SLOVENSKO
OGRODJE
KVALIFIKACIJ

Magister gospodarski inženir/magistrica gospodarska inženirka

Selected qualifications

Name of qualification	Magister gospodarski inženir/magistrica gospodarska inženirka
Translated title (no legal status)	Master of Science in industrial engineering
Type of qualification	Diploma druge stopnje
Category of qualification	Izobrazba
Type of education	Master's education
Duration	2 years
Credits	120 credits

Admission requirements

CONSTRUCTION
Enrolment in the second-cycle Industrial Engineering programme, Civil Engineering stream, is open to candidates who have completed:
• A first-cycle study programme in a relevant field: industrial engineering – civil engineering stream (5829), building and civil engineering (5820).
• A first-cycle study programme in another field: transport services (traffic, 8400), engineering (transport engineering, 5200), architecture (5811), mechanical engineering (5211), industrial engineering – mechanical engineering stream (5219, industrial engineering – electrical engineering stream (5221), industrial engineering (5200) and urban planning (5812) – if prior to enrolment in the programme the candidate has completed course units essential for further study, totalling between 10 and 60 ECTS credits. These course units may be completed during the first-cycle programme, during supplementary study programmes or by passing differential examinations before enrolment in the programme. Candidates must complete course units in subjects from the following fields: construction mechanics, geotechnical engineering, hydrotechnical engineering, engineering structures, operational civil engineering, construction materials and economics.
• A professional higher education programme, adopted before 11 June 2004, in a relevant field: building and civil engineering (5820).
• A professional higher education programme, adapted before 11 June 2004, in another field: transport services (traffic, 8400), engineering (transport engineering, 5200), architecture (5811), mechanical engineering (5211) and urban planning (5812) – if prior to enrolment in the programme the candidate has completed course units essential for further study, totalling between 10 and 60 ECTS credits. These course units may be completed during the first-cycle programme, during supplementary study programmes or by passing differential examinations before enrolment in the programme. Candidates must complete course units in subjects from the following fields: construction mechanics, geotechnical engineering, hydrotechnical engineering, engineering structures, operational civil engineering, construction materials and economics.
• An academic higher education programme, adopted before 11 June 2004, in a relevant field: industrial engineering – civil engineering stream (5829), building and civil engineering (5820). As a rule 60 ECTS credits are recognised for such candidates within the study programme and candidates may enrol in the second year of the programme if with their recognised course units they meet the conditions for transition laid down by an accredited study programme.
• An academic higher education programme, adopted before 11 June 2004, in another field: transport services (transport, 8400), architecture (5811), mechanical engineering (5211) and urban planning (5812). Up to 40 ECTS credits are recognised for such candidates within the study programme, and candidates may enrol in the corresponding year of the programme.
• A professional higher education programme, adopted before 11 June 2004, and a study programme leading to a specialisation, adopted before 11 June 2004, in a relevant field: building and civil engineering (5820). As a rule 60 ECTS credits are recognised for such candidates within the study programme and candidates may enrol in the second year of the programme if with their recognised course units they meet the conditions for transition laid down by an accredited study programme.
• A professional higher education programme, adopted before 11 June 2004, and a programme leading to a specialisation, adopted before 11 June 2004, in another field: transport services (traffic, 8400), architecture (5811), mechanical engineering (5211) and urban planning (5812). Up to 40 ECTS credits are recognised for such candidates within the study programme, and candidates may enrol in the corresponding year of the programme.
MECHANICAL ENGINEERING
• Enrolment in the second-cycle Industrial Engineering programme, Mechanical Engineering stream, is open to candidates who have completed:
• A first-cycle study programme in a relevant field: Engineering (52); Biology and biochemistry (421); Environmental science (422); Computer science (481); Computer use (482); Building and civil engineering (582); Transport services (840); Environmental protection (broad programmes, 850).
• A first-cycle study programme in another field: Economics (314); Business and administration (broad programmes, 340); Wholesale and retail sales (341); Marketing and advertising (342); Management and administration (345); Physical science (broad programmes, 440); Physics and astronomy (441); Chemistry (442); Mathematics (461); Statistics (462); Food technology (541); Textiles, clothes, footwear, leather (542); Materials (wood, paper, plastic, glass, 543); Mining and extraction (544); Architecture and town planning (581) – if prior to enrolment in the programme the candidate has completed course units essential for further study, totalling 29 ECTS credits. These course units may be completed during the first-cycle programme, during supplementary study programmes or by passing differential examinations before enrolment in the programme. Candidates must complete the following course units: Mathematical analysis (6 ECTS credits), Algebra (6 ECTS credits), Mechanics I (6 ECTS credits), Basics of economics (5 ECTS credits) and Business economics (6 ECTS credits).
• A completed professional higher education programme, adopted before 11 June 2004, in a relevant field: Engineering (52); Biology and biochemistry (421); Environmental science (422); Computer science (481); Computer use (482); Building and civil engineering (582); Transport services (840); Environmental protection (broad programmes, 850).
• A professional higher education programme, adopted before 11 June 2004, in another field: Economics (314); Business and administration (broad programmes, 340); Wholesale and retail sales (341); Marketing and advertising (342); Management and administration (345); Physical science (broad programmes, 440); Physics and astronomy (441); Chemistry (442); Mathematics (461); Statistics (462); Food technology (541); Textiles, clothes, footwear, leather (542); Materials (wood, paper, plastic, glass, 543); Mining and extraction (544); Architecture and town planning (581) – if prior to enrolment in the programme the candidate has completed course units essential for further study, totalling 29 ECTS credits. These course units may be completed during the first-cycle programme, during supplementary study programmes or by passing differential examinations before enrolment in the programme. Candidates must complete the following course units: Mathematical analysis (6 ECTS credits), Algebra (6 ECTS credits), Mechanics I (6 ECTS credits), Basics of economics (5 ECTS credits) and Business economics (6 ECTS credits).
• An academic higher education programme, adopted before 11 June 2004, in a relevant field: Engineering (52); Biology and biochemistry (421); Environmental science (422); Computer science (481); Computer use (482); Building and civil engineering (582); Transport services (840); Environmental protection (broad programmes, 850). As a rule 60 ECTS credits are recognised for such candidates within the study programme and candidates may enrol in the second year of the programme if with their recognised course units they meet the conditions for transition laid down by an accredited study programme.
• An academic higher education programme, adopted before 11 June 2004, in another field: Economics (314); Business and administration (broad programmes, 340); Wholesale and retail sales (341); Marketing and advertising (342); Management and administration (345); Physical science (broad programmes, 440); Physics and astronomy (441); Chemistry (442); Mathematics (461); Statistics (462); Food technology (541); Textiles, clothes, footwear, leather (542); Materials (wood, paper, plastic, glass, 543); Mining and extraction (544); Architecture and town planning (581). For such candidates 30 ECTS credits are recognised within the study programme and candidates may enrol in the corresponding year of the programme.
• A professional higher education programme, adopted before 11 June 2004, and a programme leading to a specialisation, adopted before 11 June 2004, in a relevant field: Engineering (52); Biology and biochemistry (421); Environmental science (422); Computer science (481); Computer use (482); Building and civil engineering (582); Transport services (840); Environmental protection (broad programmes, 850). As a rule 60 ECTS credits are recognised for such candidates within the study programme and candidates may enrol in the second year of the programme if with their recognised course units they meet the conditions for transition laid down by an accredited study programme.
• A professional higher education programme, adopted before 11 June 2004, and a programme leading to a specialisation, adopted before 11 June 2004, in another field: Economics (314); Business and administration (broad programmes, 340); Wholesale and retail sales (341); Marketing and advertising (342); Management and administration (345); Physical science (broad programmes, 440); Physics and astronomy (441); Chemistry (442); Mathematics (461); Statistics (462); Food technology (541); Textiles, clothes, footwear, leather (542); Materials (wood, paper, plastic, glass, 543); Mining and extraction (544); Architecture and town planning (581). For such candidates 30 ECTS credits are recognised within the study programme and candidates may enrol in the corresponding year of the programme.
ELECTRICAL ENGINEERING
• Enrolment in the second-cycle Industrial Engineering programme, Electrical Engineering stream, is open to candidates who have completed:
• a first-cycle study programme in a relevant field: industrial engineering – electrical engineering (522), electricity and energy (522), electronics and automation (523), engineering (broad programmes – mechatronics, 520), physical science (broad programmes, 440) and physics and astronomy (441);
• a first-cycle study programme consisting of at least 180 ECTS credits in one of the following fields not covered by the preceding paragraph: mathematics (461), computer science (481), chemical technology and process engineering (524), mechanics and metalwork (521) and building and civil engineering (582) – if prior to enrolment in the programme the candidate has completed course units essential for further study, totalling 30 ECTS credits. These course units may be completed during the first-cycle programme, during supplementary study programmes or by passing differential examinations before enrolment in the programme. Candidates must complete the following course units: Basics of electrical engineering I (6 ECTS credits), Basics of electrical engineering and II (6 ECTS credits), Basics of economics (5 ECTS credits) and Business economics (6 ECTS credits) and one subject from among the following: Control system components (7 ECTS credits), Electronic circuits (7 ECTS credits), Electricity generation and management (7 ECTS credits);
• a professional higher education programme, adopted before 11 June 2004, in a relevant field: electricity and energy (522), electronics and automation (523), physical science (broad programmes, 440) and physics and astronomy (441);
• a completed professional higher education programme, adopted before 11 June 2004, in another field: mathematics (461), computer science (481), chemical technology and process engineering (524), mechanics and metalwork (521) and building and civil engineering (582)
• if prior to enrolment in the programme the candidate has completed course units essential for further study, totalling 30 ECTS credits. These course units may be completed during the first-cycle programme, during supplementary study programmes or by passing differential examinations before enrolment in the programme. Candidates must complete the following course units: Basics of electrical engineering I (6 ECTS credits), Basics of electrical engineering and II (6 ECTS credits), Basics of economics (5 ECTS credits) and Business economics (6 ECTS credits) and one subject from among the following: Control system components (7 ECTS credits), Electronic circuits (7 ECTS credits), Electricity generation and management (7 ECTS credits);
• an academic higher education programme, adopted before 11 June 2004, in a relevant field: engineering (broad programmes – industrial engineering, electrical engineering, 520), electricity and energy (522), electronics and automation (523), physical science (broad programmes, 440), physics and astronomy (441). As a rule 60 ECTS credits are recognised for such candidates within the study programme and candidates may enrol in the second year of the programme if with these recognised course units they meet the conditions for transition laid down by an accredited study programme;
• an academic higher education programme, adopted before 11 June 2004, in another science or engineering field: mathematics (461), computer science (481), chemical technology and process engineering (524), mechanics and metalwork (521) and building and civil engineering (582). As a rule, 30 ECTS credits are recognised for such candidates within the study programme, and candidates may enrol in the corresponding year of the programme;
• a professional higher education programme, adopted before 11 June 2004, and a study programme leading to a specialisation, adopted before 11 June 2004, in a relevant field: electricity and energy (522), electronics and automation (523), physical science (broad programmes, 440) and physics and astronomy (441). As a rule 60 ECTS credits are recognised for such candidates within the study programme and candidates may enrol in the second year of the programme if with these recognised course units they meet the conditions for transition laid down by an accredited study programme;
• an professional higher education programme, adopted before 11 June 2004, and a study programme leading to a specialisation, adopted before 11 June 2004, in another field: mathematics (461), computer science (481), chemical technology and process engineering (524), mechanics and metalwork (521) and building and civil engineering (582). As a rule, 30 ECTS credits are recognised for such candidates within the study programme, and candidates may enrol in the corresponding year of the programme.

ISCED field

Field
Tehnika, proizvodne tehnologije in gradbeništvo

ISCED subfield

subfield interdisciplinarne izobraževalne aktivnosti/izidi, pretežno tehnika, proizvodne tehnologije in gradbeništvo

Qualification level

SQF 8
EQF 7
Second level

Learning outcomes

The qualification holder will be able to:

(general competences)

- resolve highly complex technical problems in accordance with the high performance standards expected of experts with such qualifications;
- seek out new sources of knowledge in a professional or scientific field and apply research methods across a broad spectrum of problems and in new or changed circumstances,
- assume responsibility for managing highly complex work processes and systems,
- apply research methods, procedures and processes from the broader field of industrial engineering in the relevant stream;
- design, plan and construct complex products, systems and technologies using professional critical judgement, self-critical assessment and responsibility, taking into account professional excellence, social utility, ethical responsibility, a commitment to professional ethics and criteria for the environmental integrity of their creations;
- carry out an independent technical assessment on the basis of scientific analysis and synthesis;
- effectively integrate theory and practice, including via project tasks;
- analyse problems, exclude unimportant effects, produce a synthesis, foresee possible solutions, select the best decision in a given moment and assess related consequences;
- communicate and work as part of a team in national and international contexts;

(subject-specific competences)

CONSTRUCTION

- autonomously and creatively perform management functions in construction companies in the context of management work in the engineering and commercial departments of such companies;
- plan, manage and lead construction projects in engineering undertakings, for developers, in administrative bodies and elsewhere;
- manage and lead construction projects in the sense of suitable quality, timeliness and cost-effectiveness;
- resolve specific work problems through the application of scientific methods and procedures;
- adopt a research-based approach in the field of the development or improvement of new high-quality products and technologies;
- keep abreast, in an in-depth and continuous manner, of scientific developments in the field of new construction materials and construction technology;
- communicate within an organisation and outside it with partners and customers;
- use information and communication technologies and systems in a specific technical field.

MECHANICAL ENGINEERING

- demonstrate mastery of knowledge in chosen specialist fields (e.g. construction and engineering systems, development engineering, environmental engineering, advanced processing technologies and systems, manufacturing technology management), further develop that knowledge and take an interdisciplinary approach to problem-solving,
- plan, evaluate and build technologically complex products and systems that can potentially be offered in global markets, either now or in the future,
- devise, develop and use modern manufacturing technologies, automation of manufacturing and new

manufacturing concepts,
- demonstrate understanding of the impact of environmental pollution and introduce primary and secondary measures to reduce it,
- demonstrate systematic understanding of manufacturing systems and processes and exploit the advantages offered by new manufacturing philosophies,
- autonomously plan and design manufacturing systems in practice,
- use standards and legislation in the addressing of engineering problems,
- resolve problems in the field of the selection and characterisation of materials,
- use computer tools in fields relating to targeted product development,
- demonstrate understanding of the formation of contractual obligations and the importance of meeting them correctly in the market,
- demonstrate understanding of and apply statistical methods in research,
- demonstrate understanding of the modern theoretical concepts of business finance and assess their applicability in practice,
- demonstrate mastery of projects and programmes in business environments,
- strategically manage business and manufacturing systems.

ELECTRICAL ENGINEERING

- demonstrate comprehensive understanding of the laws of physics in the field of electromagnetics and develop new technological solutions,
- use information technologies in various electrical engineering fields (planning, systems management and control, communication),
- demonstrate proficiency in the methods of planning installations and systems in the fields of power installations and systems, electronics, automation and robotics,
- analyse and evaluate devices and systems,
- demonstrate understanding of the laws and technology of energy-to-mass conversions in power systems processes,
- demonstrate understanding of laws and technologies in the field of signal-to-information conversions and flows in electronic systems, telecommunications and automatic control systems, and in-depth technical expertise in the fields of management, financial management and economic law.

Assessment and completion

Students' knowledge is assessed by means of practical exercises and seminar papers, and also via products, projects, performances, services, etc. and by examinations. Examination performance is scored as follows: 10 (excellent); 9 (very good: above-average knowledge but with some mistakes); 8 (very good: solid results); 7 (good); 6 (adequate: knowledge satisfies minimum criteria); 5–1 (inadequate). In order to pass an examination, a candidate must achieve a grade between adequate (6) and excellent (10).

Progression

CIVIL ENGINEERING
In order to progress to the second year, students must pass first-year examinations totalling at least 40 ECTS credits, including all course units in the subject Statistics with Research Methods.

MECHANICAL ENGINEERING
In order to progress to the second year, students must have completed first-year course units totalling at least 45 ECTS credits.

ELECTRICAL ENGINEERING
Students progress to the second year if they have met first-year requirements and accumulated at least 42 ECTS credits.

Transitions

Third-cycle doctoral study programmes (SQF level 10)

Condition for obtaining certificate

In order to complete the programme, students must complete all course units prescribed by the programme for a total of at least 120 ECTS credits.

Awarding body

Faculty of Civil Engineering, Faculty of Mechanical Engineering, Faculty of Electrical Engineering, Computer Science and Information Science, Faculty of Economics and Business; University of Maribor

URL

https://www.fgpa.um.si/en/