

**ROMANIA**  
**“VASILE ALECSANDRI” UNIVERSITY OF BACAU**  
**Faculty of Engineering**

Calea Mărășești, Nr. 157, Bacău, 600115, Tel./Fax +40 234 580170  
<http://www.ub.ro/inginerie/> ; e-mail: [decaning@ub.ro](mailto:decaning@ub.ro)



Field of Study: Chemical Engineering  
 Study Programme: Biochemical Engineering

2023-2024 academic year

**CURRICULUM**  
 1<sup>st</sup> year of study

| No  | Subject  | Number of ECTS credits | Examination form | Semester |
|-----|--|------------------------|------------------|----------|
| 1.  | Mathematical analysis                                | 4                      | WO               | 1        |
| 2.  | Linear algebra, analytic and differential geometry   | 4                      | WO               | 1        |
| 3.  | Computer programming and programming languages 1     | 4                      | W                | 1        |
| 4.  | Chemistry 1  | 5                      | W                | 1        |
| 5.  | Chemistry 2  | 5                      | W                | 1        |
| 6.  | Elements of mechanical engineering                   | 5                      | O                | 1        |
| 7.  | Physical education and sports 1                      | 1                      | P/F              | 1        |
| 8.  | English for engineering 1 / French for engineering 1 | 2                      | O                | 1        |
| 9.  | Special mathematics                                  | 3                      | WO               | 2        |
| 10. | Physics  | 4                      | WO               | 2        |
| 11. | Computer programming and programming languages 2     | 4                      | O                | 2        |
| 12. | Physical chemistry                                   | 4                      | W                | 2        |
| 13. | Chemistry 3  | 5                      | W                | 2        |
| 14. | Computer graphics                                    | 4                      | O                | 2        |
| 15. | General economics                                    | 3                      | O                | 2        |
| 16. | Physical education and sports 2                      | 1                      | P/F              | 2        |
| 17. | English for engineering 2 / French for engineering 2 | 2                      | O                | 2        |

W – written exam

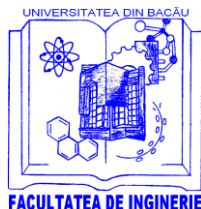
O – oral exam

WO – written and oral exam

P/F – pass/fail

**Dean,**  
 Assoc. Prof. Ph.D. Eng.  
 Mirela PANAINTE-LEHĂDUȘ

**Head of Department,**  
 Lecturer Ph.D. Eng. Econ.  
 Andrei-Ionuț SIMION



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**CURRICULUM**  
 2<sup>nd</sup> year of study

| No  | Subject   | Number of ECTS credits | Examination form | Semester |
|-----|---|------------------------|------------------|----------|
| 1.  | Transport phenomena                                   | 6                      | W                | 3        |
| 2.  | Organic chemistry                                     | 5                      | O                | 3        |
| 3.  | Fundamentals of chemical engineering                  | 4                      | O                | 3        |
| 4.  | Applied physical and colloid chemistry                | 5                      | WO               | 3        |
| 5.  | Biochemistry 1  | 5                      | W                | 3        |
| 6.  | Physical education and sports 3                       | 1                      | P/F              | 3        |
| 7.  | Communication   | 2                      | O                | 3        |
| 8.  | English for engineering 3 / French for engineering 3  | 2                      | O                | 3        |
| 9.  | Bioinorganic chemistry                                | 4                      | W                | 4        |
| 10. | Electrochemistry and corrosion                        | 4                      | W                | 4        |
| 11. | Operations and equipment in biochemical engineering 1 | 4                      | W                | 4        |
| 12. | Industrial microbiology                               | 4                      | WO               | 4        |
| 13. | Biochemistry 2  | 4                      | WO               | 4        |
| 14. | Primary and secondary metabolites                     | 4                      | WO               | 4        |
| 15. | English for engineering 4 / French for engineering 4  | 2                      | O                | 4        |
| 16. | Domain practice (5 weeks x 30 hours)                  | 4                      | O                | 4        |

W – written exam

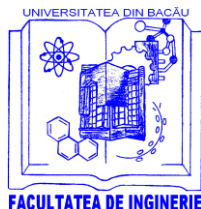
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CURRICULUM  
3<sup>rd</sup> year of study

| No  | Subject   | Number of ECTS credits | Examination form | Semester |
|-----|---|------------------------|------------------|----------|
| 1.  | General biotechnology                                 | 6                      | O                | 5        |
| 2.  | Operations and equipment in biochemical engineering 2 | 7                      | W                | 5        |
| 3.  | Instrumental analysis 1                               | 6                      | WO               | 5        |
| 4.  | Electrotechnics and electronics                       | 5                      | W                | 5        |
| 5.  | Conditioning of synthesis and biosynthesis products 1 | 6                      | W                | 5        |
| 6.  | Instrumental analysis 2                               | 4                      | W                | 6        |
| 7.  | Management and marketing                              | 3                      | O                | 6        |
| 8.  | Industrial catalysis and catalysts                    | 5                      | W                | 6        |
| 9.  | Safety of machinery and industrial installations      | 4                      | W                | 6        |
| 10. | Food biotechnologies 1                                | 3                      | W                | 6        |
| 11. | Enzymology  | 3                      | W                | 6        |
| 12. | Conditioning of synthesis and biosynthesis products 2 | 4                      | W                | 6        |
| 13. | Specialized practice (3 weeks x 30 hours)             | 4                      | O                | 6        |

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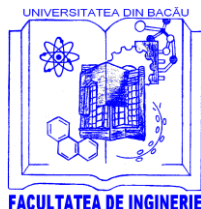
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**CURRICULUM**  
 4<sup>th</sup> year of study

| No  | Subject  | Number of ECTS credits | Examination form | Semester |
|-----|--|------------------------|------------------|----------|
| 1.  | Enzymatic and fermentative processes technology                          | 4                      | WO               | 7        |
| 2.  | Food biotechnologies 2   | 4                      | W                | 7        |
| 3.  | Techniques for separation of organic compounds                           | 4                      | W                | 7        |
| 4.  | Pharmaceuticals biotechnology  | 4                      | W                | 7        |
| 5.  | Valorisation technologies of natural products                            | 4                      | O                | 7        |
| 6.  | Bioresources   | 4                      | O                | 7        |
| 7.  | Pollution prevention and environmental protection                        | 3                      | O                | 7        |
| 8.  | Process design and optimization in biochemical industry                  | 3                      | O                | 7        |
| 9.  | Bioreactors  | 3                      | WO               | 8        |
| 10. | Membrane technology and applications                                     | 2                      | W                | 8        |
| 11. | Analytical control of bioprocesses                                       | 3                      | W                | 8        |
| 12. | Chemical and biochemical sensors   | 2                      | W                | 8        |
| 13. | Biomaterials   | 3                      | W                | 8        |
| 14. | Entrepreneurship   | 2                      | O                | 8        |
| 15. | The safety and protection of users in the digital environment            | 1                      | O                | 8        |
| 16. | Elaboration of the diploma project                                       | 4                      | O                | 8        |
| 17. | Practice for the elaboration of the diploma project (2 weeks x 30 hours) | 10                     | O                | 8        |

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