

Educational Programme	<b>Engineering and environmental protection in chemical and petrochemical industry</b>
Degree Awarded	Bachelor
Standard Length of Studies (Number of ECTS Credits)	4 years - 8 semesters - 240 ECTS
Type of Study	Full-Time
Higher Education Institution	Babeş-Bolyai University
Faculty / Department	Faculty of Chemistry and Chemical Engineering
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Profile of the Degree Programme	<b>Environmental Engineering</b>
Target Group / Addressees	Graduates of secondary education with basic level of knowledge in chemistry interested in further developing of skills in the field of chemical engineering and prevention of pollution of environment (air, water, soil).
Entrance Conditions	30% baccalaureate examination score + 70% average grade at the subject of chemistry over forms IX-XII.
Further Education Possibilities	Master Studies
Description of Study	The aim of this study is to develop theoretical and practical abilities regarding the techniques and apparatus used in chemical and petrochemical industry, in monitoring and protection of the environment.
Purposes of the Programme	<p>To provide training in chemical engineering and specific fields of:</p> <ul style="list-style-type: none"> <li>- Environmental protection and prevention of environmental pollution (water, air, soil);</li> <li>- Dispersion of pollutants in the air and water;</li> <li>- Monitoring the environment.</li> </ul> <p>To offer knowledge in the field of the chemistry, petrochemistry and environment protection, considering the practice principles of "sustainable development".</p> <p>To offer theoretical and practical knowledge about the nature of pollutants, the source of pollution and methods of preventing and reducing emissions.</p> <p>To assure a proper skill force for Romania's chemical engineering needs, enabling graduates to satisfy workplace criteria in multidisciplinary teams in chemical and environment engineering, analyzing, designing and developing "clean technologies".</p> <p>To ensure compatibility in the preparation of local chemical and environmental engineers with European Union quality standards.</p> <p>To develop skills which will allow the engineer to strengthen its knowledge by following masters and doctoral degree studies.</p> <p>To ensure the training of engineers in the present study programme as to be able to become potential researchers and professors in higher education institutions.</p>
Specialization / Area of	The holder of the diploma of <b>Engineering and</b>

Expertise	<p><b>environmental protection in chemical and petrochemical industry</b> can work in any economic and administrative institution or company to accomplish the following fundamental professional roles:</p> <ul style="list-style-type: none"> <li>• <i>Design Engineer</i> (design elaboration by using well-established methods and principles in order to prevent and protect the environment);</li> <li>• <i>Technological Engineer</i> (operation and management of industrial plants specially in chemical and petrochemical industry);</li> <li>• <i>Chemical Engineer</i> (in the environmental agencies, water and sewerage companies, monitoring and analyzing the pollution degree).</li> <li>• <i>Management and marketing activities</i> in chemical and petrochemical industry, as well as in the environmental agencies..</li> </ul>
Extra Peculiarities	-
Practical Training	Throughout the course students are required to undertake the practical work at Babeş-Bolyai University, industrial companies, laboratories of chemical analysis.
Final Examinations	Graduation thesis
Gained Abilities and Skills	<p><b>I. General competences</b></p> <p>The knowledge and understanding of basic concepts, principles and theories, phenomena and processes in chemical engineering, and also of fundamental principles with direct application in interrelated fields (electronics, mechanical engineering).</p> <p>The ability to identify, analyze, evaluate, monitor and control the pollutant sources (in air, water and soil) from chemical processes in chemical and petrochemical industry by standard investigation methods and to solve the pollution problems.</p> <p>The optimum control of a chemical process on the basis of data collection and critical analysis according to the legal safety norms on apparatus use and according to the regulations on environmental protection and long-term development.</p> <p>The ability to design, carry out and conduct practical experiments on the scale of pilot and industrial laboratories by using recognized methods and specific apparatus, to interpret the meaning of the results obtained and also to transpose these experiments to an optimum scale.</p> <p>The communication and argumentation of own ideas and points of view clearly and concisely by using various approaches of oral and written communication based on information technology, not only in the native language but also in a foreign language. The ability to establish interpersonal relationships that facilitate teamwork and to assign tasks to the subordinate levels.</p> <p>The ability to teach speciality technical disciplines in the educational system on condition that the holder of the</p>

	<p>graduation diploma in Chemical and Environmental Engineering owns the Certificate acknowledging the graduation of The Program of Psycho-pedagogical Studies.</p> <p><b>II. Speciality competences</b></p> <p>The ability to identify, analyze, evaluate, monitor and control the pollutant sources in environment (air, water and soil).</p> <p>The ability to develop technological methods to reduce, prevent, treat and remedy environmental pollution and the ability to find and choose solutions for recovery and management of wastes depending on the physico-chemical properties.</p> <p>The ability to design, test and operate equipments and devices used for prevention, protection, pollution control and remediation of environment (air, water and soil).</p> <p>The ability to develop mathematical models, steady state and dynamic, able to describe the dispersion of pollutants in the environment.</p> <p>The ability to use and apply basic concepts of design and optimization of facilities to develop new solutions to improve the technological and economic performance of the plant and environmental protection.</p>
<p>Job Placement, Potential Field of Professional Activity</p>	<p>The graduate of the specialization <b>Engineering and environmental protection in chemical and petrochemical industry</b> can work in:</p> <ul style="list-style-type: none"> <li>• Departments of production and design of chemical plants, particularly those in chemical and petrochemical industry;</li> <li>• Environmental agencies, water and sewerage companies, laboratories for research in environmental protection;</li> <li>• Consulting services at firms dealing with wastewater treatment to obtain drinking water, and wastewater treatment of industrial and domestic wastewater.</li> <li>• On condition of promoting The Program of Psycho-Pedagogical Studies I<sup>st</sup> Level, the holder of this certificate can work as a <i>teacher</i> in the obligatory pre-university educational system</li> </ul>

Date: 28.10.2010

Signature: