



SOFIA UNIVERSITY ST. KLIMENT OHRIDSKI

FACULTY: Faculty of Economics and Business Administration

CURRICULUM

Approved by:

Approved by the Academic Council with Record of Proceedings
№ 15/17.07.2024

Professional Field: 3.7 Administration and Management

Educational and Qualification Degree: „Master”

Area of Study:

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Master's Degree Program: Nuclear Technology, Management, and Innovations in English

Form of Study: part time

Length of Study (number of semesters): 4, summer semester admission

Professional Qualification: Master in Nuclear Technologies, Management, and Innovations

Qualification Description

Subject Area: Business Administration

Master's Programme: Nuclear Technologies, Management, and Innovations in English

1. Educational objectives

The Master's Programme "Nuclear Technologies, Management, and Innovations in English" is aimed at candidates of any major who has obtained a Bachelor's degree or a Master's degree and is most suitable for candidates who graduated from programmes in economics, management, and/or engineering. The objective of the MA program "Nuclear Technologies, Management, and Innovations" is to prepare highly qualified specialists who master modern methods and means of management with a specific focus on the nuclear sector and the organizations operating in it. These include micro and macro-diagnostics of the environment, industry analysis, functional analysis of the organization, business strategies, resource and functional strategies, international strategies etc.

Educational goals of this scale are being set for the first time. Their essence lies in the training of personnel who know how to think interdisciplinary and apply combined approaches in their work:

- To acquire knowledge, skills and critically analyze the legal instruments that define policy in the field of nuclear facilities.
- Have in-depth knowledge to analyze existing technologies and their evolution, proposing and implementing relevant measures for improvements.
- Understand and successfully apply International Atomic Energy Agency (IAEA) standards and its guidelines, adapting and interpreting them for national specificities.
- To acquire the ability to apply theoretical methods in practice and to analyze various risks in the implementation process. To discuss the important features of modern practices for evaluating measures related to nuclear safety, radiation, and physical protection.
- To conduct follow-up training activities for specialists, developing procedures in the field of nuclear technology. To be able to build connections between the affected areas and conduct training of the relevant specialists in their application.

2. Programme description

Admission to the program is from the summer semester.

The duration of studies is four semesters (two academic years), and it includes:

- Basic mandatory training – compulsory academic disciplines shaping the professional specialization of a Master of Nuclear Technologies, Management, and Innovations;
- Profiled training in Nuclear Sector Management – compulsory and elective academic disciplines in various domains.

There is an opportunity to study additional disciplines in an optional form. The credits from these disciplines are not considered for the completion of the curriculum.

The students graduate by elaboration and defense of a Master's thesis. The Master's thesis defense sessions are in July and September.

The program attracts many guest lecturers and visits to companies from different economic sectors and managerial layers.

Classes are small and include students from different countries and cultures and professional backgrounds – state and private sectors, employed and entrepreneurs. Through its Career Centre the Faculty of Economics and Business Administration provides career counselling, meetings with potential employers and practical projects.

Students could benefit from the classical Erasmus university exchanges.

3. Training (knowledge and skills necessary for successful professional activity; general theoretical and special training, etc.)

The training envisages that the program has a modular structure. The training includes one compulsory and one optional modules. The compulsory module contains basic information that all students need to know.

The elective module is linked to the expected future specialization of the respective student, meaning that each student chooses relevant courses to his intended future specialization. The specialization is determined by the elected courses and completed thesis, where the thesis is having priority. Two specializations are possible: small modular reactors and large nuclear power systems.

The minimum requirements are to be received in total 120 of credits of which 115 are from the compulsory module and the rest from the electives and from a diploma defense.

4. Professional and general competences, specific competences

The following competencies are expected to be acquired:

- Obtaining the theoretical knowledge and practical skills from all students to ensure the protection and improvement of national infrastructures in the field of nuclear installations and their management.
- Acquisition of skills for harmonization of global strategies and methods of implementation of nuclear safety, radiation and physical protection.
- Creating exceptional competence in the topics of nuclear safety, radiation and physical protection and building strong interdisciplinary links in their application.

More specifically, at the end of the studies, the Master in Nuclear Technologies, Management, and Innovations must:

□ HAVE KNOWLEDGE OF:

- The contemporary economic theories and how to analyze the economic environment by using the appropriate tools;
- The tools of strategic management;
- The key technological trends and transformative power of new ICT
- The methods for organizational and industry diagnostics;
- The methods for goal setting, formulation, and realization of strategies;
- The methods and approaches for structuring the organization;
- The methods for work in the socio-cultural layer of the organization;
- Public and corporate finance, the tools of the financial institutions, legal norms;
- The legal and administrative basis of businesses;

☐ BE ABLE TO:

- Implement what has been learned as theory and shared practical experience to solve practical problems;
- Make independent functional analysis, argument decisions and provide recommendations;
- Carry out industry analysis, environment, and organization diagnostics;
- Conduct business process modelling and optimize existing processes;
- Formulate goals and strategies, write plans, control;
- Intervene in the socio-cultural layer of the organizations;
- Apply the knowledge in the human resources management and to develop skills for working with people;
- Carry out real organizational changes;
- Communicate effectively;
- Plan and organize own tasks;
- Use and work with various information sources.

☐ BE:

- Creative;
- Open to innovation;
- With a developed sense of business and people;
- Tolerant of differences and with a desire for self-development and lifelong learning.

5. Professional realization (according to the National Classification of Professions and Positions in the Republic of Bulgaria / international classifications and according to the position of the future specialist in the national qualification framework for higher education and the qualification framework of the European Higher Education Area)

Specialists who have received the master's degree in "Nuclear Technologies, Management, and Innovations" can work in any enterprise using nuclear facilities in the following way:

- Management of applied and theoretical research related to the physics of nuclear reactors,
- Organization of measurements and the use of ionizing radiation, in the application of nuclear-physical methods, equipment and technologies in engineering and medicine, as well as management of activities.
- Part of the graduates can find their place in scientific institutes working on problems in the specific field of specialization.
- Training of personnel also for the national regulatory authority for the supervision of nuclear energy and ionizing radiation.

The broad-based training of graduates allows them to successfully solve management problems, organize and lead complex research and production in similar technological directions.

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program code

Major "Business Administration" / Master's program "Nuclear Technology, Management and Innovations in English"

part time, for the class, started during 2023/2024 academic year, summer admission

No.	course code				Title of the subject	Type – C, E, O	Term	ECTS credits	Number of classes- total					Number of classes per week	Type of Grading* e, ca, m, a
									Total	Lectures	Seminars	Practical classes / practice	Out of class activity		
1	2				3	4	5	6	7	8	9	10	11	12	13
Compulsory courses															
1	R	5	2	5	Economics and Management of Nuclear Energy	C	1	6	180	30	0	0	150	2	CA
2	R	5	3	5	Legislation and Regulation in the Nuclear Sector	C	1	6	180	30	0	0	150	2	E
3	R	5	3	6	Commercial Law and Intellectual Property Management	C	1	6	180	30	0	0	150	2	E
4	R	5	3	7	Nuclear Sector Security	C	1	6	180	30	0	0	150	2	E
5	R	5	3	8	Nuclear Power Plants, Reactor Physics and Nuclear Safety	C	2	6	180	30	0	0	150	2	E
6	R	5	3	9	Detectors and Measurements in Nuclear Technologies	C	2	6	180	30	0	0	150	2	E
7	R	5	4	0	Decommissioning and Radioactive Waste Disposal	C	2	6	180	30	0	0	150	2	E
8	R	5	4	1	Radioactivity, Safety and Environmental Protection	C	2	9	270	45	0	0	225	3	E

9	R	5	4	2	Human Resources Management in the Nuclear Industry	C	3	6	180	30	0	0	150	2	CA
10	R	5	4	3	Nuclear Safety and Nuclear Incident Management	C	3	6	180	30	0	0	150	2	E
11	R	5	4	4	Knowledge Management and Nuclear Safety Culture	C	3	6	180	30	0	0	150	2	E
12	R	5	4	5	Performance Monitoring and Quality Assurance	C	3	6	180	30	0	0	150	2	E
13	R	5	4	6	Strategic Management and Leadership in Nuclear organizations	C	4	6	180	30	0	0	150	2	CA
14	R	5	4	7	Internal and External Communications	C	4	6	180	30	0	0	150	2	CA

Elective courses – selected subjects must bring at least 18 Credits*

1	E	5	6	9	National Nuclear Technology Policy, Planning and Politics	E	1	3	90	15	0	0	75	1	E
2	E	5	5	6	Project Evaluation in Infrastructure	E	1	3	90	15	0	0	75	1	CA
3	E	5	5	5	Marketing and Sales in Energy and Utilities	E	2	3	90	15	0	0	75	1	CA
4	E	5	8	4	Application of Nuclear Science and Innovations	E	3	3	90	15	0	0	75	1	E
5	E	5	8	0	Nuclear Reactor Physics and Nuclear Fuel Technologies	E	3	3	90	15	0	0	75	1	E
6	E	5	8	3	Energy Modeling Fundamentals with Plexos	E	3	3	90	30	0	0	60	1	M

7	E	5	8	1	Small modular reactors	E	4	3	90	15	0	0	75	1	E
8	E	5	8	2	Emergency Preparedness and Response	E	4	3	90	15	0	0	75	1	E

Facultative courses – the credits on them are NOT considered for the implementation of the curriculum.

1	R	9	2	4	International Investment and Portfolio Management	O	1	5	150	45	0	0	105	3	E
2	R	9	1	9	European Economic Environment	O	2	3	90	30	0	0	60	2	E

Teaching practice

No.	code	Title of the practics	Type - C, E, O	Semester	ECTS - credits	Weeks	Number classes	Type of course completion
<p>All students are required to elaborate a course project in the following disciplines: Economics and Management of Nuclear Energy; Human Resources Management in the Nuclear Industry; Strategic Management and Leadership in Nuclear Organizations; Internal and External Communications; Project Evaluation in Infrastructure; Marketing and Sales in Energy and Utilities and Energy Modeling Fundamentals with PLEXOS.</p> <p>*The students can only choose disciplines from the listed in the curriculum.</p>								

Degree completion

Form of degree completion	ECTS credits	First state exam/ thesis defence session	Second state exam/thesis defence session
Master thesis defence	15	July	September

The curriculum has been approved by the Faculty Council, Record of Proceedings No 10 from 18.06.2024.

DEAN: 
/Assoc. Prof./Atanas Georgiev, PhD/

Sofia University "St. Kliment Ohridski"

Curriculum Reference Statement

Major "Business Administration" / Master's program "Nuclear Technology, Management and Innovations (in English)"

Type of study part time, terms of study 4 semesters

Course Load, ECTS -credits and course completion per semester															
Type of courses	I семестър			II семестър			III семестър			IV семестър			Total		
	Course Load - number of classes	ECTS – credits	number of grades	Course Load - number of classes	ECTS – credits	number of grades	Course Load - number of classes	ECTS – credits	number of grades	Course Load - number of classes	ECTS – credits	number of grades	Course Load - number of classes	ECTS – credits	number of grades
Compulsory courses	720	24	4	810	27	4	720	24	4	360	12	3	2610	87	15
Min. of elective courses	180	6	2	90	3	1	180	6	2	90	3	1	540	18	6
Study internships															
Total:	900	30	6	900	30	5	900	30	6	450	15	4	3150	105	21
of which auditorium	150			150			150			75			525		

Degree completion	ECTS - credits	Number of hours for preparation	First state exam/ thesis defence session	Second state exam/ thesis defence session
Master thesis defence	15	450	July	September

Professional Qualification: Master in Nuclear Technologies, Management, and Innovations

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Dean:

/Assoc. Prof. Atanas Georgiev, PhD/

