo korišćenje prirodnih resursa i sistem zaštite životne sredine(uneti naziv na engleskom)	(Z20) Environmental Engineering, Undergraduate Academic Studies
8.	Z206	Alternativna energetika(uneti naziv na engleskom)	(Z20) Environmental Engineering, Undergraduate Academic Studies
9.	ZC009	Energy, society and environment	(ZC0) Clean Energy Technologies, Undergraduate Academic Studies
10.	ZC046	Energy strategy	(ZC0) Clean Energy Technologies, Undergraduate Academic Studies
11.	I079	Modern Energy Technologies	(M50) Energy Management, Master Academic Studies (ZC0) Clean Energy Technologies, Undergraduate Academic Studies
12.	I938	Energy and Society	(M50) Energy Management, Master Academic Studies
13.	Z508	Specifični uslovi projektovanja u zaštiti životne sredine(uneti naziv na engleskom)	(Z20) Environmental Engineering, Master Academic Studies
14.	GS003	Renewable Energy in Civil Engineering	(G10) Energy Efficiency in Buildings, Specialised Academic Studies
15.	I078	Energetska politika	(M50) Energy Management, Master Academic Studies
16.	M5022	Renewable energy sources	(M50) Energy Management, Master Academic Studies
17.	SGD023	Energetska efikasnost građevinskih objekata	(Z00) Environmental Engineering, Specialised Academic Studies
18.	ZSP24	Modern Principles of Energy Management	(Z00) Environmental Engineering, Doctoral Academic Studies
Representative references (minimum 5, not more than 10)			
1.	Assessment of potential for natural gas-based cogeneration in Thailand;Gvozdenac D., Menke C., Vallikul P., Petrovic J., Gvozdenac B., ENERGY 2009		
2.	Dragan M. UROŠEVIĆ, Branka D. GVOZDENAC-UROŠEVIĆ: COMPREHENSIVE ANALYSIS OF A STRAW-FIRED POWER PLANT IN VOJVODINA, Thermal Science Year 2012, Vol. 16, Suppl. 1,S 97-106		
3.	Gvozdenac-Urošević B: Energy Efficiency and GDP, Thermal Science, ISSN: 0354-9836, Vol. 14, No. 3, Str. 799-808, 2010		



Study Programme Accreditation

SPECIALISED ACADEMIC STUDIES

Energy Efficiency in Buildings

Representative references (minimum 5, not more than 10)

4.	Jovan R. PETROVIĆ, Branka D. GVOZDENAC-UROŠEVIĆ, Josip J. POLC: REASONS FOR HEAT DEMAND CHANGES AND EFFECTS ON PLANNING AND DEVELOPMENT OF HEATING SYSTEMS, Thermal Science Year 2012, Vol. 16, Suppl. 1, S 63-77
5.	Gvozdenac D, Petrović J, Gvozdenac-Urošević B: Industrial Gas Turbine Operation Procedure Improvement, Thermal Science, ISSN: 0354-9836, 2010
6.	Petrović, J., Gvozdenac, B., Računarski model tehničke i ekonomske ocene opravdanosti izgradnje distribuiranih kogeneracionih postrojenja – na primeru fabrike na Tajlandu, KGH- Klimatizacija, grejanje i hlađenje, 2007, No. 1/07, str. 49- 54,
7.	Gvozdenac D, Gvozdenac-Urošević B, Morvaj Z, ENERGETSKA EFIKASNOST, FTN izdavaštvo, Novi Sad, 2012
8.	Gvozdenac D, Nakomčić-Smaragdakis B, Gvozdenac-Urošević B, RENEWABLE ENERGY, Faculty of Technical Sciences Publishing, Novi Sad, 2012
9.	Model planiranja razvoja distribuirane kogeneracije i njene integracije u regionalni energetska sistem
10.	Bašić, Đ., Petrović, J., Marić, M., Dragutinović, G., Gvozdenac, B., Štrbac, D., Mogućnosti korišćenja energetska potencijala geotermalnih voda u Vojvodini, PROMETEJ, Novi Sad, 2009
Summary data for teacher's scientific or art and professional activity:	
Quotation total :	0
Total of SCI(SSCI) list papers :	3
Current projects :	Domestic : 2 International : 1

	UNIVERSITY OF NOVI SAD FACULTY OF TECHNICAL SCIENCES 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 6	
	Study Programme Accreditation SPECIALISED ACADEMIC STUDIES Energy Efficiency in Buildings	

Science, arts and professional qualifications

Name and last name:		Kovačević M. Ilija	
Academic title:		Full Professor	
Name of the institution where the teacher works full time and starting date:		Faculty of Technical Sciences - Novi Sad 01.09.1972	
Scientific or art field:		Mathematics	
Academic carier	Year	Institution	Field
Academic title election:	1990	Faculty of Technical Sciences - Novi Sad	Mathematics
PhD thesis	1979	Faculty of Mathematics - Beograd	Mathematical Sciences
Magister thesis	1975	Faculty of Mathematics - Beograd	Mathematical Sciences
Bachelor's thesis	1971	Faculty of Sciences - Novi Sad	Mathematical Sciences
List of courses being held by the teacher in the accredited study programmes			
	ID	Course name	Study programme name, study type
1.	E212	Mathematical Analysis 1	(E20) Computing and Control Engineering, Undergraduate Academic Studies (SE0) Software Engineering and Information Technologies, Undergraduate Academic Studies (SEL) Software Engineering and Information Technologies - Loznica, Undergraduate Academic Studies
2.	EE204	Selected Chapters in Mathematics	(MR0) Measurement and Control Engineering, Undergraduate Academic Studies (E10) Power, Electronic and Telecommunication Engineering, Undergraduate Academic Studies
3.	E102	Mathematical Analysis 1	(ES0) Power Software Engineering, Undergraduate Academic Studies (MR0) Measurement and Control Engineering, Undergraduate Academic Studies
4.	E102A	Mathematical Analysis 1	(E10) Power, Electronic and Telecommunication Engineering, Undergraduate Academic Studies
5.	IM1423	Financial Mathematics	(I20) Engineering Management, Undergraduate Academic Studies
6.	OM501	Functional Analysis	(OM1) Mathematics in Engineering, Master Academic Studies
7.	OML501	Functional Analysis	(OM1) Mathematics in Engineering, Master Academic Studies
8.	DZ01MS	Selected Chapters in Mathematics	(E11) Power, Electronic and Telecommunication Engineering, Specialised Academic Studies (I12) Industrial Engineering, Specialised Academic Studies (I22) Engineering Management, Specialised Academic Studies (Z00) Environmental Engineering, Specialised Academic Studies
9.	I004/S	Statistical Quantitative Methods	(I20) Engineering Management, Specialised Professional Studies (IB0) Engineering Management - MBA, Specialised Professional Studies
10.	GS012	Selected Chapters in Mathematics	(G10) Energy Efficiency in Buildings, Specialised Academic Studies
11.	MPK001	Statistical and Numerical Methods	(MPK) Inženjerstvo tretmana i zaštite voda - TEMPUS(uneti naziv na engleskom), Master Academic Studies
12.	SDOM30	Probability, Statistics and Theory of Engineering Experiment	(Z00) Environmental Engineering, Specialised Academic Studies
13.	DOM01	Functional Analysis 1	(OM1) Mathematics in Engineering, Doctoral Academic Studies
14.	DOM19	Functional Analysis 2	(OM1) Mathematics in Engineering, Doctoral Academic Studies



Study Programme Accreditation

SPECIALISED ACADEMIC STUDIES

Energy Efficiency in Buildings

List of courses being held by the teacher in the accredited study programmes

ID	Course name	Study programme name, study type
15. DOM30	Probability, Statistics and Theory of Engineering Experiment	(M00) Mechanical Engineering, Doctoral Academic Studies (M40) Technical Mechanics, Doctoral Academic Studies (Z00) Environmental Engineering, Doctoral Academic Studies (Z01) Safety at Work, Doctoral Academic Studies
16. DZ01M	Selected Chapters in Mathematics	(E10) Power, Electronic and Telecommunication Engineering, Doctoral Academic Studies (E20) Computing and Control Engineering, Doctoral Academic Studies (F00) Graphic Engineering and Design, Doctoral Academic Studies (F20) Engineering Animation, Doctoral Academic Studies (G00) Civil Engineering, Doctoral Academic Studies (G10) Geodesy and Geomatics, Doctoral Academic Studies (H00) Mechatronics, Doctoral Academic Studies (I20) Industrial Engineering / Engineering Management, Doctoral Academic Studies (M00) Mechanical Engineering, Doctoral Academic Studies (M40) Technical Mechanics, Doctoral Academic Studies (OM1) Mathematics in Engineering, Doctoral Academic Studies (S00) Traffic Engineering, Doctoral Academic Studies (Z00) Environmental Engineering, Doctoral Academic Studies (Z01) Safety at Work, Doctoral Academic Studies

Representative references (minimum 5, not more than 10)

1.	I.Kovačević, On alfa-Hausdorff subsets, almost closed mappings and almost upper semicontinuous decomposition, Indian Jurnal of Pure and Applied mathematics 20 (4) 1989., 334-340.
2.	N. Adžić, I. Kovačević, V. Marić, V. Ungar, Matematička analiza 2, FTN (Edicija tehničke nauke-udžbenici), Novi Sad, 1996., 1-299.
3.	I. Kovačević, N. Ralević, Funkcionalna analiza,FTN (Edicija tehničke nauke-udžbenici), Novi Sad, (Ponovljeno i dopunjeno izdanje)2004., 1-203.
4.	I. Kovačević, N. Ralević, B. Carić, V. Marić, M. Novković, S. Medić, Matematička analiza 1- uvodni pojmovi i granični procesi ,(Ponovljeno i dopunjeno izdanje), FTN (Edicija tehničke nauke-udžbenici) Novi Sad, 2012,1-155.
5.	I.Kovačević, V.Marić, M. Novković, B. Carić, N. Ralević, S. Medić, Matematička analiza 1 - diferencijalni i integralni račun, obične diferencijalne jednačine (Ponovljeno i dopunjeno izdanje),FTN (Edicija tehničke nauke-udžbenici), Novi Sad,2012., 1-280.
6.	M. Novković, B. Carić, I. Kovačević, Zbirka rešenih zadataka iz verovatnoće i statistike, FTN (Edicija tehničke nauke-udžbenici), Novi Sad, (Ponovljeno i dopunjeno izdanje) 2012., 1-169.
7.	Kiurski J., Adamović (Majkić) S., Oros I., Krstić J., Kovačević I.: ADSORPTION FEASIBILITY IN THE Cr(TOTAL) IONS REMOVAL FROM WASTE PRINTING DEVELOPER, Global NEST Journal, 2012, Vol. 14, No 1, pp. 18-23, ISSN 1790-7632
8.	I.Kovačević, Some properties of Mn subsets and almost closed mappings, Indian J.pure appl. Math., 27(9), 1996., 875-881.
9.	I.Kovačević, On almost closed mapping, paracompactness and partial equivalence relations, Indian Journal of Pure and Applied mathematics,25(9), 1994., 949-954.
10.	Kiurski J., Oros I., Ralević N., Kovačević I., Adamović (Majkić) S., Krstić J., Čomić L.: Cluster and principal component analysis in the assessment of fountain solution quality, Carpathian Journal of Earth and Environmental Sciences, 2013, Vol. 8, No 1, pp. 19-23, ISSN 1842-4090

Summary data for teacher's scientific or art and professional activity:

Quotation total :	28
Total of SCI(SSCI) list papers :	7
Current projects :	Domestic : 3 International : 2

	UNIVERSITY OF NOVI SAD FACULTY OF TECHNICAL SCIENCES 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 6	
	Study Programme Accreditation SPECIALISED ACADEMIC STUDIES Energy Efficiency in Buildings	

Science, arts and professional qualifications

Name and last name:	Kovačević D. Aleksandar		
Academic title:	Assistant Professor		
Name of the institution where the teacher works full time and starting date:	Faculty of Technical Sciences - Novi Sad 15.07.2007		
Scientific or art field:	Applied Computer Science and Informatics		
Academic carieer	Year	Institution	Field
Academic title election:	2012	Faculty of Technical Sciences - Novi Sad	Applied Computer Science and Informatics
PhD thesis	2011	Faculty of Technical Sciences - Novi Sad	Informatics
Magister thesis	2006	Faculty of Technical Sciences - Novi Sad	Informatics
Bachelor's thesis	2003	Faculty of Sciences - Novi Sad	Information-Communication Systems

List of courses being held by the teacher in the accredited study programmes

	ID	Course name	Study programme name, study type
1.	E2K42	Knowledge Based Systems	(E20) Computing and Control Engineering, Undergraduate Academic Studies (SE0) Software Engineering and Information Technologies, Undergraduate Academic Studies (SEL) Software Engineering and Information Technologies - Loznica, Undergraduate Academic Studies
2.	ISIT03	Introduction to Programming	(SII) Software and Information Technologies (Indija), Undergraduate Professional Studies
3.	ISIT27	Osnove softverskih arhitektura	(SII) Software and Information Technologies (Indija), Undergraduate Professional Studies
4.	ISIT29	XML Technologies	(SII) Software and Information Technologies (Indija), Undergraduate Professional Studies
5.	ISIT47	E-learning tools and technologies	(SII) Software and Information Technologies (Indija), Undergraduate Professional Studies
6.	GI111	Information technologies in geodesy	(GI0) Geodesy and Geomatics, Undergraduate Academic Studies
7.	SES203	Machine Learning	(SE0) Software Engineering and Information Technologies, Undergraduate Academic Studies (SEL) Software Engineering and Information Technologies - Loznica, Undergraduate Academic Studies
8.	E2503	Data Mining and Data Analysis Systems	(E20) Computing and Control Engineering, Master Academic Studies (SE0) Software Engineering and Information Technologies, Master Academic Studies
9.	E2514	Biologically inspired computing	(E20) Computing and Control Engineering, Master Academic Studies (SE0) Software Engineering and Information Technologies, Master Academic Studies
10.	GS014	The application of information technologies in energy efficiency	(G10) Energy Efficiency in Buildings, Specialised Academic Studies
11.	E2524	Text Mining	(E20) Computing and Control Engineering, Master Academic Studies (SE0) Software Engineering and Information Technologies, Master Academic Studies
12.	E2527	Business Intelligence	(E20) Computing and Control Engineering, Master Academic Studies (SE0) Software Engineering and Information Technologies, Master Academic Studies
13.	SEM005	Decision Support Systems	(SE0) Software Engineering and Information Technologies, Master Academic Studies
14.	DRNI07	Selected Chapters in Computational Intelligence	(E20) Computing and Control Engineering, Doctoral Academic Studies (OM1) Mathematics in Engineering, Doctoral Academic Studies
15.	DRNI14	Selected Chapters in Machine Learning	(E20) Computing and Control Engineering, Doctoral Academic Studies



Study Programme Accreditation

SPECIALISED ACADEMIC STUDIES

Energy Efficiency in Buildings

Representative references (minimum 5, not more than 10)

1.	Pretraživanje zvučnih zapisa
2.	Adaptivni sistem za pretraživanje zvučnih zapisa
3.	Kovačević, A., Milosavljević, B. "The Use of R-Trees for Content-Based Audio Retrieval". In Proceedings of the 13th Scientific Conference on Industrial Systems, Herceg Novi, 2005. M63
4.	Kovačević A., Milosavljević, B., Konjović, Z. "Tjuniranje prostora osobina za pretraživanje zvučnih zapisa". Zbornik radova YUInfo 2006, Kopaonik, Srbija, 2006. ISBN: 86-85525-01-2. M63
5.	Kovačević, A., Milosavljević, B., Konjović, Z., and Vidaković, M. 2010. "Adaptive content-based music retrieval system". Multimedia Tools and Applications, 47(3) (May. 2010), pp. 525-544. doi: http://dx.doi.org/10.1007/s11042-009-0336-2 . ISSN: 1380-7501 (Print), 1573-7721 (Online). M23.
6.	Kovačević, A., Ivanović D., Milosavljević B., Konjović Z., Surla D., 2011. "Automatic extraction of metadata from scientific publications for CRIS systems" Program: Electronic library and information systems, 45(4), pp. 376 - 396. doi: http://dx.doi.org/10.1108/00330331111182094 . ISSN: 0033-0337. M23
7.	Aleksandar Kovačević, Automatizovano izdvajanje semantike iz naučnih članaka u oblasti informatike, doktorska disertacija, Fakultet tehničkih nauka, Novi Sad, 2011.
8.	Majstorović D, Pele Z, Kovačević A, Čelanović N. "Computer Based Emulation of Power Electronics Hardware", In Proceedings of the First IEEE Eastern European Conference on the Engineering of Computer Based Systems, Novi Sad, Serbia, pages 56-64, 2009. ISBN: 978-0-7695-3759-7. M33
9.	Slivka, J. Kovačević, A., Konjović, Z., 2010. "Co-training based algorithm for datasets without the natural feature split." In Proceedings of the 8th International Symposium on Intelligent Systems and Informatics, Subotica, Serbia, 279-284, 2010. ISBN: 978-1-4244-7395-3. M33
10.	Miljković, D., Gajić, Lj., Kovačević, A., Konjović, Z., 2010. The use of data mining for basketball matches outcomes prediction. In Proceedings of the 8th International Symposium on Intelligent Systems and Informatics, Subotica, Serbia, 2010. 309-312. ISBN: 978-1-4244-7395-3. M33.
Summary data for teacher's scientific or art and professional activity:	
Quotation total :	12
Total of SCI(SSCI) list papers :	3
Current projects :	Domestic : 2 International : 0

	UNIVERSITY OF NOVI SAD FACULTY OF TECHNICAL SCIENCES 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 6	
	Study Programme Accreditation SPECIALISED ACADEMIC STUDIES Energy Efficiency in Buildings	

Science, arts and professional qualifications

Name and last name:	Malešev M. Mirjana		
Academic title:	Associate Professor		
Name of the institution where the teacher works full time and starting date:	Faculty of Technical Sciences - Novi Sad 16.01.1984		
Scientific or art field:	Materials in Civil Engineering, Condition Assessment and Construction		
Academic career	Year	Institution	Field
Academic title election:	2008	Faculty of Technical Sciences - Novi Sad	Materials in Civil Engineering, Condition Assessment and Construction Sanation
PhD thesis	2003	Faculty of Civil Engineering - Beograd	Materials in Civil Engineering and Concrete Technology
Magister thesis	1994	Faculty of Technical Sciences - Novi Sad	Materials in Civil Engineering and Concrete Technology
Bachelor's thesis	1983	Faculty of Technical Sciences - Novi Sad	Constructions in Civil Engineering

List of courses being held by the teacher in the accredited study programmes

	ID	Course name	Study programme name, study type
1.	A202	Structures, Materials and Building	(A00) Architecture, Undergraduate Academic Studies
2.	GG09	Materials in Construction 2	(G00) Civil Engineering, Undergraduate Academic Studies
3.	GG21	Concrete Technology	(G00) Civil Engineering, Undergraduate Academic Studies
4.	URZP13	Building materials and structures	(ZP0) Disaster Risk Management and Fire Safety, Undergraduate Academic Studies
5.	GG504	Durability and Assessment of Concrete Structures	(G00) Civil Engineering, Master Academic Studies
6.	GG517	Damages and Repair of Masonry, Steel and Timber Structures	(G00) Civil Engineering, Master Academic Studies
7.	GG518	Repair of Concrete Structures	(G00) Civil Engineering, Master Academic Studies
8.	GG521	Construction Business and Regulative	(G00) Civil Engineering, Master Academic Studies
9.	GP502	Bridge Management	(G00) Civil Engineering, Master Academic Studies
10.	URZP62	Assessment of Damaged Structures	(ZP1) Disaster Risk Management and Fire Safety, Master Academic Studies
11.	GS009	Energy-efficient materials and diagnostic of building thermotechnical performances	(G10) Energy Efficiency in Buildings, Specialised Academic Studies
12.	GS010	The design of energy efficient buildings	(G10) Energy Efficiency in Buildings, Specialised Academic Studies
13.	GS011	Energy revitalization of buildings	(G10) Energy Efficiency in Buildings, Specialised Academic Studies
14.	SDG11A	Odabrana poglavlja iz građevinskih materijala i konstrukcija	(G10) Geodesy and Geomatics, Specialised Academic Studies
15.	GD005	Selected Chapters in Concrete Theory and Technology	(G00) Civil Engineering, Doctoral Academic Studies
16.	GD008	Contemporary Methods in Concrete Structure Design	(G00) Civil Engineering, Doctoral Academic Studies
17.	GD015	Rheology of Concrete Structures	(G00) Civil Engineering, Doctoral Academic Studies

Representative references (minimum 5, not more than 10)

1.	Malešev, M. (1994) Primena metode ultrazvuka pri određivanju otpornosti betona na dejstvo mraza, Magistarska teza
2.	Malešev, M. (2003) Parametarska analiza uticaja novih vrsta cementa proizvedenih prema EN 197-1 na osnovna svojstva betona, Doktorska disertacija
3.	Malešev, M., Folić, R., Muravljev, M., Radonjanin, V. (1996): Eksperimentalno istraživanje zavisnosti između brzine ultrazvuka i otpornosti betona na dejstvo mraza, XX Kongres JUDIMK, Cetinje, str. 73 - 79.
4.	Radonjanin, V., Malešev, M. (1997): Concrete Quality Control by Using Statistical Methods, Bulletins for Applied & Computer Mathematics, BAM-1324, Vol.LXXXIB, Budapest, Hungary, pp. 95-104.
5.	Stojanović G., Radovanović M., Malešev M., Radonjanin V.: Monitoring of Water Content in Building Materials Using a Wireless Passive Sensor, Sensors, 2010, Vol. 10, No 5, pp. 4270-4280, ISSN 1424-8220, UDK: 10.3390/s100504270
6.	Malešev M., Radonjanin V., Radeka M., Milovanović V., Lukić I.: Basic properties of structural lightweight aggregate concrete in relation to type and quantity of cementitious materials - part 1, 1. International Symposium about Research and Application of Modern Achievements in Civil Engineering in the Field of Materials and Structures, Tara: Društvo za ispitivanje i istraživanje materijala i konstrukcija Srbije, Beograd, 19-21 Oktobar, 2011, pp. 159-168, ISBN 978-86-87615-02-1



UNIVERSITY OF NOVI SAD

FACULTY OF TECHNICAL SCIENCES 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 6

**Study Programme Accreditation**

SPECIALISED ACADEMIC STUDIES

Energy Efficiency in Buildings

Representative references (minimum 5, not more than 10)

7.	Radonjanin V., Malešev M., Radeka M., Lukić I., Milovanović V.: Basic properties of structural lightweight aggregate concrete in relation to type and quantity of cementitious materials - part 2, 1. International Symposium about Research and Application of Modern Achievements in Civil Engineering in the Field of Materials and Structures, Tara: Društvo za ispitivanje i istraživanje materijala i konstrukcija Srbije, Beograd, 19-21 Oktobar, 2011, pp. 169-178, ISBN 978-86-87615-02-1
8.	Malešev M., Radonjanin V., Emhemed Saed M., Milovanović V.: Zeleni betoni-nove mogućnosti održivog građevinarstva, 12. Konferencija Savremena građevinska praksa, Andrevlje: Fakultet tehničkih nauka i Društvo građevinskih inženjera Novog Sada, 19-20 Maj, 2011, pp. 209-226, ISBN 978-86-7892-324-1
9.	Marinković S., Radonjanin V., Malešev M., Ignjatović I.: Comparative environmental assessment of natural and recycled aggregate concrete, Waste Management, 2010, Vol. 30, No 11, pp. 2255-2264, ISSN 0956-053X, UDK: doi: 10.1016/j.wasman.2010.04.012
10.	Maksimović M., Stojanović G., Radovanović M., Malešev M., Radonjanin V., Radosavljević G., Smetana W.: Application of a LTCC sensor for measuring moisture content of building materials, Construction and Buildings Materials, 2012, Vol. 26, No 1, pp. 327-333, ISSN 0950-0618(02)00045-4, UDK: 10.1016/j.conbuildmat.2011.06.029

Summary data for teacher's scientific or art and professional activity:

Quotation total :	4		
Total of SCI(SSCI) list papers :	1		
Current projects :	Domestic :	2	International : 1

	UNIVERSITY OF NOVI SAD FACULTY OF TECHNICAL SCIENCES 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 6	
	Study Programme Accreditation SPECIALISED ACADEMIC STUDIES Energy Efficiency in Buildings	

Science, arts and professional qualifications

Name and last name:	Ninkov Đ. Toša		
Academic title:	Full Professor		
Name of the institution where the teacher works full time and starting date:	Faculty of Technical Sciences - Novi Sad 15.02.1994		
Scientific or art field:	Geodesy		
Academic carier	Year	Institution	Field
Academic title election:	2002	Faculty of Technical Sciences - Novi Sad	Geodesy
PhD thesis	1982	Faculty of Civil Engineering - Beograd	Geodesy
Magister thesis	1979	Faculty of Civil Engineering - Beograd	Geodesy
Bachelor's thesis	1972	Faculty of Civil Engineering - Beograd	Geodesy

List of courses being held by the teacher in the accredited study programmes

	ID	Course name	Study programme name, study type
1.	GI019	Bathymetry	(GI0) Geodesy and Geomatics, Undergraduate Academic Studies
2.	GI025B	Geodetic Metrology	(GI0) Geodesy and Geomatics, Undergraduate Academic Studies
3.	GI029	Utility Information Systems and their Application	(GI0) Geodesy and Geomatics, Undergraduate Academic Studies
4.	GI307A	Engineering Geodesy	(GI0) Geodesy and Geomatics, Undergraduate Academic Studies
5.	GI402	Engineering Geodesy 2	(GI0) Geodesy and Geomatics, Undergraduate Academic Studies
6.	GI505	Advanced Techniques in Geodetic Design and Monitoring	(GI0) Geodesy and Geomatics, Undergraduate Academic Studies
7.	GI009	Introduction to deformation measurement and analysis	(GI0) Geodesy and Geomatics, Undergraduate Academic Studies
8.	GH507	Engineering Geodesy	(G00) Civil Engineering, Master Academic Studies
9.	GI403	Methods for Precise Geodetic Measurements and Data Processing	(GI0) Geodesy and Geomatics, Master Academic Studies
10.	GI514	Engineering Geodesy 3	(GI0) Geodesy and Geomatics, Master Academic Studies
11.	GI518	Geodesy in City Planning	(GI0) Geodesy and Geomatics, Master Academic Studies
12.	GI601	Geodynamics	(GI0) Geodesy and Geomatics, Master Academic Studies
13.	URZP65	Geodetic methods for the determination of geodynamic movements	(ZP1) Disaster Risk Management and Fire Safety, Master Academic Studies
14.	GS005	Contemporary recording methods of energy losses of buildings	(G10) Energy Efficiency in Buildings, Specialised Academic Studies
15.	GI516	Deformation analysis and measurements	(GI0) Geodesy and Geomatics, Master Academic Studies
16.	GI531	Application of GNSS systems	(GI0) Geodesy and Geomatics, Master Academic Studies
17.	GI540	Valuation of real estate	(GI0) Geodesy and Geomatics, Master Academic Studies
18.	GIAU02	Position Based Services	(E20) Computing and Control Engineering, Master Academic Studies
19.	SDGI02	Selected topics in engineering geodesy	(GI0) Geodesy and Geomatics, Specialised Academic Studies
20.	SDGI06	Selected Chapters in Real Estate Cadastre	(GI0) Geodesy and Geomatics, Specialised Academic Studies
21.	SDGI10	Selected Chapters in Landscape Arrangement	(GI0) Geodesy and Geomatics, Specialised Academic Studies
22.	SDGI11	Selected topics in deformation measurements and analysis	(GI0) Geodesy and Geomatics, Specialised Academic Studies
23.	SDGI14	Selected topics in geodetic networks and their optimization	(GI0) Geodesy and Geomatics, Specialised Academic Studies
24.	SDGI5D	Selected Chapters in the Mass Appraisal of Real Estate	(GI0) Geodesy and Geomatics, Specialised Academic Studies
25.	SDGI6A	Selected Chapters in Appraisal	(GI0) Geodesy and Geomatics, Specialised Academic Studies
26.	DGI002	Selected Chapters in Engineering Geodesy	(GI0) Geodesy and Geomatics, Doctoral Academic Studies



Study Programme Accreditation

SPECIALISED ACADEMIC STUDIES

Energy Efficiency in Buildings

List of courses being held by the teacher in the accredited study programmes

ID	Course name	Study programme name, study type
27.	DGI006 Selected Chapters in Real Estate Cadastre	(GI0) Geodesy and Geomatics, Doctoral Academic Studies
28.	DGI009 Selected Chapters in GNSS Systems	(GI0) Geodesy and Geomatics, Doctoral Academic Studies
29.	DGI010 Selected Chapters in Landscape Arrangement	(GI0) Geodesy and Geomatics, Doctoral Academic Studies
30.	DGI011 Selected Chapters in Deformation Analysis and Measurements	(GI0) Geodesy and Geomatics, Doctoral Academic Studies
31.	DGI014 Selected Chapters in Geodesic Networks and Their Optimization	(GI0) Geodesy and Geomatics, Doctoral Academic Studies
32.	DGI019 Selected Chapters in Municipal Information Systems	(GI0) Geodesy and Geomatics, Doctoral Academic Studies
33.	DGI012 Selected topics in integrated systems of surveying	(GI0) Geodesy and Geomatics, Doctoral Academic Studies
34.	DGI015 Selected topics in geophysics	(GI0) Geodesy and Geomatics, Doctoral Academic Studies

Representative references (minimum 5, not more than 10)

1.	Ninkov, T. (1988): "Optimizacija projektovanja geodetskih mreža" Naučna knjiga, Gradjevinski fakultet, Beograd 1989
2.	Ninkov, T. (1982): "A new method of land Surveying networks optimization". Meeting of Study Eroup 5 B. Survey Control Networks; Alborg, edited by K. Borre i W.M. Welsch Rep 7 Schriftenreihe Wissenschaftlicher Studiengang Wermessungswesen der Hochschule der Bundeswehr Munchen, pp. 293-300.
3.	Bulatović V., Sušić Z., Ninkov T.: Estimate of the ASTER-GDEM regional systematic errors and their removal, INT J REMOTE SENS, 2012, Vol. 33, No 18, pp. 5915-5926, ISSN 0143-1161
4.	Tosa Ninkov, Miro Govedarica, Milan Trifkovic: One Method of Renewal of Stereographics Survey Data in Coka Municipality, Geodetski list: glasilo Hrvatskoga geodetskog društva. 68(88), (2011), 4; (IF 2010 0.038)
5.	Govedarica Miro, Boskovic Dubravka, Petrovacki Dusan, Ninkov Tosa: Metadata Catalogues in Spatial Information Systems (Review) GEODETSKI LIST, (2010), vol. 64 br. 4, str. 313-334 (IF 2009 0.167)
6.	Vladimir Bulatović, Toša Ninkov, Zoran Sušić: Open Geospatial Consortium Web Services Complex Distribution Systems, Geodetski list, (2009), br 1, str.13-29, (IF 2009 0.167)
7.	Jasmina Nedeljковиć Ostojić, Miro Govedarica, Toša Ninkov: Analysis of Structure Surveying Method by 3D Laser Scanners Geodetski list:glasilo Hrvatskoga geodetskog društva 65(88), (2011), 1; (IF 2010 0.038)
8.	Bulatović V., Ninkov T., Malenković V., Vulić M.: Contemporary Methods of Determining Energy Losses in Structures, TTEM. Tehnics technologies education management, 2012, Vol. 7, No 2, pp. 687-692, ISSN 1840-1503
9.	- Projekat informacionog sistema postojeće kanalizacione mreže Beograda i 3D modela sadržaja na fizičkoj površini zemlje koristeći GPS merenja, satelitski snimak sistema IKONOS i postojeću dokumentaciju (Beograd 2006)
10.	- GIS projekat Naftnog i gasnog distributivnog sistema QGPC-a (Qatar General Petroleum Corporation)1999-2000 Šef projekta za GIS

Summary data for teacher's scientific or art and professional activity:

Quotation total :	86
Total of SCI(SSCI) list papers :	5
Current projects :	Domestic : 3 International : 2



	UNIVERSITY OF NOVI SAD FACULTY OF TECHNICAL SCIENCES 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 6	
	Study Programme Accreditation SPECIALISED ACADEMIC STUDIES Energy Efficiency in Buildings	

Science, arts and professional qualifications

Name and last name:	Oros V. Đura		
Academic title:	Assistant Professor		
Name of the institution where the teacher works full time and starting date:	Faculty of Technical Sciences - Novi Sad		
	05.11.1982		
Scientific or art field:	Power Electronics, Machines and Facilities		
Academic carier	Year	Institution	Field
Academic title election:	2009	Faculty of Technical Sciences - Novi Sad	Power Electronics, Machines and Facilities
PhD thesis	2008	Faculty of Technical Sciences - Novi Sad	Electroenergetics
Magister thesis	1997	School of Electrical Engineering - Beograd	Power Electronics, Machines and Facilities
Bachelor's thesis	1982	Faculty of Technical Sciences - Novi Sad	Electroenergetics

List of courses being held by the teacher in the accredited study programmes

	ID	Course name	Study programme name, study type
1.	H361	Control of Electrical Drives	(H00) Mechatronics, Undergraduate Academic Studies
2.	M109	Electric Machines and Power Electronics	(M20) Mechanization and Construction Engineering, Undergraduate Academic Studies (M30) Energy and Process Engineering, Undergraduate Academic Studies (M40) Technical Mechanics and Technical Design, Undergraduate Academic Studies (MR0) Measurement and Control Engineering, Undergraduate Academic Studies (P00) Production Engineering, Undergraduate Academic Studies (S00) Traffic and Transport Engineering, Undergraduate Academic Studies (S01) Postal Traffic and Telecommunications, Undergraduate Academic Studies
3.	M112	Electrical Engineering and Electric Machines	(M20) Mechanization and Construction Engineering, Undergraduate Academic Studies (M30) Energy and Process Engineering, Undergraduate Academic Studies (M40) Technical Mechanics and Technical Design, Undergraduate Academic Studies (P00) Production Engineering, Undergraduate Academic Studies (S00) Traffic and Transport Engineering, Undergraduate Academic Studies (S01) Postal Traffic and Telecommunications, Undergraduate Academic Studies
4.	E2315	Electrical Machines in Automatic Control Systems	(E20) Computing and Control Engineering, Undergraduate Academic Studies (MR0) Measurement and Control Engineering, Undergraduate Academic Studies (E10) Power, Electronic and Telecommunication Engineering, Undergraduate Academic Studies
5.	EE419A	Testing of electrical machines	(E10) Power, Electronic and Telecommunication Engineering, Undergraduate Academic Studies
6.	EE421A	Electrical Design and Calculation Software	(E10) Power, Electronic and Telecommunication Engineering, Undergraduate Academic Studies
7.	ZR405A	Protection from the harmful effects of electricity in the application of power converters	(Z01) Safety at Work, Undergraduate Academic Studies
8.	ZR43A	Health and safety regulations in electrical systems	(Z01) Safety at Work, Undergraduate Academic Studies
9.	EE534	Special Electric Motor Drives	(E10) Power, Electronic and Telecommunication Engineering, Master Academic Studies
10.	M2541	Occupational Safety and Protection in Operation with Machinery	(M22) Mechanization and Construction Engineering, Master Academic Studies
11.	GS016	Lighting in Buildings	(G10) Energy Efficiency in Buildings, Specialised Academic Studies

		UNIVERSITY OF NOVI SAD			
		FACULTY OF TECHNICAL SCIENCES 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 6			
Study Programme Accreditation					
SPECIALISED ACADEMIC STUDIES			Energy Efficiency in Buildings		
List of courses being held by the teacher in the accredited study programmes					
ID	Course name	Study programme name, study type			
12.	ZRD235	Systemic regulation in the field of occupational safety and health	(Z01) Safety at Work, Doctoral Academic Studies		
13.	ZRD236	State and development of health and safety at work in the field of electrical engineering	(Z01) Safety at Work, Doctoral Academic Studies		
Representative references (minimum 5, not more than 10)					
1.	Vasić V., Marčetić D., Oros Đ.: Prediction of Local Instabilities in Open-loop Induction Motor Drives, COMPEL - The international journal for computation and mathematics in electrical engineering, 2010, Vol. 29, No 3, ISSN 0332-1649				
2.	Đura V. Oros, Veran V. Vasić, Darko P. Marčetić: NFO sensorless induction motor drive with on-line stator resistance parameter update, Electric Power Components and Systems, 2008, Vol. 36, No. 12, str. 1318- 1336, ISSN 1532-5008.				
3.	Oros Đ., Vasić V., Marčetić D., Kulić F.: Influence of parameters detuning on induction motor NFO shaft-sensorless scheme, Journal of Advances in Electrical and Computer Engineering, 2010, Vol. 10, No 4, pp. 121-124, ISSN 1582-7445				
4.	Reljić D., Vasić V., Oros Đ.: Power factor correction and harmonics mitigation based on phase shifting approach, 15. International Power Electronics and Motion Control Conference, EPE-PEMC 2012 ECCE Europe, Novi Sad, Serbia, pp. DS3b.12-1 - 12-8, ISBN: 978-1-4673-1971-3, IEEE catalog number CFP 1234A-USB				
5.	Dumnić B., Oros Đ., Miličević D., Matić D., Vasić V.: Vector Control of Induction Generator with Parallel Stator Resistance and Rotor Speed Estimation, 31. Power Electronics, Intelligent Motion, Power Quality PCIM, Nuremberg: Mesago PCIM GmbH, 4-6 Maj, 2010, pp. 608-612, ISBN 978-3-8007-3229-6				
6.	Vasić V., Marčetić D., Oros Đ., Kulić F.: Prediction of local instabilities caused by inverter dead time in AC drive, 13. European Conference on Power Electronics and Applications, Barselona, 8-10 Septembar, 2009, ISBN 9789075815009				
7.	Francuski Lj., Kulić F., Dumnić B., Oros Đ.: Fuzzy PI Controller for Vector Control of Induction Machine, 9. NEUREL- Symposium on Neural Network Applications in Electrical Engineering, Beograd: IEEE SCG Section, CAS - SP Chair, 25-27 Septembar, 2008, pp. 207-210, ISBN 978-1-4244-2903-5				
8.	Reljić D., Vasić V., Oros Đ.: Power Quality Considerations of Variable Speed AC Drives, A Simulation Study, Paper No. T6-2.4, pp. 1-5,, 16. International Symposium on Power Electronics – Ee, Novi Sad, 26-28 Oktobar, 2011, ISBN 978-86-7892-355-5				
9.	Reljić D., Miličević D., Adžić E., Dumnić B., Grabić S., Porobić V., Vekić M., Ivanović Z., Katić V., Vasić V., Marčetić D., Oros Đ., Čorba Z.: Modern Laboratory Tools for Experimental Research in the Field of Electric Drives, 15. International Symposium on Power Electronics Ee, Novi Sad: Društvo za energetsku elektroniku-Novu Sad, Elektrotehnički institut "Nikola Tesla"-Beograd, Fakultet tehničkih nauka-Novu Sad, 28-30 Oktobar, 2009, pp. 1-5, ISBN 978-86-7892-208-4				
10.	Ostojić D., Vasić V., Dujić D., Oros Đ.: The Influence of Parameter Mismatch on Natural Field Orientation Controlled Induction Motor Speed Estimation, 1. International Conference on Power Electronics and Intelligent Control for EnergyConservation, Varšava, 6-19 Oktobar, 2005				
Summary data for teacher's scientific or art and professional activity:					
Quotation total :		3			
Total of SCI(SSCI) list papers :		4			
Current projects :		Domestic :	1	International :	0

	UNIVERSITY OF NOVI SAD FACULTY OF TECHNICAL SCIENCES 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 6	
	Study Programme Accreditation SPECIALISED ACADEMIC STUDIES Energy Efficiency in Buildings	

Science, arts and professional qualifications

Name and last name:	Perišić R. Branko		
Academic title:	Associate Professor		
Name of the institution where the teacher works full time and starting date:	Faculty of Technical Sciences - Novi Sad 01.04.1983		
Scientific or art field:	Applied Computer Science and Informatics		
Academic career	Year	Institution	Field
Academic title election:	2011	Faculty of Technical Sciences - Novi Sad	Applied Computer Science and Informatics
Education Specialist Thesis	2007	Software Engineering Institute at Carnegie Mellon University - Pittsburgh	Computer Science
Education Specialist Thesis	2004	Software Engineering Institute at Carnegie Mellon University - Pittsburgh	Computer Science
PhD thesis	1994	Faculty of Technical Sciences - Novi Sad	Applied Computer Science and Informatics
Magister thesis	1986	Faculty of Technical Sciences - Novi Sad	Applied Computer Science and Informatics
Bachelor's thesis	1977	Faculty of Electrical Engineering - Sarajevo	Electrical and Computer Engineering

List of courses being held by the teacher in the accredited study programmes

	ID	Course name	Study programme name, study type
1.	E235	Fundamentals of Information Systems and Software Engineering	(E20) Computing and Control Engineering, Undergraduate Academic Studies (F10) Engineering Animation, Undergraduate Academic Studies (MR0) Measurement and Control Engineering, Undergraduate Academic Studies
2.	E242	Software Specification and Modeling	(E20) Computing and Control Engineering, Undergraduate Academic Studies (SE0) Software Engineering and Information Technologies, Undergraduate Academic Studies (SEL) Software Engineering and Information Technologies - Loznica, Undergraduate Academic Studies
3.	E2S40	Software Patterns and Components	(E20) Computing and Control Engineering, Undergraduate Academic Studies (MR0) Measurement and Control Engineering, Undergraduate Academic Studies
4.	RI45	Software Design	(E20) Computing and Control Engineering, Undergraduate Academic Studies (MR0) Measurement and Control Engineering, Undergraduate Academic Studies (SE0) Software Engineering and Information Technologies, Undergraduate Academic Studies (SEL) Software Engineering and Information Technologies - Loznica, Undergraduate Academic Studies
5.	RI53	Business Information Systems	(E20) Computing and Control Engineering, Undergraduate Academic Studies (SE0) Software Engineering and Information Technologies, Undergraduate Academic Studies (SEL) Software Engineering and Information Technologies - Loznica, Undergraduate Academic Studies
6.	ISIT22	Osnove baza podataka	(SII) Software and Information Technologies (Indija), Undergraduate Professional Studies
7.	ISIT26	Upravljanje projektima	(SII) Software and Information Technologies (Indija), Undergraduate Professional Studies
8.	ISIT28	Informaciona bezbednost	(SII) Software and Information Technologies (Indija), Undergraduate Professional Studies
9.	ISIT2E	Osnove projektovanja softvera	(SII) Software and Information Technologies (Indija), Undergraduate Professional Studies
10.	ISIT33	Integracija i verifikacija softverskih aplikacija	(SII) Software and Information Technologies (Indija), Undergraduate Professional Studies



Study Programme Accreditation

SPECIALISED ACADEMIC STUDIES

Energy Efficiency in Buildings

List of courses being held by the teacher in the accredited study programmes

ID	Course name	Study programme name, study type
11. SE0011	Introduction to Software Engineering	(SE0) Software Engineering and Information Technologies, Undergraduate Academic Studies (SEL) Software Engineering and Information Technologies - Loznica, Undergraduate Academic Studies
12. SE0017	Software Development Methodologies	(P00) Production Engineering, Undergraduate Academic Studies (SE0) Software Engineering and Information Technologies, Undergraduate Academic Studies (SEL) Software Engineering and Information Technologies - Loznica, Undergraduate Academic Studies
13. SES103	Oral and written communication skills	(SE0) Software Engineering and Information Technologies, Undergraduate Academic Studies (SEL) Software Engineering and Information Technologies - Loznica, Undergraduate Academic Studies
14. SES40	Software patterns and components	(SE0) Software Engineering and Information Technologies, Undergraduate Academic Studies (SEL) Software Engineering and Information Technologies - Loznica, Undergraduate Academic Studies
15. E2508	Agile Software Development Methodology	(E20) Computing and Control Engineering, Master Academic Studies (SE0) Software Engineering and Information Technologies, Master Academic Studies
16. E2509	Protection and Recovery of Software Systems	(E20) Computing and Control Engineering, Master Academic Studies (MR0) Measurement and Control Engineering, Master Academic Studies (SE0) Software Engineering and Information Technologies, Master Academic Studies (E10) Power, Electronic and Telecommunication Engineering, Master Academic Studies
17. GS014	The application of information technologies in energy efficiency	(G10) Energy Efficiency in Buildings, Specialised Academic Studies
18. E2522	Software Standardization and Quality	(E20) Computing and Control Engineering, Master Academic Studies (MR0) Measurement and Control Engineering, Master Academic Studies (SE0) Software Engineering and Information Technologies, Master Academic Studies (E10) Power, Electronic and Telecommunication Engineering, Master Academic Studies
19. DRNI05	Selected Topics in Software Standardization and Quality	(E20) Computing and Control Engineering, Doctoral Academic Studies (F20) Engineering Animation, Doctoral Academic Studies
20. DRNI08	Selected Topics in Information Systems	(E20) Computing and Control Engineering, Doctoral Academic Studies
21. DAU014	Selected Topics in Computing	(E20) Computing and Control Engineering, Doctoral Academic Studies (OM1) Mathematics in Engineering, Doctoral Academic Studies
22. DRNI12	Selected Topics in Contemporary Software Development Methods	(E20) Computing and Control Engineering, Doctoral Academic Studies (F20) Engineering Animation, Doctoral Academic Studies

Representative references (minimum 5, not more than 10)

1.	B. Perišić, G. Milosavljević "A Method and Tool for Rapid Prototyping of Large Scale Business Information Systems" COMSIS 2004
2.	Perišić B., Milosavljević G., Dejanović I., Milosavljević B.: UML Profile for Specifying User Interfaces of Business Applications, Computer Science and Information Systems (ComSIS), 2011, Vol. 8, No 2, pp. 405-426, ISSN 1820-0214
3.	Dejanović I., Milosavljević G., Tumbas Živanov M., Perišić B.: A Domain-Specific Language for Defining Static Structure of Database Applications, Computer Science and Information Systems (ComSIS), 2010, Vol. 7, No 3, pp. 409-440, ISSN 1820-0214



Study Programme Accreditation

SPECIALISED ACADEMIC STUDIES

Energy Efficiency in Buildings

Representative references (minimum 5, not more than 10)

4.	Branko Perišić "DMIS-Distributed Medical Information System Concept&Structure", SystemScienceJournal NO.1 Vol.13 1987
5.	Dejanović I., Perišić B., Milosavljević G., Stričević N.: Towards a foundation for distributed version control of SLE artifacts. In 3rd International Workshop on Model-Based Software and Data Integration
6.	Milosavljević G., Dejanović I., Perišić B.: Ready for the industry: A practical approach to teaching mde. In 7th Educators Symposium@MODELS 2011: Software Modeling in Education, pages 31-40, Wellington, New Zealand, www.se.uni-oldenburg.de/documents/olnse-2-2011-EduSymp.pdf
7.	Milosavljević G., Dejanović I., Perišić B., Milosavljević B.: UML Profile for Specifying User Interfaces of Business Applications, 14. Advances in Databases and Information Systems, Novi Sad, 20-24 September, 2010, pp. 77-94
8.	Dejanović I., Tumbas Živanov M., Milosavljević G., Perišić B.: Comparison of Textual and Visual Notations of DOMMLite Domain-Specific Language, 14. Advances in Databases and Information Systems, Novi Sad, 20-24 September, 2010, pp. 20-24
9.	G.Milosavljević, B.Perišić "Really Rapid Prototyping of Large-Scale Business Information Systems", IEEE Workshop on Rapid Systems Prototyping San Diego 2003
10.	Perišić B., Zečević I.: Program package University organizational structure Korisnik: FTN Novi Sad, Univerzitet u Novom Sadu Rađeno za: TEMPUS , 2007

Summary data for teacher's scientific or art and professional activity:

Quotation total :	12			
Total of SCI(SSCI) list papers :	4			
Current projects :	Domestic :	1	International :	6

	UNIVERSITY OF NOVI SAD FACULTY OF TECHNICAL SCIENCES 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 6	
	Study Programme Accreditation SPECIALISED ACADEMIC STUDIES Energy Efficiency in Buildings	

Science, arts and professional qualifications

Name and last name:		Radeka M. Miroslava	
Academic title:		Associate Professor	
Name of the institution where the teacher works full time and starting date:		Faculty of Technical Sciences - Novi Sad 01.12.1979	
Scientific or art field:		Materials in Civil Engineering, Condition Assessment and Construction	
Academic career	Year	Institution	Field
Academic title election:	2008	Faculty of Technical Sciences - Novi Sad	Materials in Civil Engineering, Condition Assessment and Construction Sanation
PhD thesis	1998	Faculty of Technology - Novi Sad	Material Science and Engineering Materials
Magister thesis	1985	Faculty of Technology - Novi Sad	Material Science and Engineering Materials
Bachelor's thesis	1979	Faculty of Technology - Novi Sad	Technological Engineering
List of courses being held by the teacher in the accredited study programmes			
ID	Course name	Study programme name, study type	
1.	GG04	Materials in Construction 1	(G00) Civil Engineering, Undergraduate Academic Studies
2.	GG09	Materials in Construction 2	(G00) Civil Engineering, Undergraduate Academic Studies
3.	GG405	Finishing Operations and Installation in Facilities	(G00) Civil Engineering, Undergraduate Academic Studies
4.	URZP13	Building materials and structures	(ZP0) Disaster Risk Management and Fire Safety, Undergraduate Academic Studies
5.	Z202	Graditeljstvo i životna sredina(uneti naziv na engleskom)	(Z20) Environmental Engineering, Undergraduate Academic Studies
6.	GS001	Energy Efficiency and Certification of Buildings	(G10) Energy Efficiency in Buildings, Specialised Academic Studies
7.	GS013	Special topics of building physics and thermodynamics	(G10) Energy Efficiency in Buildings, Specialised Academic Studies
8.	SDGI5A	Selected chapters from the energy efficiency of buildings	(G10) Geodesy and Geomatics, Specialised Academic Studies
9.	GD012	Selected Chapters in Science on Materials	(G00) Civil Engineering, Doctoral Academic Studies
10.	GD023	Energy Efficiency of Construction Structures	(G00) Civil Engineering, Doctoral Academic Studies
Representative references (minimum 5, not more than 10)			
1.	Praktikum sa zbirkom rešenih zadataka za VEŽBE iz predmeta MATERIJALI U GRAĐEVINARSTVU 1, 2008		
2.	1.Radeka, M., Ranogajec, J., Marinković-Nedučin, R., Živanović, B. (1995): Compaction Mechanism as the Function of Atomised Powder Particle Size. <i>Ceramics International</i> , Vol. 21, No. 4, pp. 249-255.		
3.	2.Đurić, M., Marinković-Nedučin, R., Ranogajec, J., Radeka, M. (1995): Particle Size as a Factor Influencing Compressibility of Ceramic Powder. <i>Ceramics International</i> , Vol. 21, No. 4, pp. 227-230.		
4.	3. Đurić, M., Ranogajec, J., Radeka, M., Marinković-Nedučin, R. (1995): Deformation Stress Analysis on Ceramic Powders with Variable Particle Size Range. <i>J. Can. Cer. Soc.</i> , Vol. 64, No. 4, pp.7-12.		
5.	4. Đurić, M., Ranogajec, J., Radeka, M., Živanović, B. (2000): Influence of Amorphous Phase Quantity on some Characteristics of Sintered Ceramic Tiles. <i>J. Can. Cer. Soc.</i> , Vol.68, No.2., pp. 52-57.		
6.	5.Ranogajec, J., Đurić, M., Radeka, M., Jovanović P. (2000): Influence of Particle Size and Furnace Atmosphere on the Sintering of Powder for Tiles Production. <i>Ceramics Silikaty</i> , Vol. 44, No.2., pp.71-77.		
7.	6. Radeka, M., Đurić, M., Ranogajec, J., Živanović, B. Petrašinović-Stojkanović Lj. (2000): Transport Characteristics of Ceramic Particles During Compaction. <i>cfi/Ber. DKG</i> , Vol.77, No.4, pp. 24-29.		
8.	7. Radeka, M., Ranogajec, J., Marinković-Nedučin, R., Kiurski, J. (2003): Texture Modeling of Ceramic Roofing Tile Systems as a Means of Improving Frost Resistance Characteristics, <i>Tile&Brick International</i> , Vol.19, No.2, pp.86-93.		
9.	1.Kiurski J., Ranogajec J., Ujhelji A, Radeka M.,Bokorov M.: Evaluation of the Effect of Lichens on Ceramic Roofing Tiles by Scanning Electron Microscopy and Energy-Dispersive Spectroscopy Analyses, <i>Scanning</i> Vol. 27., (2005) 113-119.		
10.	1. Kiurski J., Ranogajec J., Ujhelji A.,Radeka M., Bokorov M., Balint J., Borbelj-Mesaros A. : Biochemical Corrosion of Ceramic Roofing Tiles by Lichen Actions, <i>Interceram</i> , Vol 54 (2005) [5] 340-343.		
Summary data for teacher's scientific or art and professional activity:			
Quotation total :		11	
Total of SCI(SSCI) list papers :		11	
Current projects :		Domestic :	2
		International :	1



Science, arts and professional qualifications

Name and last name:	Radonjanin S. Vlastimir		
Academic title:	Associate Professor		
Name of the institution where the teacher works full time and starting date:	Faculty of Technical Sciences - Novi Sad 01.11.1987		
Scientific or art field:	Materials in Civil Engineering, Condition Assessment and Construction		
Academic career	Year	Institution	Field
Academic title election:	2008	Faculty of Technical Sciences - Novi Sad	Materials in Civil Engineering, Condition Assessment and Construction Sanation
PhD thesis	2003	Faculty of Civil Engineering - Beograd	Materials in Civil Engineering and Concrete Technology
Magister thesis	1994	Faculty of Technical Sciences - Novi Sad	Materials in Civil Engineering and Concrete Technology
Bachelor's thesis	1982	Faculty of Civil Engineering - Beograd	Civil Engineering

List of courses being held by the teacher in the accredited study programmes

ID	Course name	Study programme name, study type
1.	A202 Structures, Materials and Building	(A00) Architecture, Undergraduate Academic Studies
2.	GG09 Materials in Construction 2	(G00) Civil Engineering, Undergraduate Academic Studies
3.	GG21 Concrete Technology	(G00) Civil Engineering, Undergraduate Academic Studies
4.	URZP13 Building materials and structures	(ZP0) Disaster Risk Management and Fire Safety, Undergraduate Academic Studies
5.	GG504 Durability and Assessment of Concrete Structures	(G00) Civil Engineering, Master Academic Studies
6.	GG506 Professional Practice	(G00) Civil Engineering, Master Academic Studies
7.	GG517 Damages and Repair of Masonry, Steel and Timber Structures	(G00) Civil Engineering, Master Academic Studies
8.	GG518 Repair of Concrete Structures	(G00) Civil Engineering, Master Academic Studies
9.	GP502 Bridge Management	(G00) Civil Engineering, Master Academic Studies
10.	URZP62 Assessment of Damaged Structures	(ZP1) Disaster Risk Management and Fire Safety, Master Academic Studies
11.	GS009 Energy-efficient materials and diagnostic of building thermotechnical performances	(G10) Energy Efficiency in Buildings, Specialised Academic Studies
12.	GS010 The design of energy efficient buildings	(G10) Energy Efficiency in Buildings, Specialised Academic Studies
13.	GS011 Energy revitalization of buildings	(G10) Energy Efficiency in Buildings, Specialised Academic Studies
14.	SDG11A Odabrana poglavlja iz građevinskih materijala i konstrukcija	(G10) Geodesy and Geomatics, Specialised Academic Studies
15.	GD005 Selected Chapters in Concrete Theory and Technology	(G00) Civil Engineering, Doctoral Academic Studies
16.	GD008 Contemporary Methods in Concrete Structure Design	(G00) Civil Engineering, Doctoral Academic Studies
17.	GD013 Earthquake Engineering	(G00) Civil Engineering, Doctoral Academic Studies
18.	GD015 Rheology of Concrete Structures	(G00) Civil Engineering, Doctoral Academic Studies

Representative references (minimum 5, not more than 10)

1.	Radonjanin,V. (2003): Prilog istraživanju osnovnih karakteristika betona modifikovanih polimerima sa aspekta njihove primene u armiranobetonskim konstrukcijama, Magistarska teza
2.	Radonjanin,V.(1994): Parametarska analiza karakteristika reparaturnih maltera sa aspekta njihove primene pri sanaciji armiranobetonskih konstrukcija, Doktorska disertacija
3.	Folić, R., Radonjanin, V. (1998): Experimental research on polymer modified concrete, ACI Materials Journal, VOL. 95 No. 4, July/August 1998, pp.463-470.
4.	Marinkovic Snezana B, Radonjanin Vlastimir S, Malesev Mirjana, Ignjatovic IS,Comparative environmental assessment of natural and recycled aggregate concrete (Article), WASTE MANAGEMENT, (2010), vol. 30 br. 11, str. 2255-2264
5.	Stojanovic Goran M, Radovanovic Milan, Malesev Mirjana, Radonjanin Vlastimir S, Monitoring of Water Content in Building Materials Using a Wireless Passive Sensor (Article), SENSORS, (2010), vol. 10 br. 5, str. 4270-4280
6.	Maksimovic M.; Stojanovic G.; Radovanovic M.; Malesev M.; Radonjanin V.; Radosavljevic G.; Smetana W (2012).: Application of a LTCC sensor for measuring moisture content of building materials, Elsevier - Construction and Building Materials, Volume 26, Issue 1, January 2012, pp. 327–333 (http://dx.doi.org/10.1016/j.conbuildmat.2011.06.029)
7.	Folić, R., Radonjanin, V., Malešev, M. (2002): The assessment of the Structure of Novi Sad Open University Damaged in Fire, Journal "Construction and Building Materials", No. 16 (2002), Elsevier Science, London, pp.427 - 440.



UNIVERSITY OF NOVI SAD

FACULTY OF TECHNICAL SCIENCES 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 6

**Study Programme Accreditation**

SPECIALISED ACADEMIC STUDIES

Energy Efficiency in Buildings

Representative references (minimum 5, not more than 10)

- | | |
|-----|---|
| 8. | Matić B., Tepić J., Sremac S., Radonjanin V., Matić D., Jovanović P.: Development and evaluation of the model for the surface payment temperature prediction, Journal "Metalurgija", Croatian metallurgical society, Zagreb, Croatia, ISSN: 0543-5846, 2012 (UDC – UDK 621.747.621.006.2:658.564=111), pp.329-332 |
| 9. | Pavlović, P., Folić, R., Radonjanin, V., Tatomirović, M. (1997): The Testing and Repair of Steel Silo, Journal "Construction and Building Materials", Vol. 11. No. 5-6 (1997), Elsevier Science, London, pp.353-363. |
| 10. | Radonjanin, V., Malešev, M., Folić, R. (2007): Assessment and repair of the bearing structure of a multi-storey parking garage, Journal of Building Appraisal, Volume 2, Issue 4, Publisher "Palgrave Macmillan", London, UK, February 2007, pp. 335-354. |

Summary data for teacher's scientific or art and professional activity:

Quotation total :	24		
Total of SCI(SSCI) list papers :	7		
Current projects :	Domestic :	2	International : 1

	UNIVERSITY OF NOVI SAD FACULTY OF TECHNICAL SCIENCES 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 6	
	Study Programme Accreditation SPECIALISED ACADEMIC STUDIES Energy Efficiency in Buildings	

Science, arts and professional qualifications

Name and last name:		Ristanović R. Milan	
Academic title:		Assistant Professor	
Name of the institution where the teacher works full time and starting date:		Faculty of Mechanical Engineering - Beograd 01.10.2011	
Scientific or art field:		Automatic Control and System Engineering	
Academic career	Year	Institution	Field
Academic title election:			
List of courses being held by the teacher in the accredited study programmes			
	ID	Course name	Study programme name, study type
1.	GS006	Intelligent Buildings	(G10) Energy Efficiency in Buildings, Specialised Academic Studies
Representative references (minimum 5, not more than 10)			
1.	Milan Ristanović, Dragan Lazić, Ivica Indjin, Modeling, Simulation and Control of an Electromechanical Aerofin Control System With PWM Controlled DC Motor, Avtomatika i vyqislitelna tehnika / Automatic Control and Computer Sciences, Allerton Press, Inc. distributed by Springer, Vol. 42, No. 4, 2008, pp. 184-190.		
2.	D V Lazić, M R Jovanović, M R Ristanović, Practical Tracking of a Hydraulic Cylinder and Axial Piston Hydraulic Motor, Power Transmission and Motion Control (PTMC 98), Edited by C R Burrows and K A Edge, ISBN 1 86058 134 X, Bath, UK, 1998, pp. 331-346		
3.	Milan Ristanović, Dragan Lazić, Ivica Indjin, Experimental Validation of Increased Performances of an Electromechanical Aerofin Control System With PWM Controlled DC Motor", FME Transactions, Faculty of Mechanical Engineering Belgrade, Volume 34, Number 1, 2006, pp. 15-20		
4.	Dragan V. Lazić, Milan R. Ristanović, Hvac, Floor Heating And Fan Coil KNX/EIB Intelligent Control System In The Wellness Centre Of The Hotel Splendid In Bečići, KGH, No1. Februar 2008, Godina 37, str. 49-54. (in Serbian)		
5.	Banjac Miloš J., Todorović Maja N., Ristanović Milan R., Galić Radoslav D, Experimental determination of thermal conductivity of soil with a thermal response test. Thermal Science, 2012 OnLine-First (00):156-156 Details Full text (998 KB) DOI:10.2298/TSCI100627156B		
Summary data for teacher's scientific or art and professional activity:			
Quotation total :			
Total of SCI(SSCI) list papers :			
Current projects :		Domestic :	International :



Science, arts and professional qualifications

Name and last name:	Stankovski V. Stevan		
Academic title:	Full Professor		
Name of the institution where the teacher works full time and starting date:	Faculty of Technical Sciences - Novi Sad 23.03.1987		
Scientific or art field:	Mechatronics, Robotics and Automation and Integral Systems		
Academic carier	Year	Institution	Field
Academic title election:	2005	Faculty of Technical Sciences - Novi Sad	Mechatronics, Robotics and Automation and Integral Systems
PhD thesis	1994	School of Electrical Engineering - Beograd	Electrical and Computer Engineering
Magister thesis	1991	School of Electrical Engineering - Beograd	Electrical and Computer Engineering
Bachelor's thesis	1987	Faculty of Technical Sciences - Novi Sad	Electrical and Computer Engineering

List of courses being held by the teacher in the accredited study programmes

	ID	Course name	Study programme name, study type
1.	H105	Fundamentals in Computer science	(H00) Mechatronics, Undergraduate Academic Studies
2.	H109	Fundamentals in Programming	(H00) Mechatronics, Undergraduate Academic Studies
3.	H1403	Automation of work processes	(H00) Mechatronics, Undergraduate Academic Studies
4.	H1409	Intelligent Systems	(H00) Mechatronics, Undergraduate Academic Studies
5.	H1410	Programming and application of programmable logic controllers	(H00) Mechatronics, Undergraduate Academic Studies
6.	H1501A	Systems for Survailance and Visualisation of Process	(H00) Mechatronics, Undergraduate Academic Studies
7.	H310	Components of technological systems	(H00) Mechatronics, Undergraduate Academic Studies
8.	H311	Application of Sensors and Actuators	(H00) Mechatronics, Undergraduate Academic Studies (E10) Power, Electronic and Telecommunication Engineering, Undergraduate Academic Studies
9.	BM116C	Motion control	(BM0) Biomedical Engineering, Undergraduate Academic Studies
10.	BMI106	Rehabilitation devices and systems	(BM0) Biomedical Engineering, Undergraduate Academic Studies
11.	BMI110	Sensors and actuators in medicine	(BM0) Biomedical Engineering, Undergraduate Academic Studies
12.	II1009	Automatic identification systems	(I10) Industrial Engineering, Undergraduate Academic Studies
13.	II1010	Control of technical systems	(I10) Industrial Engineering, Undergraduate Academic Studies
14.	II1011	Automation of work processes 1	(I10) Industrial Engineering, Undergraduate Academic Studies
15.	II1015	Programmable Logic Controllers (PLC)	(I10) Industrial Engineering, Undergraduate Academic Studies
16.	II1038	Automation of work processes 2	(I10) Industrial Engineering, Undergraduate Academic Studies
17.	II1042	Automation of Continual Processes	(I10) Industrial Engineering, Undergraduate Academic Studies
18.	II1045	Systems for measurement, surveillance and control	(I10) Industrial Engineering, Undergraduate Academic Studies
19.	II1048	Artificial intelligence in engineering	(I10) Industrial Engineering, Undergraduate Academic Studies
20.	IM1022	Fundamentals of technical systems control	(I20) Engineering Management, Undergraduate Academic Studies (M20) Mechanization and Construction Engineering, Undergraduate Academic Studies
21.	IM1035	Identification technologies in enterprises	(I20) Engineering Management, Undergraduate Academic Studies
22.	IM1719	Implementation of information systems in insurance	(I20) Engineering Management, Undergraduate Academic Studies
23.	H505	Implementation of automated systems	(H00) Mechatronics, Master Academic Studies (I10) Industrial Engineering, Master Academic Studies



Study Programme Accreditation

SPECIALISED ACADEMIC STUDIES

Energy Efficiency in Buildings

List of courses being held by the teacher in the accredited study programmes

ID	Course name	Study programme name, study type
24.	HDOS12 Research in the area of automatic identification technology	(I12) Industrial Engineering, Specialised Academic Studies
25.	HDOS13 Motion control and application of MEMS	(I12) Industrial Engineering, Specialised Academic Studies
26.	HDOS14 Nonindustrial automation	(I12) Industrial Engineering, Specialised Academic Studies
27.	IMDR0S Selected chapters in enterprise's design, organization and control	(I12) Industrial Engineering, Specialised Academic Studies (I22) Engineering Management, Specialised Academic Studies
28.	MBA414 Integrated Business Processes	(I20) Engineering Management, Specialised Professional Studies (I80) Engineering Management - MBA, Specialised Professional Studies
29.	PLM09 Systems and Devices for Tracking Products Through Life Cycle	(I1U) Industrial Engineering - Product Lifecycle Management and Development, Master Academic Studies
30.	NIT02 Factory Automation	(NIT) Industrial Engineering - Advanced Engineering Technologies, Master Academic Studies
31.	NIT06 Advanced Technologies for Manufacturing Support	(NIT) Industrial Engineering - Advanced Engineering Technologies, Master Academic Studies
32.	NIT08 Fundamentals of Computer Science and Informatics	(NIT) Industrial Engineering - Advanced Engineering Technologies, Master Academic Studies
33.	GS006 Intelligent Buildings	(G10) Energy Efficiency in Buildings, Specialised Academic Studies
34.	H799 Fieldbuses and protocols	(H00) Mechatronics, Master Academic Studies
35.	H828 Advanced robotics	(H00) Mechatronics, Master Academic Studies
36.	H845 Motion control	(H00) Mechatronics, Master Academic Studies (I10) Industrial Engineering, Master Academic Studies
37.	I903 Application of microelectromechanical systems	(I10) Industrial Engineering, Master Academic Studies
38.	IIDS6 Selected chapters in automation	(I12) Industrial Engineering, Specialised Academic Studies
39.	IM2516 Artificial Intelligence in Engineering	(I20) Engineering Management, Master Academic Studies
40.	IM2716 Automation systems in insurance	(I20) Engineering Management, Master Academic Studies
41.	IM2721 Systems for detection, alarming and warning	(I20) Engineering Management, Master Academic Studies
42.	GD018 Automation and Robotics in Construction	(G00) Civil Engineering, Doctoral Academic Studies (OM1) Mathematics in Engineering, Doctoral Academic Studies
43.	HDOK12 Research in the area of automatic identification technologies	(H00) Mechatronics, Doctoral Academic Studies
44.	HDOK13 Motion control and the application of MEMS	(H00) Mechatronics, Doctoral Academic Studies
45.	HDOK14 Non-industrial Automation	(H00) Mechatronics, Doctoral Academic Studies
46.	HDOK-3 Selected Chapters in Automation Systems Integration	(H00) Mechatronics, Doctoral Academic Studies
47.	HDOKL3 Selected Chapters in Automation Systems Integration	(H00) Mechatronics, Doctoral Academic Studies
48.	HDOL12 Research in the area of automatic identification technologies	(H00) Mechatronics, Doctoral Academic Studies
49.	HDOL13 Motion control and application of MEMS	(H00) Mechatronics, Doctoral Academic Studies (I20) Industrial Engineering / Engineering Management, Doctoral Academic Studies
50.	HDOL14 Nonindustrial automation	(H00) Mechatronics, Doctoral Academic Studies (I20) Industrial Engineering / Engineering Management, Doctoral Academic Studies
51.	IMDR0 Science of Industrial Engineering and Management	(I20) Industrial Engineering / Engineering Management, Doctoral Academic Studies
52.	IMDR80 Selected chapters in automation	(I20) Industrial Engineering / Engineering Management, Doctoral Academic Studies
Representative references (minimum 5, not more than 10)		
1.	Stankovski S., Tarjan L., Škrinjar D., Ostojić G., Šenk I.: Using a Didactic Manipulator in Mechatronics and Industrial Engineering Courses, IEEE Transactions on Education, 2010, Vol. 53, No 4, pp. 572-579, ISSN 0018-9359	



Study Programme Accreditation

SPECIALISED ACADEMIC STUDIES

Energy Efficiency in Buildings

Representative references (minimum 5, not more than 10)

2.	Gajić G., Stankovski S., Ostojić G., Tešić Z., Miladinović Lj.: Method of evaluating the impact of ERP implementation critical success factors – a case study in oil and gas industries (DOI:10.1080/17517575.2012.690105), Enterprise Information Systems, 2012, ISSN 1751-7575
3.	Stankovski S., Ostojić G., Šenk I., Rakić-Skoković M., Trivunović S., Kučević D.: Dairy cow monitoring by RFID, Scientia Agricola, 2012, Vol. 69, No 1, pp. 75-80, ISSN 0103-9016
4.	Stankovski, S., Ostojić, G., Raković, M., Trajan, L., Šenk, I., Nikolić, M.: Zbirka rešenih zadataka iz: Programiranje i primena programabilno logičkih kontrolera, Fakulte tehničkih nauka, 2009
5.	Stankovski, S., Rakić-Skoković, M., Šešljija, D., Ostojić, G.: Primena RFID tehnologije u automatizaciji
6.	Stankovski S., Lazarević M., Ostojić G., Čosić I., Purić R.: RFID Technology in Product/Part Tracking During the Whole Life Cycle , Assembly Automation, 2009, Vol. 29, No 4, pp. 364-370, ISSN 0144-5154
7.	Ostojić G., Lazarević M., Stankovski S., Čosić I.: RFID Technology Application in Disassembly Systems , Strojnski vestnik = Journal of Mechanical Engineering, 2008, Vol. 54, No 11, pp. 759-767, ISSN 0039-2480, UDK: 658.5
8.	Popović B., Popović N., Mijić D., Stankovski S., Ostojić G.: Remote Control of Laboratory Equipment for Basic Electronics Courses: A LabVIEW-based Implementation DOI: 10.1002/cae.20531, Computer Applications in Engineering Education, 2011, ISSN 1061-3773
9.	Stankovski S., Ostojić G., Tarjan L., Škrinjar D., Lazarević M.: IML Robot Grasping Process Improvement, Iranian Journal of Science & Technology, 2011, Vol.35, No M1, pp. 197-207, Transactions B ISSN: 1028-6284
10.	Janković J., Petrović N., Miladinović Lj., Popkonstantinović B., Stoimenov M., Petrović D., Ostojić G., Stankovski S.: Computer Simulation of Fast Hydraulic Actuators, Iranian Journal of Science & Technology, Transactions B, 2012, Vol. 36, No M1, pp. 95-106, ISSN: 1028-6284
Summary data for teacher's scientific or art and professional activity:	
Quotation total :	25
Total of SCI(SSCI) list papers :	20
Current projects :	Domestic : 3 International : 4

	UNIVERSITY OF NOVI SAD FACULTY OF TECHNICAL SCIENCES 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 6	
	Study Programme Accreditation SPECIALISED ACADEMIC STUDIES Energy Efficiency in Buildings	

Science, arts and professional qualifications

Name and last name:		Šumarac M. Dragoslav	
Academic title:		Full Professor	
Name of the institution where the teacher works full time and starting date:		Faculty of Civil Engineering - Beograd 17.10.1980	
Scientific or art field:		Technical Mechanics	
Academic carier	Year	Institution	Field
Academic title election:	1998		Technical Mechanics
PhD thesis	1998		Technical Mechanics
Bachelor's thesis	-		Technical Mechanics
Magister thesis	-		Technical Mechanics
List of courses being held by the teacher in the accredited study programmes			
ID	Course name	Study programme name, study type	
1.	GS001 Energy Efficiency and Certification of Buildings	(G10) Energy Efficiency in Buildings, Specialised Academic Studies	
2.	SDGI5A Selected chapters from the energy efficiency of buildings	(G10) Geodesy and Geomatics, Specialised Academic Studies	
3.	GD023 Energy Efficiency of Construction Structures	(G00) Civil Engineering, Doctoral Academic Studies	
4.	GD024 Fracture Mechanics	(G00) Civil Engineering, Doctoral Academic Studies	
Representative references (minimum 5, not more than 10)			
1.	Šumarac, D.: Energetska efikasnot zgrada (Zbornik radova), Građevinski fakultet Beograd, 2005.		
2.	Šumarac, D.: Energetska efikasnost zgrada u Srbiji, Konferencija Graditeljstvo i održivi razvoj, DIMK, Građevinski fakultet Beograd, Ed. S. Marinković i V. Radonjanin, Beograd, jun 04-05, 2009.		
3.	Sumarac,D.and Krajcinovic, D.: "A Mesomechanical Model for Brittle Deformation Processes", Part II, Journal of Applied Mechanics, 56, pp. 57-62, 1989.		
4.	Sumarac, D. and Krajcinovic, D.: "A Simple Solution of the Crack Reinforced by Bonds", Engineering Fracture Mechanics, Vol. 33, 6, pp. 949, 1989.		
5.	Krajcinovic, D., Basista, M. and Sumarac, D.: "Micromechanically Inspired Phenomenological Damage Model", Journal of Applied Mechanics, 58, No.2, pp. 305, June 1991.		
6.	Krajcinovic, D., Basista, M., Mallick, K. and Sumarac, D.: "Chemo-Micromechanics of Brittle Solids", Journal of the Mechanics and Physics of Solids, Vol. 40, No. 5, pp. 965-990, 1992.		
7.	Krajcinovic, D., Mallick, K., Basista, M. and Sumarac, D.: "Elastic Moduli of Perforated Plates in the Neighborhood of Critical State", Int. Journal of Solids and Structures, Vol.29, No. 14/15, pp. 1837-1847., 1992.		
8.	Sumarac, D., Krajcinovic, D. and Mallick, K.: "Elastic Parameters of Brittle, Elastic Solids Containing Slits-Mean Field Theory", Inter. Journal of Damage Mechanics, Vol.1, No.3, pp. 320-346, 1992.		
9.	Krajcinovic, D., Sumarac, D. and Mallick, K.: "Elastic Parameters of Brittle, Elastic Solids Containing Slits-Critical State", Inter. Journ. of Damage Mechanics, Vol. 1, No. 4, pp. 386-403, 1992.		
10.	Krajcinovic,D. Lubarda,V., Sumarac,D.: "Fundamental Aspects of Brittle Cooperative Phenomena-Effective Continua Models", Mechanics of Materials, 15, pp.99-115, 1993.		
Summary data for teacher's scientific or art and professional activity:			
Quotation total :			
Total of SCI(SSCI) list papers :			
Current projects :		Domestic :	International :



Science, arts and professional qualifications

Name and last name:	Vukajlov D. Ljiljana		
Academic title:	Assistant Professor		
Name of the institution where the teacher works full time and starting date:	Faculty of Technical Sciences - Novi Sad 28.02.2007		
Scientific or art field:	Architectural-Urbanistic Planning, Design and Theory		
Academic carier	Year	Institution	Field
Academic title election:	2010	Faculty of Technical Sciences - Novi Sad	Architectural-Urbanistic Planning, Design and Theory
PhD thesis	2010	Faculty of Technical Sciences - Novi Sad	Architectural-Urbanistic Planning, Design and Theory
Magister thesis	1998	Faculty of Architecture - Beograd	Architectural-Urbanistic Planning, Design and Theory
Bachelor's thesis	1987	Faculty of Architecture - Beograd	Architectural-Urbanistic Planning, Design and Theory

List of courses being held by the teacher in the accredited study programmes

	ID	Course name	Study programme name, study type
1.	A205	Urban, Rural Analysis and Morphology 1	(A00) Architecture, Undergraduate Academic Studies
2.	A241	Urban/Rural Analysis and Morphology 2	(A00) Architecture, Undergraduate Academic Studies
3.	S0110A	Urban Planning 2	(S00) Traffic and Transport Engineering, Undergraduate Academic Studies (S01) Postal Traffic and Telecommunications, Undergraduate Academic Studies
4.	URZP21	Risk Management and Sustainable Settlement Development	(ZP0) Disaster Risk Management and Fire Safety, Undergraduate Academic Studies
5.	A007S	Razvoj tipologije arhitektonskih objekata - odabrana poglavlja	(A00) Architecture, Specialised Academic Studies
6.	A008S	Development of typology of urban spaces	(A00) Architecture, Specialised Academic Studies
7.	RPR011	Tourism as Regional Development Perspective	(RPR) Regional Development Planning and Management, Master Academic Studies
8.	GS004	Bioclimatic Architecture	(G10) Energy Efficiency in Buildings, Specialised Academic Studies
9.	A118S	Contemporary technologies applied to architecture and urbanism	(A00) Architecture, Specialised Academic Studies
10.	A118SA	Kulturno nasleđe kao arhitektonski i urbanistički kontekst - odabrana poglavlja	(A00) Architecture, Specialised Academic Studies
11.	AT07D	Principles of Universal Design 2	(AH0) Architecture, Master Academic Studies

Representative references (minimum 5, not more than 10)

1.	Vukajlov, Lj.: Historical Review of the Interdependence of Settlements and Urban and Rural Blocks, Facta Universitatis, Series Architecture and Civil Engineering Vol. 7. No. 2, 2009. pp.121- 133 DOI: 10.2298/FUACE090212IV UDC 711.43+711.43(091)(045)
2.	Vukajlov, Lj.: "Organizacija urbanog i ruralnog bloka u funkciji obezbeđenja privatnosti stanovanja", Zbornik radova, međunarodni naučnostručni skup „Arhitektura i urbanizam, Građevinarstvo, Geodezija – Juče, Danas, Sutra“, Arhitektonsko - građevinski fakultet, Banja Luka, 2011. str. 423-434
3.	Vukajlov, Lj. "Urban Design Course", Second Conference, Reforming Architectural Education in the CARDS Countries, TEMPUS SCM CO19 A04, Skenpoint, Skopje, 2006. 144-149, ISBN 978-9989-118-05-0, COBISS.MK-ID 73043722 M33 (1)
4.	Vukajlov, Lj.: Geometry of Urban and Rural Block Bases in the Towns of Vojvodina and Surrounding Regions, XXV International Conference of Geometry and Graphics moNGeometrija 2010, Belgrade 24-27 June 2010.
5.	Autori: Kisin S., Đukić Lj., Lekić R., Vukajlov, L.: The Survey of Gimnasium Steel Structure, VII Megunareden simpozium društva na građevnite konstruktori na Makedonija, Ohrid, Republika Makedonija, 2 - 4. oktobar 1997. str. 38/1-38/6
6.	Vukajlov, Lj. Dorić, M.: "Istraživanje pozorišnih objekata u Republici Srbiji sa urbanističkih aspekata", studija prikazana na 20. Salonu urbanizma, Udruženje urbanista Srbije, Niš, 2011. str. 07.19. ISBN 978-86-84275-26-6
7.	Vukajlov Lj., Dorić M.: Uticaj urbanog bloka na kvalitet javnog prostora: Unapređenje strategije obnove i korišćenja javnih prostora u prostornom i urbanističkom planiranju i projektovanju, u: Kurtović-Folić, N., Novi Sad, Fakultet tehničkih nauka, Departman za arhitekturu i urbanizam, 2011, str. 193-218, ISBN 978-86-7892-254-1 COBISS.SR-ID 262615815
8.	Vukajlov, Lj.: "Urbanistički kriterijumi scenskih objekata u Republici Srbiji", tekst u okviru "Arhitektura scenskih objekata u Republici Srbiji", Radivoje Dinulović, Dragana Konstantinović, Miljana Zeković urednici, Departman za arhitekturu i urbanizam, Fakultet tehničkih nauka, Novi Sad, 2011. str. 283-301, ISBN 978-86-7892-255-8



UNIVERSITY OF NOVI SAD

FACULTY OF TECHNICAL SCIENCES 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 6

**Study Programme Accreditation**

SPECIALISED ACADEMIC STUDIES

Energy Efficiency in Buildings

Representative references (minimum 5, not more than 10)

9. Vukajlov, Lj.: Objašnjenje termina načina i sistema građevnja urbanih blokova, Izgradnja 63 (2009) 9-10, str. 415-420 UDK 624+71+72(05)

10. Uloga urbanog i ruralnog bloka u formiranju strukture i identiteta naselja u Vojvodini

Summary data for teacher's scientific or art and professional activity:

Quotation total :	0		
Total of SCI(SSCI) list papers :	0		
Current projects :	Domestic :	2	International : 0



Study Programme Accreditation

SPECIALISED ACADEMIC STUDIES

Energy Efficiency in Buildings

Standard 10. Organizational and Material Resources

To perform the study program are provided human, physical, technical, technological, library and other resources that are appropriate to the nature of the study program and the anticipated number of students. Teaching in the study program "Energy Efficiency of Buildings" is performed in two shifts so a minimum area of 2m² per student is provided.

Classes are held in the amphitheater, classrooms and specialized laboratories. The library has more than 100 library items that are relevant for the implementation of the study program "Energy Efficiency in Buildings". All courses are covered with appropriate reference textbook and teaching aids, which are available on time and in sufficient numbers for the normal teaching process. Also, an adequate informational support is provided.

The Faculty has a library and reading room and provides a place for every student in the amphitheater, classrooms and laboratories.



Study Programme Accreditation

SPECIALISED ACADEMIC STUDIES

Energy Efficiency in Buildings

Standard 11. Quality Control

Audit of the quality of the study program is conducted regularly and systematically through self-evaluation, external quality assurance and through decades long practice of students pooling.

Audit of the quality of the study program is achieved through:

- A survey of students at the end of the course.
- By the survey of graduates on the quality of the study program and logistical support to studies. In addition, the study assesses and comfort (clean and tidy classrooms, ...).
- The survey of teaching and non-teaching staff on the quality of the study program and logistical support to studies. This survey evaluates the Dean, student services, library and other departments of the Faculty.

Committee for the monitoring of the quality of the study program is composed of all the heads of departments that participate in the realization of the study program and two students from the study program



Study Programme Accreditation
SPECIALISED ACADEMIC STUDIES Energy Efficiency in Buildings

Standard 12. Distance Education

e-learning has not been introduced.