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Magister inženir kemijske tehnike/magistrica inženirka kemijske tehnike

Selected qualifications

Magister profesor zgodnjega učenja/magistrica profesorica zgodnjega učenja

Name of qualification	Magister inženir kemijske tehnike/magistrica inženirka kemijske tehnike
Translated title (no legal status)	Master's degree in chemical 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

• A first-cycle programme in a relevant field (e.g. chemistry, chemical technology, chemical engineering, process engineering, biochemical engineering, chemistry for education) or a relevant professional higher education programme adopted before 11 June 2004.

ISCED field

Field
Tehnika, proizvodne tehnologije in gradbeništvo

ISCED subfield

subfield kemijsko inženirstvo in procesi

Qualification level

SQF 8
EQF 7
Second level

Learning outcomes

The qualification holder will be able to:

(general competences)

- carry out scientifically supported analysis and synthesis in the field of chemical and biochemical engineering and demonstrate understanding of the influence of technical solutions on environmental and social relations,
- deal holistically with problems on the basis of fundamental and advanced analytical and synthetic approaches,
- use acquired knowledge to address qualitative and quantitative tasks in the field of chemistry and biochemical engineering,
- identify and resolve problems through the application of scientific methods and procedures in a given specialised field,
- integrate technical applications with finances, management and business organisation,
- observe and measure chemical properties and changes and systematically and reliably control, record and process data in chemical and biochemical engineering,
- acquire knowledge from relevant literature and data sources, including computer databases,
- use commercial computer programs,
- communicate effectively, including in foreign languages, and use modern presentation tools,
- work as part of a team in multidisciplinary groups,
- demonstrate understanding of the principles of leadership and business practice,
- demonstrate understanding of own professional and ethical responsibility,
- pursue autonomous learning, including in-depth learning, and recognise the need for lifelong learning.

(subject-specific competences)

- demonstrate mastery of in-depth chemical engineering knowledge for the understanding, description and addressing of complex problems in the planning and operation of chemical and biochemical processes, innovation in existing processes and the development of new processes and products,

- demonstrate understanding of thermal separation processes in the chemical and biochemical industries,
- demonstrate understanding of the influence of the structure of materials on their physical and chemical properties,
- demonstrate proficiency in mathematical modelling of chemical and biochemical processes,
- demonstrate proficiency in the dynamics, regulation and control of chemical and biochemical processes,
- demonstrate mastery of the theory and applications of mathematical programming (optimisation) in the planning and operation of chemical and biochemical processes,
- demonstrate mastery of methodologies for the preparation of studies and carry out economic evaluation of processes and projects,
- demonstrate understanding of safety, health and the environment and the ability to apply the concept of sustainability,
- demonstrate familiarity with legislation in a specific field,
- demonstrate understanding of and the ability to apply the concept of chemical product engineering,
- demonstrate familiarity with and proficiency in project work for practical applications of process and product engineering.

As well as the common subject-specific competences listed above, master's degree candidates will acquire the following narrower competences with regard to their selected stream and elective module:

Chemical engineering stream: understanding of the functioning of process equipment and systems and the ability to plan them, familiarity with water and gas networks, familiarity with the thermodynamics of mixtures, proficiency in the conceptual planning of processes.

- Chemical engineering module: familiarity with practical possibilities for better energy education and the use of renewable sources, the ability to apply mathematical programming (optimisation) to the synthesis of chemical and biochemical processes.
- Environmental engineering module: proficiency in environmental management and cleaner production in processes and services, understanding of the impacts of products on the environment in all phases of the life cycle, the ability to assess and improve the environmental operation of chemical processes, the ability to select the most suitable waste processing methods and technologies with regard to the type of waste.
- Coatings technology module: familiarity with types of coating systems and raw materials for their manufacture, mastery of process stages in the manufacture of coatings, familiarity with optimal techniques of application and drying for various coating systems.

Biochemical engineering stream: mastery of bioseparation methods and in-depth knowledge of biocatalysis, familiarity with industrial microbiology, understanding of and familiarity with the modelling of bioreactor systems.

- Biochemical Engineering module: Understanding of the techniques of preparation of raw materials for industrial purposes, understanding of technological procedures for the manufacture of food products.
- Pharmaceutical engineering module: Familiarity with and understanding of the field of pharmaceutical active ingredients, and the ability to plan, develop and manage the manufacture of pharmaceutical active ingredients.

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

Completion of all first -year course units (60 ECTS credits).

Transitions

Third-cycle doctoral study programmes (SQF level 10)

Condition for obtaining certificate

In order to complete the second-cycle master's programme in Chemical Engineering, students must complete all course units prescribed by the programme for a total of at least 120 ECTS credits and write and successfully defend a master's thesis.

Awarding body

Faculty of Chemistry and Chemical Technology, University of Maribor

URL

http://www.fkkt.um.si/en