

II.3. PROGRAM DESCRIPTION

II. 3.1. Structure and organization of the doctoral program

Doctoral course Ecoengineering lasts for three years and has 180 ECTS credits.

The study is composed of the choice of two obligatory credit groups.

The first credit group represents the basic subjects from the scientific areas and field which are the key subjects for the students advancing during the course.

The second score group represents the subjects directed towards the narrower scientific interest.

Except obtaining the credits from the two mentioned groups, the students can get credits from the scientific activity in the framework of the additional score group and from registration for elective courses.

All the courses of the interdisciplinary postgraduate study Ecoengineering have the obligatory teaching of 30 hours, that is the direct contact of the lecturer and the students through lectures, seminars, laboratory exercises, auditory exercises or consultation. At the beginning of each academic year the lecturers of the study determine the ratio of hours of lecturers, laboratory exercises, auditory exercises and consultations according to the previous knowledge and the number of the students.

Basic (general) courses and aimed courses are credited with 10 ECTS credits which means that the students' load which includes the presence at the obligatory teaching, preparation of the seminar work and the preparation and taking the exams, which is total 250 hours for these courses.

Elective courses are credited with 5 ECTS credits which denotes the students' load which includes the presence at the obligatory teaching, preparation of the seminar work and the preparation and taking the exams, which is total 125 hours for these courses.

The study is organized with the part of working time, and the teaching is performed on Fridays and Saturdays as block teaching. It enables the attendances the listening and taking the exams in one academic year. Two other years are left for dissertation elaboration.

II. 3.2. Basic and elective courses

CORE COURSES: Basic engineering science and principles

<i>Number</i>	<i>Courses</i>	<i>Hours</i>	<i>Credits</i>
111	Ecology	30	10
112	Ecotoxicology	30	10
113	Environmental Chemistry	30	10
114	Environmental Microbiology	30	10
115	Environmental Geochemistry	30	10
.....			
121	Statistics	30	10
122	Mathematical and Computer Modeling of Ecological Systems	30	10
123	Ecological Process Engineering	30	10
124	Biotechnology in Environment Protection	30	10
125	Environmental Protection in Construction	30	10
126	Environmental Protection at Exploitation of Mineral Raw Materials	30	10
127	Power Systems and the Environment	30	10
128	Environmental Engineering	30	10
129	Processes and Technologies for Environmental Protection	30	10

AREA(S) OF SPECIALIZATION: Applied eco-engineering sciences and ecological engineering

<i>Number</i>	<i>Courses</i>	<i>Hours</i>	<i>Credits</i>
2010	Environmental Impact Assessment	30	10

<i>Number</i>	<i>Courses</i>	<i>Hours</i>	<i>Credits</i>
---------------	----------------	--------------	----------------

Special Topics in Chemical Engineering:

211	Mechanical Separation Processes	30	10
212	Ecoprocesses of Drying	30	10
213	Environmental Process Design	30	10
214	Environmental Catalysis	30	10

Water and Wastewater Treatment:

221	Chemistry of Water	30	10
222	Oxidation Processes for Treating Industrial Wastewaters	30	10
223	Water Quality Management	30	10
224	Biological Wastewater Treatment Processes	30	10
225	Urban and Industrial Wastewater Treatment and Disposal	30	10
226	Water Treatment	30	10
227	Groundwater Protection	30	10
228	Karst Aquifers Protection	30	10

Air and Air Pollution Control:

231	Air Chemistry	30	10
232	Air Quality	30	10
233	Meteorological Aspects of Atmospheric Pollution	30	10
234	Solid-Gas Separations or Liquid Drops – Gas Separations	30	10
235	Cleaning of Air and Waste Gases	30	10
236	Chemical Engineering for air Pollution Control	30	10

Soil:

241	Soil Chemistry	30	10
242	Soil Microbiology and Biochemistry	30	10
243	Soil Protection	30	10
244	Sustainable Land Management	30	10

Industrial Waste Treatment:

251	Waste in Chemical Industry	30	10
252	Recycling and Disposal of Waste	30	10
253	Polymer Waste and Management	30	10
254	Management of the Industrial/ Technological Waste	30	10
255	Sanitary Landfills	30	10

Materials Recycling:

261	Biodegradable Polymer Materials	30	10
262	Modification of Polymer Materials in Purpose of Better Degradability	30	10
263	Degradation of Polymeric Material	30	10
264	Recycling of Polymers	30	10
265	Recycling of Materials	30	10
266	Building Eco Materials	30	10
267	Quality Assurance for Structural Materials	30	10
268	Construction Waste Management	30	10

Forest:

281	Forest Ecology	30	10
282	Forest Protection	30	10
283	Sustainable Forest Management	30	10

Recommended Electives:

<i>Number</i>	<i>Courses</i>	<i>Hours</i>	<i>Credits</i>
2710	Sustainable Development	30	5
2711	Environmental Law- Civil Law Aspect	30	5
2712	Environment and Health	30	5
2713	Social Ecology	30	5
2714	Environmental Risk Assessment and Management	30	5
2715	Systems of Environmental Management	30	5
2716	Quality Control of Environment	30	5
2717	Chemistry and Technology of Zeolites	30	5
2718	Databases	30	5
2719	Ion Exchangers in Environmental Analysis	30	5
2720	Ion Exchange Processes in Industry	30	5
2721	Metal Corrosion and Protection Cause of Environmental Problems	30	5
2722	Corrosion and Protection of Civil Engineering Structures	30	5
2723	Disassembly	30	5
2724	Aerosols	30	5
2725	Biotransformation Processes and Environmental Pollution	30	5
2726	Environmental Protection in Mineral Resources Exploitation	30	5
2727	Energy and Environment	30	5
2728	Electromagnetic Fields in the Environment	30	5
2729	Radioactivity in the Environment	30	5
2730	Noise and Vibration	30	5
2731	Protection of the Adriatic Sea from the Pollution	30	5
2732	Waste Disposal	30	5
2733	Water Supply and Sewerage	30	5
2734	Technology Assessment	30	5
2735	Forest Vegetation of Croatia	30	5
2736	Physical Planning	30	5
2737	Ecological Building Construction	30	5
2738	Metallurgical Scrap Management	30	5
2739	Recycling of Metallic Materials	30	5
2740	Recycling of Paper	30	5

ADDITIONAL CREDIT GROUP**Scientific activity**

- work published in magazine registered in CC	20 credits
- work published in magazine, reviewed proceedings, book or similar	10 credits
- presentation in the international scientific meeting	5 credits
- presentation in the domestic scientific meeting	2,5 credits
