



# Technical Faculty in Bor

# Engineering Management

at Technical Faculty In Bor, 12 Vojske Jugoslavije, 19210 Bor, [www.tf.bor.ac.rs](http://www.tf.bor.ac.rs)

ECTS: 60/ LANGUAGE OF INSTRUCTION: SERBIAN/ DEGREE: MASTER

## Study program content

This academic master studies program which lasts two semesters brings 60 ECTS credits. Through curriculum realization students acquire knowledge in four compulsory subjects, two sets of optional subjects and writing a final master's paper. Through optional subjects and final master's thesis students opt for fields and topics according to their affinities. In all subjects teaching is realized in three ways: lectures, practice and research work of the students. Some additional methods are writing seminary papers and doing projects in actual problem situations which is realized through academic coaching.

## Study program goals

The aims of the study program Master in Engineering Management, which is realized at the Technical faculty in Bor, can be defined through several statements:

- Acquiring knowledge in the field of management science (planning, organizing, guiding and controlling) on a higher level, compared to the first level of basic academic studies, from the aspect of the general insight into company functioning as a complex system,
- Development of complex portfolios of production and services economic systems from the standpoint of their continual growth and development,
- Development of creative abilities, critical thinking and systems approach to problem solving,
- Development of the ability for team work and mastering the tools and techniques needed for performing professional duties,
- Development of awareness for implementation of the highest international standards in all the activities in companies, and especially for the implementation of the quality of living standard and environment protection,
- Development of the project approach to solving problems and to realization of activities in companies.

## Study program outcomes

By completing the master's program in Engineering Management, students are able to ap-

ply general and specific knowledge in certain subjects which enables them to perform their tasks effectively within their field of study. General competences of masters in Engineering Management can be applied in systematic approach to business system through logistics of its functioning with the special reference on the role of technology and anticipation of changes. Subject characteristics of masters in Engineering Management consist of capabilities and competences of planning short-term and long-term (strategic) needs of a company through a development of continual improvements system, which enables a continual growth and development of a company. Students are specially enabled to use a process approach to solving practical problems using updated tools and techniques and information-communication technologies. Masters in Engineering Management are capable to elaborate and present results of their work. Development of research potential is one of the recognizable competences of these students, which enables their involvement in the science-research projects and continuation of their education at doctoral studies.

## Admission requirements

The right to apply for the master's academic studies is granted to a student who has acquired a diploma which is equivalent to the first degree of academic studies, with at least 240 ESPB points. The right to enroll into a program of Engineering Management is granted to candidates who have finished basic academic studies in the field of management, economy and organization sciences (Bachelor's degree). The other students take differential subject exams in the field of marketing, entrepreneurship, management and strategic management according to the program of four year academic studies.

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# Metallurgical Engineering

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ECTS: 60/ LANGUAGE OF INSTRUCTION: SERBIAN/ DEGREE: MASTER

## Study program content

This study program represents the continuation of the basic academic program with flexible curriculum. Students, who have acquired engineering knowledge in the field of metallurgy, creating the character of their studies according to their affinities, are offered the opportunity to pursue specialist studies through course work at master academic studies. Thus, graduate students of this study program acquire clearly defined competences which make them relevant for job market.

The program includes three compulsory courses and three optional sets of 2 to 4 courses, which are relevant to the profession. The program also offers students a chance to integrate their academic studies with professional practice, which takes 90 hours in the summer semester.

At the end of the course the students submit a document in support of candidature for a master's degree in which they present their research. The methods of teaching the course material are lectures, practice, research work and other additional forms which are realized through interaction.

They are created as integration of theory and practice which enables students to apply expertise to the resolution of complex practical issues, as well as to enhance their creativity and innovation.

## Study program goals

The aims of the masters academic studies of Metallurgical Engineering are directed towards acquiring academic skills, developing creative abilities and achieving professional knowledge in the field of metallurgy engineering – obtaining and processing of metals, alloys and up-to-date metal materials, and are in accordance with basic tasks and goals of education at Technical faculty in Bor which are related to a continual improvement and modernization of the education system, implementation of acquired knowledge into economy and society and approaching to the world accomplishments, as well as requirements of the job market.

## Study program outcomes

Through this program students acquire adequate competences:

- They achieve adequate professional foundation for the opportunity of easy and fast upgrading of the acquired knowledge at the first level of academic education
- Opportunity to suggest solutions and anticipate consequences based on problem analysis,
- Ability of direct application of theoretical knowledge in practice,
- Ability to create and do the projects,
- High responsibility in a process of making decisions and ability to work independently
- High level of readiness to work in multi- and interdisciplinary teams
- Readiness to take a leading position in a group
- Ability to work in international surrounding - ability to deal with complex problems in the field using up-to-date scientific methods and approaches,
- Acquired feeling for continual pursuit and application of novelties in the field,
- Ability to use information-communication technologies in mastering the knowledge in special fields.

The stated competences enable graduate academic students for successful work in their profession and further academic education in doctoral studies.

## Admission requirements

The person who is granted the right to enroll has a Bachelor's degree in Mining Engineering, Metallurgy Engineering and Engineering Technology, with 240 ECTS at least.

## Contact

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# Mining Engineering

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ECTS: 60/ LANGUAGE OF INSTRUCTION: SERBIAN/ DEGREE: MASTER

## Study program content

Master degree program lasts two semesters (one year), comprises 60 ECTS credits and consists of three modules. It is characterized by flexible curriculum which represents an adequate continuation of the basic academic studies program. Students, who have acquired general engineering education at basic academic studies, are offered the opportunity to pursue specialist studies through course work at master academic programs.

The suggested list of optional subjects, student load for each subject and the final paper project are accorded to the European System. Courses at the masters degree program in Mining metallurgy implies traditional teaching, practicing calculation techniques in the laboratory sessions and compulsory professional practice of economic activities in the surroundings - in the Mining Metallurgy Complex Bor ("RTB Bor"). The completion of the master academic studies includes writing a final paper.

## Study program goals

The main aim of the study program Mining engineering is a continual improvement of the education process in all levels and the development of the study program which is adjusted to up-to-date accomplishments in science and the development of education worldwide.

The aim of the study program is its own quality and the possibility of its adequate realization through application of contemporary interactive methods with associated laboratory sessions and practice in the plants of the industrial complex "RTB Bor", which is in the close vicinity.

Also, the aim of the study program is to make complementary modules, so that the students after acquiring this degree, Masters of Mining engineering, can have an insight into complex, multidisciplinary problems on the whole, not in segments. Thus, they will be able to deal with problems successfully with maximum economical performance in ecologically acceptable environment.

## Study program outcomes

Competences of the masters of Mining engineering, in addition to the acquired general engineering knowledge in Bachelor's degree, are developed skills to have an integrated outlook on solving the problems, to approach them analytically, to synthesize causative/consequence phenomena and information; the ability to deal with problems individually; anticipation of the consequences and results; mastering the methods and procedures of research as well as direct implementation of theoretical knowledge into practice. They should have the ability to work in international teams, to express creativity, to be venturesome, to have a positive attitude to a quality of work and the wish to succeed, to follow an ethical code in business dealings.

Professional competences of the Masters in this field are:

- Good and detailed knowledge of elected narrow specialty in the field of mining, which is directly upgraded on the general engineering knowledge, acquired in basic academic studies;
- Feeling of need for continual pursuit for new scientific findings and accomplishments;
- Ability to use information-communication technologies in mastering the knowledge of the elected special field.

Apart from a specialty, graduate Masters are expected to have the ability for independent formulating the hypothesis, to have the ability to understand complex processes and systems and their flexibility in the function of variables.

They should also have the ability to state qualitative and quantitative changes in the processes and systems, as well as their adequate processing using adequate software, computer processing of data and modeling of the processes.

The graduate Masters have the ability to use up-to-date means of communication for following the latest scientific and professional accomplishments in the elected field; they speak foreign languages for the purpose of communication

and following the scientific literature worldwide, which is a precondition for continual development of their career in the direction of further academic education in PhD level.

## Modules

Mining engineering has a clearly defined structure which consists of three modules:

- Exploitation of mineral resources,
- Preparation of mineral resources,
- Recycling technologies and sustainable development

## Admission requirements

The right to apply for the Master's academic studies is granted to candidates who have finished basic academic studies in the field of technical - technological sciences, such as Mining engineering, Engineering metallurgy and Engineering technology, with at least 240 ECTS credits.

## Contact

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# Chemical Engineering

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ECTS: 60/ LANGUAGE OF INSTRUCTION: SERBIAN/ DEGREE: MASTER

## Study program content

The program of master academic studies - Chemical Engineering represents a continuation of basic academic studies. The program lasts one year (two semesters), i.e. 60 ECTS credits. Students, depending on the previous knowledge and personal affinities, can choose between courses related to the environment protection or inorganic chemical technology. In each case, through compulsory subjects, they will acquire knowledge which will enable them to opt for a career in their preferable field.

At this study program, through compulsory and optional subjects students study theoretical basics of the phenomenon of transfer, thermodynamics and kinetics of chemical reactions which take place in technological processes in the environment. They also study about the influence of technological processes on the environment pollution, industrial sources of polluting the environment, structure and characteristics of inorganic materials, basics of electrochemical engineering etc. Besides compulsory and optional subjects, at master academic studies there is a subject in the second semester called Theoretical basics for writing a final diploma paper.

Within this subject students analyze and formulate hypothesis of research, present of plan of research, collect literature data, do experiments discussing the results. This subject represents the introduction to the final master's paper which brings 10 ESPB. The masters in Engineering technology includes tutorials, lectures, laboratory practice and research work.

## Study program goals

The main aim is organization and realization of education process which will enable the masters in Chemical Engineering to acquire competences necessary for work. Methods which are used to realize this goal include up-to-date and interactive approaches to courses, which are completely integrated with laboratory and research work. During writing the final master paper, students learn how to interpret the obtained experiment results with a suitable dis-

ussion. Such work of masters in Engineering Technology, with previously acquired knowledge on basic academic studies, provides them with good fundamental engineering education in certain fields such as phenomena of transfer and technological operations, thermodynamics and kinetics of chemical reactions which take place in technological processes, the influence of technological processes on the state of the environment etc. All this aims at successful understanding, that masters in this field should have, of very complex aspects of wide range of industrial processes and their influence on the environment. With such integrated theoretical knowledge and laboratory researches they can deal with very complex issues in practice.

## Study program outcomes

After they have completed their studies, masters in Chemical Engineering acquire the following competences:

- Application of knowledge, understanding and dealing with problems in new and unknown surroundings in wider or multidisciplinary contexts connected with technical-technological field,
- Understanding and dealing with problems in various situations which arise during the work connected to technical-technological field of work,
- Logical reasoning based on available data, formulating their own opinions, presumptions and making deductions
- Analyzing, synthesizing and anticipating solutions to problems and consequences
- Mastering of the methods, procedures and processes of research
- Placement and publishing various scientific and professional information, giving opinions and exchanging ideas,
- Professionally based interpretation of experimental data and application of knowledge in practice,
- Managing professional teams and organizations
- Forming an attitude on the necessity of permanent improvement and ability to apply professional ethics.

Apart from it all, students will be able process data using adequate software and they will be able to search and use up-to-date literature in different data bases. Besides, they will acquire extended knowledge in the field of environment protection. This will make it possible for them to continue their studies in PhD level.

### Admission requirements

The right to apply for the master's academic studies is granted to a student who has acquired a diploma which is equivalent to the first degree of academic studies, with at least 240 ESPB points. The right to enroll into a program of Engineering Management is granted to candidates who have finished basic academic studies in the field of management, economy and organization sciences (Bachelor's degree). The other students take differential subject exams in the field of marketing, entrepreneurship, management and strategic management according to the program of four year academic studies.

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