

**INFORMATION PACKAGE
/ECTS/**

FIELD OF HIGHER EDUCATION: 5. TECHNICAL SCIENCES

PROFESSIONAL FIELD: 5.1. MECHANICAL ENGINEERING

SPECIALITY: ENGINEERING SAFETY

EDUCATIONAL DEGREE: MASTER

LEVEL BY NATIONAL QUALIFICATION FRAMEWORK LEVEL 7

NUMBER OF CREDITS ON ESTS 60

QUALIFICATION: MASTER of ENGINEERING

DUARATION: ONE YEAR

FORM OF EDUCATION: FULL TIME

ENTER FROM 2017/2018

QUALIFICATION CHARACTERISTICS

of the specialty: **ENGINEERING SAFETY**

EDUCATIONAL DEGREE: **MASTER**

MASTER - ENGINEER

QUALIFICATION: **IN THE ENGINEERING SAFETY**

PURPOSE AND EDUCATIONAL AIM OF THE SPECIALTY

The Master's degree targets Bachelor's degree / Master's degree graduates majoring in professional fields in higher education areas 5. Technical sciences.

The professional purpose of the engineering degree is to carry out: research, research, analytical and expert activity to provide engineering safety in various technical fields of activity.

The established learning structure of the degree is in line with the latest trends in technical and technological advancement aiming to provide engineering safety incorporating streamlined laws established both locally and within the European Union. It works in conjunction with health and safety company policies as well as working hygiene and profession related health issues.

The Master's degree "Engineering safety" aims to prepare candidates in the research, scientific, analytical and expertise fields and thus to ensure engineering safety in different technical areas of the field. The candidates will acquire knowledge, skills, habits, predispositions and values required when making technical decisions in the process of developing measures aiming to minimize the existing risk in carrying out the necessary work. They will become familiar with all basic legislative applications regulating the work of health and safety specialists and the documentation used in the preparation and provision of healthy and safe working conditions. Successful "Engineering safety" Master's degree graduates will acquire improved knowledge and practical competences, and will be able to rely on modern methods for identifying production and other side risks. They will receive extensive specialized training and will thus be able to maintain a level of modern day accuracy and professionalism when putting their technical and ergonomic expertise to practice in all industrial fields.

REQUIREMENTS FOR THE PREPARATION OF THE SPECIALIST

The Engineering safety Master's degree candidate who in line with a well-rounded specialized knowledge of the field can also demonstrate knowledge of the organization, planning, processes and research analysis. The structure of the degree is broken down in the following categories:

- Compulsory courses laying the foundations of the theoretical and specialized platform in preparation of the specialty "Engineering Safety";
- Elective courses enabling the advancement of the basic theoretical and specialized training of the Major. Within the framework of the elective course of study, students are provided with the necessary conditions for deepening, specifying and enriching the

acquired knowledge and the skills and competences formed within the compulsory subjects;

- Optional courses that provide the opportunity to enrich the knowledge, skills and competences of students, depending on the varying focus of their interests;
- As a requirement for a successful graduation, students must pass a national level examination in the Major or develop and verbally present and defend a dissertation contributing 15 credits to their overall diploma record.

KNOWLEDGE AND SKILLS, NECESSARY FOR PROFESSIONAL ACTIVITY

A master's degree graduate in "Engineering safety" must be able to:

- Carry out a professional examination of the workplace, workstation area, machinery and equipment, materials and raw materials used and side-factors accompanying the work process;
- Identify technical and organizational measures and solutions for improving working conditions;
- Develop measures to reduce and prevent risks in the course of work;
- Compile technical safety tasks for all workers;
- Carry out an expert study on the safety and hygiene working conditions of the main activity as well as any other related production activities.

The Master's graduate also actively performs expert actions on health and safety at work on a personal level.

AREA OF PROFESSIONAL IMPLEMENTATION

The Master's degree graduate in "Engineering Safety" must possess the following basic skills:

- Ability to apply acquired theoretical knowledge in practice;
- Ability to independently define and solve tasks related to safety and hygiene at work;
- Become familiar with the equipment and technical safety of used machinery, equipment and work equipment;
- Become familiar with the requirements for carrying out production activities;
- Ability to develop risk assessment and risk minimization measures.

AREA FOR PROFESSIONAL REALISATION

Students successfully completing their training will be prepared to apply their knowledge in the field of technical safety and hygiene at work for the needs of all industrial activities. They will also be able to carry out expert work on work safety and to take personal responsibility for their activities; they can become successful as managers on state, public and private enterprises and institutions, as well as experts in occupational safety.

The specialist will be trained to work in all areas requiring higher education in Engineering safety, as well as skills for technical analysis, modeling and research of risks, accidents at work and other incidents. They can become professional with their knowledge and skills both in the Republic of Bulgaria and abroad.

ROLES THAT CAN BE APPLIED FOR IN ACCORDANCE WITH THE NATIONAL CLASSIFIER OF PROFESSIONS AND OFFICIALS

Students who have successfully completed their studies in the Masters are pursuing the following positions in the national classification of positions and professions in the Republic of Bulgaria (2011):

- Expert on work safety; work safety inspector, engineering; expert, technical safety and information; expert, technological support; engineer, civil servant; mechanical engineer; Mechanical Engineer; technician, mechanic; specialist with control functions; organizer of the proceedings; Foreman; factory manager; manager; infrastructure and logistics in an enterprise; engineer, quality; engineer, production planning, forecasting and development; engineer, production efficiency; engineer, production; Technical Director; Production Director; Explorer; lecturer, high school; assistant, high school.

The Master's degree graduates can also continue their education in educational and scientific PhD degree.

DEGREE COURSE OF ENGINEERING SAFETY

CURRICULUM

First academic year			
First semester	ECTS credits	Second semester	ECTS credits
Industrial safety I part	5	Industrial safety II part	5
Theory of the engineering science	4	Labor law in the European Union	3
Modern occupational safety management systems	5	Labor hygiene and occupational diseases	3
Company safety and health policy	5	Elective course from Group 2 - Judicial-technical expertise; - Electrical safety and mechanical danger	4 4
Legal regulation of work conditions	5	DIPLOMA THESIS	15
Marketing management	4		
Elective course from Group 1 - Analysis and control of pollution of the working environment - metrological quality assurance	4 4		
	Total: 30		Total: 30

TOTAL: 60 CREDITS FOR ONE ACADEMIC YEARS

INDUSTRIAL SAFETY I PART

ECTS credits: 5	Semester: I
Exam type: written exam	Hours per week: 2 lectures+2 laboratory exercises
Course type: lectures +laboratory exercises	Course status: Compulsory
	Degree Course: Engineering safety

Lecturer: Assoc. Prof. Eng. Snezhina Andonova, PhD, Email: andonova_sn@swu.bg

Department: Mechanical engineering

Faculty: Faculty of Engineering

Phone : (+359 73) 073 88 51 62, Email: technical_mtt@swu.bg

Description of the discipline:

In the "Industrial Safety I" course, students should have basic knowledge about the legal security and the organization of labor protection and technical safety in the industry. The main concepts, definitions and information related to the provision of industrial safety are examined, focusing on analysis, prevention and regulation. The normative reference in the content of the discipline complies with the national and European directives.

Aim of the discipline:

The aim of the course is to acquaint students with the basic concepts, definitions and information, the normative security and the organization of the labor protection, as well as with the technical safety in the industry.

Educational methods:

Lectures, individual work and scientific literature textbook exercises, brainstorming and discussion, solve problems, exercise, and Power Point presentation.

Inscribing for tuition: Not necessary.

Inscribing for exam: Agreement with the lecturer and the Students Service Department

THEORY OF THE ENGINEERING SCIENCE

ECTS credits: 3	Semester: I
Evaluation: current control, course work Exam type: term assessment	Hours per week: 1 lectures+2 laboratory exercises
Course type: lectures +laboratory exercises	Course status: Compulsory
	Degree Course: Engineering safety

Lecturer: Assoc. Prof. Eng. Dimitrina Kerina, PhD, Email: d_kerina@swu.bg
Department: Mechanical engineering
Faculty: Faculty of Engineering
Phone: (+359 73) 073 88 51 62, Email: technical_mtt@swu.bg

Description of the discipline:

The training in the subject includes the study of the basic issues related to the mathematical foundations of the engineering experiment. The discipline contains the mathematical apparatus necessary for the study of the engineering disciplines provided in the curriculum and prepares future specialists for independent engineering. Basic knowledge and skills are required from the Bachelor's degree course in Mathematics.

Aim of the discipline:

The aim of the course is to enhance the main knowledge of the students and to develop their habits for a constructive approach in the application of mathematical knowledge in engineering. They are going to be acquainted with special questions from the theory of differential equations, methods of approximating functions, numerical methods (approximation of algebraic equations and systems of algebraic equations, numerical differentiation and integration, numerical solution of differential equations) for optimization.

Educational methods:

Lectures, individual work and scientific literature textbook exercises, brainstorming and discussion, solve problems, exercise, and Power Point presentation.

Inscribing for tuition: Not necessary.

Inscribing for exam: Agreement with the lecturer and the Students Service Department

COMPANY SAFETY AND HEALTH POLICY

ECTS credits: 3	Semester: I
Exam type: term assessment	Hours per week: 0 lectures+2 laboratory exercises
Course type: laboratory exercises	Course status: Compulsory
	Degree Course: Engineering safety

Lecturer: Prof. Eng. Snezhina Andonova, PhD, Email: andonova_sn@swu.bg

Department: Mechanical engineering

Faculty: Faculty of Engineering

Phone : (+359 73) 073 88 51 62, Email: technical_mtt@swu.bg

Description of the discipline:

In the course "Company safety and health policy" the students should have basic knowledge of the model of the system for management of safety and health at work in the company and the applied aspects of the company management systems - stages, goals, organization of the system, functional features, safety and health planning at work, documentation of the safety management system, hierarchy of documents.

Aim of the discipline:

The aim of the course is to acquaint students with the basic concepts and definitions about the sources of information, the processing and application of the information for risk assessment for the safety of the workers; the main documents and criteria governing the provision of safety and health in companies.

Educational methods:

Individual work and scientific literature textbook exercises, brainstorming and discussion, solve problems, exercise, and Power Point presentation.

Inscribing for tuition: Not necessary.

Inscribing for exam: Agreement with the lecturer and the Students Service Department

LEGAL REGULATION OF WORK CONDITIONS

ECTS credits: 5	Semester: I
Exam type: term assessment	Hours per week: 2 lectures+2 laboratory exercises
Course type: lectures +laboratory exercises	Course status: Compulsory
	Degree Course: Engineering safety

Lecturer: Assoc. Prof. Eng. Raya Stoyanova, PhD, Email: raikach@swu.bg
Department: Mechanical engineering
Faculty: Faculty of Engineering
Phone : (+359 73) 073 88 51 62, Email: technical_mtt@swu.bg

Description of the discipline:

In the field of "Legal Regulation of Working Conditions", the students of the specialty "Engineering Safety" should receive basic knowledge about the main directions and tasks related to the legal regulation of the working conditions and workplace, the types of harmful factors in the workplace, remedies, as well as the legal framework relating to occupational illness and occupational traumatism.

Aim of the discipline:

The aim of the course is to provide students with theoretical and practical knowledge and skills to prepare, carry out and assess legal conditions of work, occupational illness and occupational traumatism, as well as the rights and obligations of the employee and the employer in terms of working conditions.

Educational methods:

Individual work and scientific literature textbook exercises, brainstorming and discussion, solve problems, exercise, and Power Point presentation.

Inscribing for tuition: Not necessary.

Inscribing for exam: Agreement with the lecturer and the Students Service Department

ECTS credits: 4	Semester: I
Exam type: term assessment	Hours per week: 1 lectures+2 laboratory exercises
Course type: lectures +laboratory exercises	Course status: Compulsory
	Degree Course: Engineering safety

Lecturer:

Chief Assistant Professor, Eng. Blagoyka Paleva-Kadiyska, Ph.D,
E-mail: bip_k@swu.bg

Department: Mechanical Engineering and Technologies

Faculty: Faculty of Engineering

Phone: (+359 73) 073 88 51 62, Email: technical_mtt@swu.bg

Description of the discipline:

The discipline includes the study of essentials and essential elements of marketing management and the main functions of marketing managers. It examines the marketing management process. The theoretical and applied aspects of segmentation of markets, choice of target markets, their research and forecasting are analyzed.

Students are given the necessary knowledge and skills to develop the ability to effectively organize the marketing process and the formation of practical skills in the management of marketing activities.

Aim of the discipline:

The aim of the course is to provide students with knowledge of contemporary ideas about the essence of marketing management and to realize its key role in the activities of organizations; to gain knowledge about the process of environmental analysis, marketing research, and marketing information system, consumer behavior and the factors that determine it, but through the view of the marketing management; understand the process of developing the organization's target market; gain knowledge about the importance and key features of marketing management elements in the organization.

Educational methods:

Lectures, individual work and scientific literature textbook exercises, brainstorming and discussion, solve problems, exercise, and Power Point presentation.

Inscribing for tuition: Not necessary.

Inscribing for exam: Agreement with the lecturer and the Students Service Department

ANALYSIS AND CONTROL OF POLLUTION OF THE WORKING ENVIRONMENT

ECTS credits: 4	Semester: I
Exam type: term assessment	Hours per week: 1 lectures+2 seminars
Course type: lectures + seminars	Course status: Selectable
	Degree Course: Safety engineering

Lecturer: Assoc. Prof. Eng. Ivan Amudjev, PhD, Email: ivan1703@swu.bg
Department: Mechanical engineering
Faculty: Faculty of Engineering
Phone : (+359 73) 073 88 51 62, Email: technical_mtt@swu.bg

Description of the discipline:

Students should acquire basic knowledge of the metrology activities and concepts, analyzing, managing, providing, assessing and controlling the pollution of the working environment.

The main concepts, definitions and information on the analysis and control of the pollution of the working environment are discussed, with an emphasis on management and regulation.

Aim of the discipline:

The aim of the course is to acquaint students with the basic concepts, definitions and information needed in analyzing and controlling the pollution of the working environment, with an emphasis on management and regulation; acquiring from students the skills to justify personal perceptions and views in solving specific engineering tasks to ensure normal working conditions in continuous analysis and control of environmental pollution.

Educational methods:

Lectures, individual work and scientific literature textbook exercises, brainstorming and discussion, solve problems, exercise, and Power Point presentation.

Inscribing for tuition: It is necessary to submit an application to the academic department at the end of the previous semester.

Inscribing for exam: Agreement with the lecturer and the Students Service Department

ECTS credits: 4	Semester: I
Exam type: term assessment	Hours per week: 1 lectures+2 seminars
Course type: lectures + seminars	Course status: Selectable
	Degree Course: Safety engineering

Lecturer: Assoc. Prof. Eng. Ivan Amudjev, PhD, Email: ivan1703@swu.bg
Department: Mechanical engineering
Faculty: Faculty of Engineering
Phone : (+359 73) 073 88 51 62, Email: technical_mtt@swu.bg

Description of the discipline:

In the Metrological Quality Assurance course, students should be provided with basic knowledge of the sequence, interaction and identification of metrological quality assurance processes and the interpretation of the terminology used to postulate and substantiate different understandings and views.

It examines standards, models, audits, certification and documentation of metrological quality assurance, as well as measurement and analysis of metrological quality assurance.

Aim of the discipline:

The aim of the course is to acquaint students with basic concepts, definitions and information on metrology and quality management, with an emphasis on analysis and regulation; acquiring from students the skills to justify personal perceptions and views in solving metrological and engineering tasks to ensure user characteristics and key aspects of quality.

Educational methods:

Lectures, individual work and scientific literature textbook exercises, brainstorming and discussion, solve problems, exercise, and Power Point presentation.

Inscribing for tuition: It is necessary to submit an application to the academic department at the end of the previous semester.

Inscribing for exam: Agreement with the lecturer and the Students Service Department

INDUSTRIAL SAFETY II PART

ECTS credits: 5	Semester: II
Exam type: written exam	Hours per week: 1 lectures+3 laboratory exercises
Course type: lectures +laboratory exercises	Course status: Compulsory
	Degree Course: Safety engineering

Lecturer: Prof. Eng. Snezhina Andonova, PhD, Email: andonova_sn@swu.bg

Department: Mechanical engineering

Faculty: Faculty of Engineering

Phone : (+359 73) 073 88 51 62, Email: technical_mtt@swu.bg

Description of the discipline:

In the course, students should have basic knowledge about the formation of a culture of safety and health at work, and the application of personal and collective remedies, such as measures for technical safety in enterprises.

Through the discipline skills are acquired to justify personal perceptions and views in solving managerial and engineering tasks in the field of industrial safety.

In the laboratory exercises the knowledge of the lecture material is enhanced and the skills for taking practical decisions in the analysis, prevention, regulation and management of the industrial safety are acquired.

Aim of the discipline:

The aim of the course is to acquaint students with basic concepts, definitions and information related to the formation of a culture of safety and health at work and the application of personal and collective means of protection as measures for technical safety in enterprises.

Educational methods:

Lectures, individual work and scientific literature textbook exercises, brainstorming and discussion, solve problems, exercise, and Power Point presentation.

Inscribing for tuition: Not necessary.

Inscribing for exam: Agreement with the lecturer and the Students Service Department

ELECTRICAL SAFETY AND MECHANICAL DANGER

ECTS credits: 4	Semester: II
Exam type: written exam	Hours per week: 2 lectures+2 laboratory exercises
Course type: lectures +laboratory exercises	Course status: Selectable
	Degree Course: Engineering safety

Lecturer:

Chief Assistant Professor, Eng. Blagoyka Paleva-Kadiyska, Ph.D,
E-mail: bip_k@swu.bg

Department: Mechanical Engineering and Technologies

Faculty: Faculty of Engineering

Phone: (+359 73) 073 88 51 62, Email: technical_mtt@swu.bg

Description of the discipline:

The training in the subject includes the study of the basic issues of the normative basis, the theory and the practical organization of the electrical safety, the mechanical dangers and the healthy conditions of labor. Both labor safety problems and related industrial traumatism and occupational (caused by specificity of the profession) diseases, means of individual protection and technical protection devices related to the operation of equipment and machines are considered.

Aim of the discipline:

The course aims to give basic knowledge about the characteristics of hazardous workers: noise, ultrasound, infrasound, light, ultraviolet and infrared radiation, light, electromagnetic radiation, radioactivity, electricity, fire and explosion protection measures and activities to safely and safely handle machines and equipment in power generation, fire prevention and rapid and decisive action in major industrial accidents and natural disasters. To acquaint them with the means of control and the methods of limiting disaster and protecting people, material values and the environment, and eliminating the consequences.

Educational methods:

Lectures, individual work and scientific literature textbook exercises, brainstorming and discussion, solve problems, exercise, and Power Point presentation.

Inscribing for tuition: Not necessary.

Inscribing for exam: Agreement with the lecturer and the Students Service Department

JUDICIAL-TECHNICAL EXPERTISE

ECTS credits: 4	Semester: II
Exam type: written exam	Hours per week: 2 lectures+2 laboratory exercises
Course type: lectures +laboratory exercises	Course status: Compulsory
	Degree Course: Engineering safety

Lecturer: Assoc. Prof. Eng. Raya Stoyanova, PhD, Email: raikach@swu.bg

Department: Mechanical engineering

Faculty: Faculty of Engineering

Phone : (+359 73) 073 88 51 62, Email: technical_mtt@swu.bg

Description of the discipline:

The training in the discipline includes the study of the legal basis, the regulation of the court expertises, the types of expert opinions, the classification of the court expertises, the main issues related to the admission and the appointment of judicial expertise, both in the pre-trial phase and in the judicial phase. Questions relating to the admission of further and re-expertise are considered. A particular place is devoted to the main issues / tasks / placed in the various expert reports.

Aim of the discipline:

The aim of the course is to acquire the theoretical and practical knowledge in the scientific methodological apparatus for the preparation of judicial expertise, the types of expertise, the normative basis in the criminal and civil court proceedings related to the admission and commissioning of the expertise expert.

Educational methods:

Lectures, individual work and scientific literature textbook exercises, brainstorming and discussion, solve problems, exercise, and Power Point presentation.

Inscribing for tuition: Not necessary.

Inscribing for exam: Agreement with the lecturer and the Students Service Department