

MASTER OF SCIENCE IN “CIVIL ENGINEERING”

(The program is offered with two specializations: a. Structural Engineering, b. Transport Infrastructure)

STUDY PROGRAMME OBJECTIVES

The master's program is designed to prepare qualified professionals capable of addressing complex and advanced challenges within the field of civil engineering. This program offers an extensive curriculum that includes both theoretical and practical knowledge in the design, implementation, and supervision of structures and engineering works. Through this program, students will develop analytical and critical skills that will enable them to solve technical and scientific problems in an innovative manner.

LEARNING OUTCOMES

Upon completion of the master's program graduates will be able to:

- Develop and implement construction standards, focusing on the processes of adaptation and compliance with legal and safety codes to ensure the quality of construction projects.
- Plan and coordinate construction resources, including budget and time management, to ensure the successful realization of projects.
- Analyse and select suitable construction materials, considering their physical and chemical properties during the design process.
- Collaborate effectively within a team of professionals, recognizing the importance of communication and coordination in complex projects.
- Propose and justify the most appropriate engineering solutions to problems that arise during the life cycle of a construction project, applying various techniques for their identification and resolution.
- Assess and manage risks associated with construction projects, preparing strategies to mitigate negative impacts.
- Promote the use of sustainable practices and technologies in construction, thereby contributing to environmental preservation.

SPECIALISATION: STRUCTURAL ENGINEERING

- Design special reinforced concrete structures such as retaining walls, bunkers, silos, tanks, chimneys, pipelines, etc.
- Apply the use of advanced analysis methods to simulate the behaviour of structures under various static and dynamic/seismic loads and external environmental conditions.
- Analyse and design solutions related to the restoration and reinforcement of existing structures, based on European standards, to ensure the optimization of stability and safety of the structures.

SPECIALISATION: TRANSPORT INFRASTRUCTURE

- Model and analyse transportation infrastructure works, such as roadway pavements and railway alignments, while adhering to necessary safety and efficiency standards.
- Design specialized structures such as roads, bridges, tunnels, and drainage systems, ensuring that all projects are feasible and compliant with engineering standards.
- Propose and validate appropriate solutions during the implementation of transportation infrastructure engineering works, employing innovative approaches to enhance efficiency.

JOB OPPORTUNITIES

Graduates can be employed as civil engineers, in compliance to the knowledge and competencies acquired, as:

- Design engineer at construction companies, renowned real estate developers, and building agencies.
- Construction experts in specialized construction firms, consulting companies, and institutions offering advanced supervision services.
- Materials performance engineer in innovative manufacturing companies, as well as in research laboratories promoting high performance standards.
- Technical director in companies and institutions providing strategic safety consultancy.
- Construction inspectors for qualified oversight and supervision of construction projects.
- Infrastructure transport construction engineer in construction companies, local transport authorities, and government agencies, contributing to the planning and development of sustainable and efficient infrastructure for improving transport and mobility.
- Structural engineer in design and construction companies, engineering consultancies, and public institutions, contributing to the analysis, design, and development of reinforced concrete, steel, timber, and other structural systems for civil, industrial, and engineering structures.
- Structural design specialist in construction, restoration, rehabilitation, and structural retrofitting projects, performing structural and seismic analyses and evaluating the performance and safety of structures.
- Structural analysis and assessment engineer in consulting firms, technical institutions, and specialized organizations, conduct technical assessments, condition evaluations of existing structures, and compliance reviews in accordance with national and international structural design standards and codes.
- Infrastructure specialists in construction management projects, road development, and public transport systems, as well as collaboration with various authorities.
- Transport infrastructure planning engineer in government agencies and companies specialized in feasibility studies, environmental impact assessment, and strategic design of roads and infrastructure.

The degree holder is entitled to obtain a license, in accordance with the current legal framework in Albania, to provide services and technical consultancy to public or private entities as a freelance professional in the field of construction engineering (in the role of engineer, sector manager, or technical director in the design of structures and infrastructure works).

MASTER OF SCIENCE "CIVIL ENGINEERING" 120 ECTS

No.	Year	Sem	Course	ECTS
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A - GENERAL COURSES 5-10% / 6 ECTS

1	II	1	Research Methods for Engineering Sciences	6
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B - CORE COURSES 50-60%/60 ECTS

1	I	1	Advanced Theory of Structures 1	6
2	I	2	Advanced Theory of Structures 2	6
3	I	1	Special Reinforced Concrete Constructions	8
4	I	2	Dynamics of Structures and Earthquake Engineering	6
5	I	1	Urban Design 1	6
6	I	2	Bridges and Tunnels	6
7	I	1	The Mechanics of Soils, Rocks and Foundations	10
8	II	1	GIS	6
Specialisation TRANSPORT INFRASTRUCTURE				
9	I	2	Applied Geology	6
Specialisation STRUCTURAL ENGINEERING				
9	I	2	Prestressed Reinforced Concrete Constructions	6
				60

C - INTERDISCIPLINARY/INTEGRATIVE COURSES 12-20% / 14 ECTS

Specialisation TRANSPORT INFRASTRUCTURE				
1	I	2	Cartography	6
2	II	1	Road, Rail and Airport Floors	8
Specialisation STRUCTURAL ENGINEERING				
1	I	2	Normativa dhe projektimi i elementëve të strukturave Beton-Arme	6
2	II	1	Restoration and Reinforcement of Structures	8
<i>Optional module available for both specialisations</i>				
3	II	1	Environmental Law	8
				14

D- ADDITIONAL COURSES/ 10% / 12 ECTS

1	II	1-2	Professional Practice	12
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E - FINAL OBLIGATIONS 10-15%/28 ECTS

1	II	2	Diploma Thesis	28
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Totali

120