



Univerza v Mariboru

Fakulteta za elektrotehniko,
računalništvo in informatiko

Smetanova ulica 17
2000 Maribor, Slovenia

UNIVERSITY OF MARIBOR
FACULTY OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCE
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MASTER'S (2ND-CYCLE) PROGRAMMES:

- 1. ELECTRICAL ENGINEERING**
3 tracks: Automation and Robotics; Electronics; Power Engineering
- Candidates select the desired track in their application. Tracks are being implemented in the first semester.
- COMPUTER SCIENCE AND INFORMATION TECHNOLOGIES**
- 3. INFORMATICS AND TECHNOLOGIES OF COMMUNICATION**
- 4. TELECOMMUNICATIONS**
- 5. MEDIA COMMUNICATIONS**

The Faculty of Electrical Engineering and Computer Science also conducts an interdisciplinary master's (2nd-cycle) programme Mechatronics (in cooperation with the Faculty of Mechanical Engineering). Information on this programme is published separately.

Location: Maribor
Duration: 2 years, 120 ECTS

Admission requirements:

1. ELECTRICAL ENGINEERING

Candidates who completed the following may apply for the master's (2nd-cycle) programme "Electrical Engineering":

- A bachelor's (1st-cycle) programme in a relevant field: electricity and energy (522), electronics and automation (523), engineering and engineering trades (broad programmes – mechatronics, 520), industrial engineering – electricity and energy (522), physical science (broad programmes – 440) and physics (441);
- A bachelor's (1st-cycle) programme in one of the following fields: mathematics (461), computer science (481), chemical and process engineering (524), mechanics and metal work (521) and building and civil engineering (582). Prior to enrolment, candidates must fulfil study obligations corresponding to 18 ECTS credits under the bachelor's (1st-cycle) programme, a training programme or by taking placement tests. Candidates must fulfil the following obligations: "Principles of Electrical Engineering I" (7 ECTS) and "Principles of Electrical Engineering II" (5 ECTS). In addition, candidates applying for the track "Automation and Robotics" must also pass the course "Signals" (6 ECTS); candidates applying for the track "Electronics" must also pass the course "Introduction to Electronics" (6 ECTS); candidates applying for the track "Power Engineering" must also pass the course "Electrical and Electromechanical Converters" (6 ECTS);
- A bachelor's vocational programme adopted prior to 11 June 2004 in a relevant field: electricity and energy (522), electronics and automation (523), physical science (broad programmes – 440) and physics (441);
- A bachelor's vocational programmes adopted prior to 11 June 2004 in one of the following fields: mathematics (461), computer science (481), chemical and process engineering (524), mechanics and metal work (521) and building and civil engineering (582). Prior to enrolment, candidates must fulfil study obligations corresponding to 18 ECTS credits under the bachelor's (1st-cycle) programme, a training programme or by taking placement tests. Candidates must fulfil the following obligations: "Principles of Electrical Engineering I" (7 ECTS) and "Principles of Electrical Engineering II" (5 ECTS). In addition, candidates applying for the track "Automation and Robotics" must also pass the course "Signals" (6 ECTS); candidates applying for the track "Electronics" must also pass the course "Introduction to Electronics" (6 ECTS); candidates applying for the track "Power Engineering" must also pass the course "Electrical and Electromechanical Converters" (6 ECTS);
- An undergraduate programme adopted prior to 11 June 2004 in a relevant field: electricity and energy (522), electronics and automation (523), engineering and engineering trades (broad programmes – industrial engineering, electricity, 520), physical science (broad programmes – 440) and physics (441). These candidates are

typically awarded 60 ECTS and may enrol in the second year, if they satisfy the transfer criteria laid down in the accredited study programme;

- An undergraduate programme adopted prior to 11 June 2004 in natural sciences and engineering: mathematics (461), computer science (481), chemical and process engineering (524), mechanics and metal work (521) and building and civil engineering (582). These candidates are typically awarded 30 ECTS credits and may enrol in the corresponding year;
- A bachelor's vocational programme adopted prior to 11 June 2004 and a specialisation programme adopted prior to 11 June 2004 in a relevant field: electricity and energy (522), electronics and automation (523), physical science (broad programmes – 440) and physics (441). These candidates are typically awarded 60 ECTS credits and may enrol in the second year if they satisfy the transfer criteria laid down in the accredited study programme;
- A bachelor's vocational programme adopted prior to 11 June 2004 and a specialisation programme adopted prior to 11 June 2004 in one of the following fields: mathematics (461), computer science (481), chemical and process engineering (524), mechanics and metal work (521) and building and civil engineering (582). These candidates are typically awarded 30 ECTS credits and may enrol in the corresponding year.

In the selection procedure, candidates will be ranked according to the academic performance under the bachelor's (first-cycle) programme (grade point average including bachelor's thesis – 100%).

Mode of study: full-time

Transfer criteria:

In accordance with the transfer criteria, candidates may transfer to the master's (second-cycle) programme "Electrical Engineering" from programmes in the field of electricity and energy (522), electronics and automation (523), engineering and engineering trades (broad programmes – mechatronics, 520) and industrial engineering – electricity (522) provided they lead to the acquisition of comparable competencies and provided that at least half of the obligations under the former study programme relating to compulsory subjects of the new programme can be recognized.

Under the process procedure, satisfied obligations that may be recognized fully or partially are identified and new obligations required for completion of the new programme are laid down.

2. COMPUTER SCIENCE AND INFORMATION TECHNOLOGIES

Candidates who completed the following may apply for the master's (2nd-cycle) programme "Computer Science and Information Technologies":

- A bachelor's (1st-cycle) programme in the relevant field: computing (48);
- A bachelor's (1st-cycle) programme in one of the following fields: physical science (broad programmes - 440), physics (441), mathematics and statistics (46), mechanics and metal work (521), electricity and energy (522), electronics and automation (523). Prior to enrolment, candidates must fulfil study obligations corresponding 24 ECTS credits under the bachelor's (first-cycle) programme, a training programme or by taking placement tests. Candidates must fulfil the following obligations: "Programming II" (6 ECTS), "Algorithms and Data Structures" (6 ECTS), Computer Architecture (6 ECTS), Operating Systems (6 ECTS);
- A bachelor's vocational programme adopted prior to 11 June 2004 in the relevant field: computing (48);
- A bachelor's vocational programme adopted prior to 11 June 2004 in one of the following fields: physical science (broad programmes - 440), physics (441), mathematics and statistics (46), mechanics and metal work (521), electricity and energy (522), electronics and automation (523). Prior to enrolment, candidates must fulfil study obligations corresponding 24 ECTS credits under the bachelor's (first-cycle) programme, a training programme or by taking placement tests. Candidates must fulfil the following obligations: "Programming II" (6 ECTS), Algorithms and Data Structures (6 ECTS), Computer Architecture (6 ECTS), Operating Systems (6 ECTS);
- An undergraduate programme adopted prior to 11 June 2004 in the relevant field: computing (48). These candidates are typically awarded 60 ECTS credits and may enrol in the second year provided they satisfy the transfer criteria laid down in the accredited study programme;
- An undergraduate programme adopted prior to 11 June 2004 in one of the following fields: physical science (broad programmes - 440), physics (441), mathematics and statistics (46), mechanics and metal work (521), electricity and energy (522), electronics and automation (523). These candidates are typically awarded 30 ECTS credits and may enrol in the corresponding year;
- A bachelor's vocational programme adopted prior to 11 June 2004 and a specialisation programme adopted prior to 11 June 2004 in the relevant field: computing (48). These candidates are typically awarded 60 ECTS credits and may enrol in the second year provided they satisfy the transfer criteria laid down in the accredited study programme;
- A bachelor's vocational programme adopted prior to 11 June 2004 and a specialisation programme adopted prior to 11 June 2004 in one of the following fields: physical science (broad programmes - 440), physics (441), mechanics and metal work (521), electricity and energy (522), electronics and automation (523). These candidates are typically awarded 30 ECTS credits and may enrol in the corresponding year.

In the selection procedure, candidates will be ranked according to the academic performance under the bachelor's (first-cycle) programme (grade point average including bachelor's thesis – 100%).

Mode of study: full-time

Transfer criteria:

In accordance with the transfer criteria, candidates may transfer to the master's (second-cycle) programme "Computer Science and Information Technologies" from programmes in the field of computing (48) provided they lead to the acquisition of comparable competencies and provided that at least half of the obligations under the former study programme relating to compulsory subjects of the new programme can be recognized.

Under the recognition process, satisfied obligations that may be recognized fully or partially are identified and new obligations required for completion of the new programme are laid down.

3. INFORMATICS AND TECHNOLOGIES OF COMMUNICATION

Candidates who completed the following may apply for the master's (2nd-cycle) programme "Informatics and Technologies of Communication":

- A bachelor's (1st-cycle) programme in the relevant field: computer science (48);
- A bachelor's (1st-cycle) programme in one of the following fields: mathematics and statistics (46), mechanics and metal work (521), electricity and energy (522), electronics and automation (523), information security (861), economics (314), business and administration (34). Prior to enrolment, candidates must fulfil study obligations corresponding to 30 ECTS credits under the bachelor's (first-cycle) programme, a training programme or by taking placement tests. All candidates must fulfil the following obligations: "Object-oriented Programming in Java" (6 ECTS), "Databases I" (6 ECTS), "Basics of Web Technologies" (6 ECTS). Candidates from the field of mathematics and statistics (46), mechanics and metal work (521), electricity and energy (522), electronics and automation (523), economics (314), business and administration (34) must also pass the exam "ICT Security" (6 ECTS). Candidates from the field of mathematics and statistics (46), mechanics and metal work (521), electricity and energy (522), electronics and automation (523), information security (861) must also pass the exam "Business Process Modelling" (6 ECTS). Candidates from the field of economics (314), business and administration (34) must also pass the exam "System Convergence and Integration" (6 ECTS). Candidates from the field of information security (861) must also pass the exam "IS Architectures and Patterns" (6 ECTS).
- A bachelor's vocational programme adopted prior to 11 June 2004 in the relevant field: computer science (48);
- A bachelor's vocational programme adopted prior to 11 June 2004 in one of the following fields: mathematics and statistics (46), mechanics and metal work (521), electricity and energy (522), electronics and automation (523), economics (314), business and administration (34). All candidates must fulfil the following obligations: "Object-oriented Programming in Java" (6 ECTS), "Databases I" (6 ECTS), "Basics of Web Technologies" (6 ECTS) and "Information System Security" (6 ECTS). Candidates from the field of mathematics and statistics (46), mechanics and metal work (521), electricity and energy (522), electronics and automation (523) must also pass the exam "Business Process Modelling" (6 ECTS). Candidates from the field of economics (314), business and administration (34) must also pass the exam "System Convergence and Integration" (6 ECTS);
- An undergraduate programme adopted prior to 11 June 2004 in the relevant field: computer science (48). These candidates are typically awarded 60 ECTS credits and may enrol in the second year if they satisfy the transfer criteria laid down in the accredited study programme;
- An undergraduate programme adopted prior to 11 June 2004 in one of the following fields: economics (314), business and administration (34), mathematics and statistics (46), mechanics and metal work (521), electricity and energy (522), electronics and automation (523). These candidates are typically awarded 30 ECTS credits and may enrol in the corresponding year;
- A bachelor's vocational programme adopted prior to 11 June 2004 and a specialisation programme adopted prior to 11 June 2004 in the relevant field: computer science (48). These candidates are typically awarded 60 ECTS credits and may enrol in the second year if they satisfy the transfer criteria laid down in the accredited study programme;
- A bachelor's vocational programme adopted prior to 11 June 2004 and a specialisation programme adopted prior to 11 June 2004 in one of the following fields: business and administration (34), economics (314), mathematics and statistics (46), mechanics and metal work (521), electricity and energy (522), electronics and automation (523). These candidates are typically awarded 30 ECTS credits and may enrol in the corresponding year.

In the selection procedure, candidates will be ranked according to the academic performance under the bachelor's (first-cycle) programme (grade point average including bachelor's thesis – 100%).

Mode of study: full-time

Transfer criteria:

In accordance with the transfer criteria, candidates from the following fields may transfer to the master's (second-cycle) programme "Informatics and Technologies of Communication": computing (48) - provided the programme leads to the acquisition of comparable competencies and provided that at least half of the obligations under the former study programme relating to compulsory subjects of the new programme can be recognized.

Under the recognition process, satisfied obligations that may be recognized fully or partially are identified and new obligations required for completion of the new programme are laid down.

4. TELECOMMUNICATIONS

Candidates who completed the following may apply for the master's (2nd-cycle) programme "Telecommunications":

- A bachelor's (1st-cycle) programme in a relevant field: telecommunication technology (5233), electricity and energy (522), electronics and automation (523), industrial engineering – electricity (522), computer science (481);
- A bachelor's (1st-cycle) programme in the field of natural sciences and engineering: physical science (broad programmes - 440), physics (441), mathematics and statistics (46), engineering and engineering trades (broad programmes – mechatronics, 520), mechanics and metal work (521), chemical and process engineering (524), building and civil engineering (582) and computer use (482). Prior to enrolment, candidates must fulfil obligations corresponding to 20 ECTS credits under the bachelor's (1st-cycle) programme, a training programme or by taking placement tests. All candidates must fulfil the following obligations: "Introduction to Telecommunications" (6 ECTS), "Programming for Telecommunications" (8 ECTS), "Fundamentals of Communications Networks" (6 ECTS);
- A bachelor's vocational programme adopted prior to 11 June 2004 in a relevant field: telecommunication technology (5233), electricity and energy (522), electronics and automation (523), computer science (481);
- A bachelor's vocational programme adopted prior to 11 June 2004 in another field: physical science (broad programmes – 440), physics (441), mathematics and statistics (46), mechanics and metal work (521), chemical and process engineering (524), building and civil engineering (582), computer use (482). Prior to enrolment, candidates must fulfil obligations corresponding to 20 ECTS credits under the bachelor's (1st-cycle) programme, a training programme or by taking placement tests. All candidates must fulfil the following obligations: "Introduction to Telecommunications" (6 ECTS), "Programming for Telecommunications" (8 ECTS), "Fundamentals of Communications Networks" (6 ECTS);
- An undergraduate programme adopted prior to 11 June 2004 in the relevant field: telecommunication technology (5233). These candidates are typically awarded 60 ECTS credits and may enrol in the second year provided they satisfy the transfer criteria laid down in the accredited study programme;
- An undergraduate programme adopted prior to 11 June 2004 in the field of natural sciences and engineering: electricity and energy (522), electronics and automation (523) with the exception of telecommunication technology, computer science (481). These candidates are typically awarded 30 ECTS credits and may enrol in the corresponding year;
- A bachelor's vocational programme adopted prior to 11 June 2004 and a specialisation programme adopted prior to 11 June 2004 in the relevant field: telecommunication technology (5233). These candidates are typically awarded 60 ECTS credits and may enrol in the second year provided they satisfy the transfer criteria laid down in the accredited study programme;
- A bachelor's vocational programme adopted prior to 11 June 2004 and a specialisation programme adopted prior to 11 June 2004 in one of the following fields: electricity and energy (522), electronics and automation (523) with the exception of telecommunication technology, computer science (481). These candidates are typically awarded 30 ECTS credits and may enrol in the corresponding year.

In the selection procedure, candidates will be ranked according to the academic performance under the bachelor's (first-cycle) programme (grade point average including bachelor's thesis – 100%).

Mode of study: full-time**Transfer criteria:**

In accordance with the transfer criteria, candidates may transfer to the master's (second-cycle) programme "Telecommunications" from programmes in the field of telecommunication technology (5233) provided they lead to the acquisition of comparable competencies and provided that at least half of the obligations under the former study programme relating to compulsory subjects of the new programme can be recognized.

Under the recognition process, satisfied obligations that may be recognized fully or partially are identified and new obligations required for completion of the new programme are laid down.

5. MEDIA COMMUNICATIONS

Candidates who completed the following may apply for the master's (2nd-cycle) programme "Media Communications":

- A bachelor's (1st-cycle) programme in a relevant field: media communications (48), computing (48), audio-visual techniques and media production (213), multimedia communications (523), media studies (313);
- A bachelor's (1st-cycle) programme in the following field: journalism and reporting (321). Prior to enrolment, candidates must fulfil obligations corresponding to 21 ECTS credits under the bachelor's (first-cycle) programme, a training programme or by taking placement tests. All candidates must fulfil the following obligations: "Audio and Video Engineering" (5 ECTS), "Informatics in Media" (6 ECTS), "Web Development" (5 ECTS), "Audio and Video Techniques" (5 ECTS);
- A bachelor's vocational programme adopted prior to 11 June 2004 in a relevant field: computing (48), audio-visual techniques and media production (213), multimedia communication (523), media studies (313);
- An undergraduate programme adopted prior to 11 June 2004 in a relevant field: media communications (48), computing (48), audio-visual techniques and media production (213), multimedia communications (523), media studies (313). These candidates are typically awarded 60 ECTS credits and may enrol in the second year if they satisfy the transfer criteria laid down in the accredited study programme.

In the selection procedure, candidates will be ranked according to the academic performance under the bachelor's (first-cycle) programme (grade point average including bachelor's thesis – 100%).

Mode of study: full-time

Transfer criteria:

In accordance with the transfer criteria, candidates may transfer to the master's (second-cycle) programme "Media Communications" from programmes in the field of media communications (48), computing (48) and audio-visual techniques and media production (213) provided they lead to the acquisition of comparable competencies and provided that at least half of the obligations under the former study programme relating to compulsory subjects of the new programme can be recognized.

Under the recognition process, satisfied obligations that may be recognized fully or partially are identified and new obligations required for completion of the new programme are laid down.

DOCTORAL (3RD-CYCLE) PROGRAMMES:

1. ELECTRICAL ENGINEERING
2. COMPUTER SCIENCE AND INFORMATICS
3. MEDIA COMMUNICATIONS

Location: Maribor
Duration: 3 years, 180 ECTS
Mode of study: part-time

Admission requirements:

Candidates who completed the following may enrol in doctoral (3rd cycle) programmes:

- A master's (2nd-cycle) programme;
 - An undergraduate programme adopted prior to 11 June 2004;
 - A bachelor's vocational programme adopted prior to 11 June 2004 and a specialisation programme. Prior to enrolment, these candidates must fulfil obligations corresponding to a maximum of 35 ECTS under the master's (2nd-cycle) programme:
 - for the doctoral programme "Electrical Engineering" in the field of electrical engineering,
 - for the doctoral programme "Computer Science and Informatics" in the field of computer science and informatics,
 - for the doctoral programme "Media Communications" in the field of media communications.
- The Faculty's Academic Affairs Committee determines which study obligations must be fulfilled by taking into account the candidate's field of expertise (type of the completed programme);
- A programme educating students for professions regulated by EU directives or another master's (2nd-cycle) programme corresponding to 300 ECTS credits.

A completed undergraduate programme or a master's (2nd-cycle Bologna) programme in one of the following fields is considered adequate prior knowledge:

- for the doctoral programme "Electrical Engineering" in the field of electrical engineering, telecommunications and mechatronics;
- for the doctoral programme „Computer Science and Informatics“ in the field of computer science and informatics;
- for the doctoral programme "Media Communications" in the field of media communications, computer science or informatics.

If the number of applications exceeds the number of positions available, candidates will be ranked according to:

- overall score (20%);
- grade in the elective exam in the field of electrical engineering, computer science and informatics or media communications (80%).

With regard to the elective exam, candidates may replace up to 50% of the grade with the grade awarded for scientific research and professional work. Evaluation criteria:

- original scientific papers or review articles in JCR journals or journals indexed in SCI, SSCI or A&HCI databases;
- contributions in international conference proceedings;
- other publications.

Transfer criteria:

In accordance with the transfer criteria, candidates who completed the following may be admitted to the second year of doctoral (3rd-cycle) programmes "Electrical Engineering", "Computer Science and Informatics" and "Media Communications":

- A master's programme (MSc) (adopted prior to 11 June 2004) – these candidates are awarded 60 ECTS credits;
- An undergraduate programme (adopted prior to 11 June 2004) and a specialisation programme – these candidates are awarded 60 ECTS credits.

Number of available positions: The number of positions available is published in a table, which is attached to and represents an integral part of the call text.