

Materials Science

1. Admission Requirements:

• Prerequisites:

- Successful completion of high school studies and obtaining a baccalaureate degree or equivalent.
- Non-EU Citizens - Contingent upon the presentation of the Graduation Certificate from the preparatory year (excluding those who have completed their previous studies in the Romanian language) and obtaining the Letter of Acceptance issued by the Ministry of Education.
- EU Citizens + Swiss Confederation - Contingent upon the presentation of the Graduation Certificate from the preparatory year (excluding those who have completed their previous studies in the Romanian language) and the recognition of their studies by the National Centre for Recognition and Equivalence of Diplomas (CNRED).

• Entrance Exams:

- The admission average of registered candidates is made up of: average of the baccalaureate exam - weight 100%.
- Admission to undergraduate studies is strictly in descending order of the general admission averages obtained by the candidates respecting the capacity of tuition for each study program

2. Degree Levels:

- Bachelor's Degree: 4-year program.

3. Curriculum:

• Core Courses:

Mandatory courses that all students in the program must take:

- Linear Algebra, Analytical, and Differential Geometry
- Mathematical Analysis
- Chemistry
- Chemistry-Physics
- Technical Drawing and Infographics
- Applied Informatics
- Physics
- Computer Programming and Programming Images
- Numerical Methods
- Descriptive Geometry
- Computer-Aided Graphics (AUTOCAD)

- Science and Engineering of Materials
- Mechanics
- Technology of Materials
- Thermotechnics
- Mechanics of Fluids
- Crystallography
- Physical Metallurgy
- Strength of Materials
- Electrotechnics and Electrical Machines
- Mechanisms and Machine Parts
- Properties of Materials
- Plastic Deformation Processes
- Basics of Breaking Materials
- Heat Treatments
- Basics of Alloy Production
- Theoretical Bases of Casting

- **Electives:**

- Corrosion and Corrosion Protection of Materials
- Structural Theory of Materials
- Physical Metallurgy
- Nanocrystalline Materials
- Material Analysis Techniques
- Plastic Deformation Technology
- Powder Metallurgy
- Biomaterials
- Industrial Furnaces
- Metallic Materials
- Non-metallic Materials
- Polymeric Materials
- Ceramic Materials
- Composite Materials
- Selection of Materials
- Modeling and Optimization of Processes

- **Major/Concentration:**

The study program ensures the acquisition of the following professional skills:

- Application of calculus, demonstrations, and problem-solving techniques in materials engineering based on fundamental sciences.

- Integration of knowledge, principles, and methods from the field of technical sciences, utilizing graphical methods to address specific tasks.
- Utilization of Computer-Aided Design (C.A.D) techniques for materials designing.
- Assessment and optimal resolution of technical challenges related to materials processing through the application of concepts, theories, and experimental methods.
- Development of management and marketing competencies in the realm of design and materials characterization.
- Advancement of technical assessment activities related to sustainable development in the materials industries.

• **General Education Requirements:**

- Successful completion of the mandatory courses, seminars and labs, completion of the three internships and the bachelor thesis.

4. Credits:

- Each semester carries a weight of 30 ECTS, with a total of 240 ECTS required for graduation.

5. Internships and Practical Experience:

- Students have the opportunity to carry out their internship in companies and enterprises in Dambovită county and its surroundings, as well as in the teaching and research laboratories of the faculty or the Institute for Scientific and Multidisciplinary Research.
- II - Internship 1: 3 weeks x 30 hours = 90 hours.
- III - Internship 2: 3 weeks x 30 hours = 90 hours.
- IV - Internship for Bachelor's Thesis Project Development: 2 weeks x 30 hours = 60 hours.

6. Research Requirements:

- In order to present the bachelor's thesis, students are required to accrue the necessary number of credits (240 credits) and then prepare and deliver the bachelor's thesis.

7. Academic Advising:

- A supervising teacher is assigned to each year of study and partially assisted activities are coordinated by supervising teachers.
- The bachelor thesis is also supervised by a scientific supervisor.

8. Extracurricular Activities:

- Students have the option to participate in clubs, organizations, student scientific circles, or extracurricular activities related to their field of study or personal interests.

9. Examinations:

- The courses will span 14 weeks during each semester and conclude with oral, written, or practical examinations. Successful completion of these exams is mandatory to earn study credits. The grading system for a subject ranges from 10 to 1, with whole numbers assigned as marks. The minimum passing grade is 5, and the highest achievable mark is 10.

10. Thesis Defense:

The prerequisites for presenting a bachelor thesis before a committee include:

- Attainment of 240 ECTS credits throughout the program.
- Obtaining the approval of the scientific supervisor to present the bachelor thesis.
- Credits for Practical Diploma Project Elaboration: 2 ECTS.
- Credits for Elaboration of the Diploma Project: 4 ECTS.

11. Graduation Requirements:

- Graduation necessitates the fulfilment of all program requirements, encompassing the completion of the required credit hours and the successful completion of the bachelor thesis.

12. Degree Awarding:

- Bachelor's Degree (Engineer) in Materials Science.