

CURRICULA AND SYLLABI

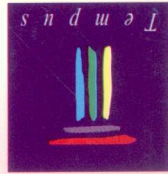
- **UNDERGRADUATE STUDIES**
- **POSTGRADUATE STUDIES**



University "St. Kiril & Metodij" Skopje

Faculty of Mining & Geology Stip

TEMPUS-PHARE PROGRAMME
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- GRADUATE STUDIES
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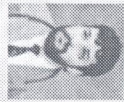
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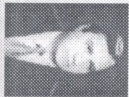
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CURRICULUM

FOR DEVELOPMENT TRENDS OF THE FACULTY OF MINING & GEOLOGY - STIP, R. MACEDONIA

FOR TRANSFORMED AND REVISED COURSES AND PROGRAMMES IN THE
GEOLOGY AND MINING DEPARTMENT

(Possibilities, initiatives and perspectives)

*"The mission of the Mining and Geology Department is to
make significant contributions in the areas of instruction,
research, extension, management and services"*

Minerals have been essential to man since our beginning. An adequate supply of mineral products at acceptable prices is the indispensable basis of any modern industrial nation. The demand for minerals of all kinds is higher today than ever before, and it continues to increase as the nations of the world strive to improve their standards of living. It is the task of the mineral industry and the people in it to supply these needs.

The function of the mining and geology engineer is to apply knowledge of pertinent scientific theory, engineering fundamentals, and improved technology to recover natural resources. Mining and Geology are a world-wide activity involving the extraction of nonmetallics, metal ores of all kinds, and solid fuels and energy sources such as coal and nuclear material. In addition to mineral extraction, the skills of mining engineers are also needed in a variety of fields where the earth's crust is utilized. The construction industry, with its requirements of developing



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roads, railroads, tunnels, and underground chambers, and the hazardous waste disposal industry are examples of such applications. These are rapidly expanding needs, with a shortage of competent people; the mining engineer is well qualified to meet these needs. The importance of ecological and environmental planning is recognized and given significant attention in all aspects of the revised courses and programmes of the mining and mineral engineering.

Geology, mining and mineral engineering deal with discovering, extracting, beneficiating, marketing, and utilizing mineral deposits from the earth's crust. The role of the mining engineer may be quite diversified, and the field offers opportunities for specialization in a large number of technical areas. The trained professional in this field is well versed in mining and geology and also in the principles of civil and mechanical engineering as applied to the mining industry. With the present trend toward the use of engineers in industrial management and administrative positions, the mining engineer's training also includes economics and business in mining, management and ecology.

Professional technical courses include surface and underground mining systems, engineering principles of blasting, materials handling, ventilation, roof control, rock mechanics, mining equipment, coal and mineral preparation, plant and mine design, geology, and water control. In addition, students receive a foundation in the managerial, financial, investment, environmental aspects of the operation of a mining enterprise.

UNDERGRADUATE PROGRAM DESCRIPTION

The undergraduate program of study is structured to meet the following objectives:

- **Producing high quality, rigorously trained geology, mining and minerals engineers, whose background and education reflect the current level of technology and thought in the profession, and who can enter directly into engineering practice or graduate school;**

Intrinsic to the curriculum is the development of a meaningful major-related design experience that builds on the fundamental concepts of mathematics, the basic sciences, the engineering, and communication skills, ecology planning and management.



- **Providing a conceptual and technical background in the use of modern technologies as well as computer experience integrated into most courses.**

The curriculum is designed to provide a strong background in computer software packages and evaluation. Revised courses include probability and statistics.

- **Exposing students to laboratory work, conducting experiments, and evaluating each experiment, and reporting the results.**

Laboratory sections are supervised by the students and integrated into the laboratory work.

- **Producing students with strong communication skills;**

Writing & Communication Engineering stresses the importance of communication skills emphasized in the major.

- **Exposing students to the impact of engineering ethics, and to the economic and social aspects of the engineering profession.**

A number of courses stress the impact of economic and social freedom of engineering design.



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- **Providing a program of study which is progressive in conceptual and technical development;**

The curriculum is designed to incorporate newly-conceived industrial technologies as well as research developments taking place in the field. Computer experience is an important aspect of the curriculum, and it is integrated into most courses, assignments and student work. Students use computer software packages for mine and geology planning, design, and evaluation. Revised courses in the curriculum also emphasize the study of probability and statistics.

- **Exposing students to laboratory courses which emphasize conducting experiments, understanding the principles involved in each experiment, and collecting, processing and reporting data;**

Laboratory sections are kept small to allow personal attention and supervision of the students by faculty. Instruction and training have to integrate into the laboratory environment.

- **Producing students who possess strong written and oral communication skills;**

Writing & Communication Program in the Geology, Mining and Mineral Engineering stresses the importance of the professional communications skills emphasized in the most courses and programmes.

- **Exposing students to the meaning of professionalism and ethics, and to the economic, business and safety considerations of the engineering profession;**

A number of courses stress these important ideas, placing special emphasis on the impact of economic, legal, and environmental parameters on the freedom of engineering design.



- The course work and research emphasize the application of microeconomic principles and bussiness skills to mineral, energy and environmental issues with the goal of ensuring that graduates are qualified in a lot of managing areas:

Economic Analysis: Choice and demand, production and supply, industrial organization, international trade, policy and trends of the metal and minerals market, efficient use of resources, and economic development;

Bussiness and Investment Decision Making: Evaluation of investment opportunities, decision analysis, operation research, and finance;

Quantitative Methods: Fundamentals of applied statistics, econometric analysis, and torecasting.

Communication: Effective writing and oral skills in proression,economics and management.



Syllabi of the Facul

DEPAR

First Year

	Courses
1.	Mathematics
2.	Physics
3.	Chemistry
4.	Principles of Mining
5.	Mineral engineering
6.	Defence and protection
7.	Mine graphics and design
8.	Computing in Mining
	Total

Second year

	Courses
1.	Technical mechanics
2.	Strength of materials
3.	Mine-mechanical engineerin
4.	Methods of mining
5.	Materials in mining
6.	Numerical methods in minin
7.	Methods of examination in n
8.	Mineralogy and petrography
	Total