DEPARTMENT OF ECOLOGY, AGRONOMY AND AQUACULTURE

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Office hours will be published at the beginning of the academic year on the Department's website.

ABOUT US:

Contemporary needs of regional development of Zadar and neighboring counties include areas of applied ecology in agriculture, aquaculture, protection of the sea and underwater activities. Therefore, University of Zadar has recently developed new study programs which include natural and biotechnical sciences.

Department of ecology, agronomy and aquaculture of the University of Zadar started in 2006, when first workers in the field of natural and biotechnical sciences were employed.
In the academic year 2010/11. Department organizes and starts undergraduate study: "Applied Ecology in Agriculture" with the first generation of students. The study is structured in accordance with the Bologna Declaration and includes two directions:

- Mediterranean plant production (A1)
- Mediterranean ecosystem management (A2)

In the academic year 2014/15. Department starts another undergraduate study: "Underwater Science and Technology".

The study of applied ecology in agriculture includes integrated and ecological approach, with emphasis on Mediterranean ecosystems. Focus is on ecology and management, not exploitation. Departmental philosophy is to promote and understand acceptable methods for food production while accounting for ecological balance, biodiversity and economical benefits, meanwhile keeping an eye on systems sustainability.
Program in Applied ecology in Mediterranean agriculture is adapted to a three-year undergraduate study education system that includes ECTS credits. Undergraduate students from this program can directly continue their studies in other study programs in Croatia and/or EU countries, taking into consideration their respective requirements. Since study program is comparable with other undergraduate programs in the field of biotechnical sciences (Agronomy, Forestry, Food Technology and Biotechnology faculty at University of Zagreb and Agronomy faculty at University of Osijek), vertical mobility after graduation is ensured. Since teaching plan is made in collaboration with Agronomy Faculty, University of Perugia, Agronomy faculty Tuscia, University of Viterbo (Italy), State University in Utah, Veterinary Faculty, University of Zagreb, Agricultural faculty, University of Osijek, several

of our courses are also taught there. This is primarily true for Universities in Perugia and Tuscia in Italy.

After the completion of the study program students can seek employment in the following areas:
1. Family farms
2. NGOs
3. Food processing and production companies.
4. Retail and wholesale companies.
5. Agricultural advising agencies, local and federal government.

The study of underwater science and technology is an interdisciplinary study, and it is new not only for Croatia but also for the whole Mediterranean. This program was established together with University of Plymouth from England, through successful Tempus project (TEMPUS JEP_41082_2006).
Croatia has a long and developed coastline, and as a country is economically and culturally dependent on the sea. Numerous activities are related to the underwater work and technology, including construction projects on coastal and marine structures, marine industry, aquaculture, activities related to protection of the environment (sea and coastal areas), and underwater archaeology. All of these jobs require skilled labour, which is lacking in the Croatian labour market. The students graduating from this programme are intended for employment in various coastal and off-shore industries such as construction and aquaculture, as well as in underwater inspection, environmental protection and research involving e.g. underwater archaeology or marine biology.
After the completion of the study program students can seek employment in the following areas:
1. Research Institutes
2. Aquaculture
3. NGOs
4. Archaeological museums
5. Construction companies
5. Environmental advising agencies, local and federal government.

STUDY PROGRAMMES

Applied ecology in agronomy

Duration of the study: 6 semesters (3years)

Total ECTS: 180

Admission requirements: Completed four-year high school and passed state graduation exam for full-time students

Competencies acquired upon finishing the study program:

- application of the basic knowledge from the fields of biology (botany/zoology/ecology), pedology, chemistry, math, physics, and informatics in solving practical situations in agronomy production
- use of applied research methods and acquired expertise in solving varied situations in the fields of plant production, plant ecology, animal husbandry, especially when applied to Mediterranean climatic zone
- proficiency in the field and laboratory situations and use of skills from the areas of fruit, vegetable and fodder production
- ability to conduct basic lab analysis in the areas of quality control, storage and usage of fruits and vegetables in fresh, pre-processed and processed form
- ability to raise, keep and breed farm animals
- rationally use and manage sustainable grasslands in Mediterranean ecosystems
- offer practical and technical assistance in the fields of plant and animal ecology
- be professional and ethical
- manage farms based on the principles of economy, organizational management and entrepreneurship
- continually improve expertise and stay current in the filed
- besides Croatian, posses active use of English language (courses will be taught both in Croatian and English)
- exchange and manage data and information from the field of agronomy
- be cooperative and team oriented whilst retaining a degree of independence

Program is registered in the area of biotechnical sciences, filed of agronomy.

Professional title acquired upon finishing the study programme: Bachelor (*baccalaureus*) of applied ecology in agronomy (univ. bacc. ing. agr.)

Program graduates can obtain one of two majors:

- **Mediterranean plant production (A1)**
- **Mediterranean ecosystem management (A2)**

Module list of the undergraduate study programme by semester:

Course unit code	1. SEMESTER	Status	Hours per week			ECTS
			L	S	E	
PEP101	Fundamentals of Botany	mandatory	45	15	15	6
PEP102	Mathematics	mandatory	30	15	0	6
PEP103	Fundamentals of Chemistry	mandatory	45	15	0	6
PEP104	Agroclimatology	mandatory	30	15	0	3
PEP106	Introduction to scientific methods and biometrics	mandatory	45	0	15	6
PEP107	Fundamentals of Biology	mandatory	30	15	15	5
JEE101	English for Specific Purposes I	mandatory	30	0	30	4
	2. SEMESTER					
PEP202	Basic Zoology of the Mediterranean Ecosystems	mandatory	30	15	15	6

PEP203	General Pedology and Competence of Mediterranean Soil Types	mandatory	30	15	0	5
PEP201	Mechanization in the Mediterranean Agriculture	mandatory	30	0	15	4
PEP204	Agricultural economics	mandatory	30	15	0	4
PEP205	Biochemistry	mandatory	45	15	0	6
JEE102	English for Specific Purposes II	mandatory	30	0	30	4
	3. SEMESTER					
PEP301	Vegetation of Mediterranean Area	mandatory	45	15	0	5
PEP201	Microbiology and Mycology	mandatory	30	15	0	5
PEP409	Fundamentals of Genetics	mandatory	30	0	0	3
PEP308	Laboratory methods in agronomy	mandatory	15	0	45	3
PEP404	Principles of Agronomy	mandatory	30	30	0	6
PEP303	Fundamentals of Plants Physiology	mandatory for A1 major	30	0	15	5
PEP504	Zoo-hygiene and DDD	mandatory for A2 major	30	0	15	5
PEP307	Farm Management and Agricultural Products Marketing	elective for 3. i 5. semester	30	0	0	3
PEP508	Fungi culture	elective for 3. i 5. semester	30	0	0	3
PEP509	Fundaments of ecology	elective for 3. i 5. semester	30	15	0	4
	4. SEMESTER					
PEP401	Mediterranean Forest Cultures and Field-forest Management	mandatory	30	15	0	4
PEP305	Agro-ecology	mandatory	30	15	0	4
PEP402	Medicinal plants	mandatory	30	15	0	4
PEP304	Systems of Water Management	mandatory	30	15	0	3
PEP408	Apiculture	mandatory/elective	30	0	15	4
PEP410	Techniques of Plant Breeding	mandatory for A1 major	30	15	0	3
PEP306	Plant Protection	mandatory for A1 major	45	15	15	6
PEP405	Plant nutrition	mandatory for A1 major	30	15	0	3
PEP406	Fundamentals of Biology and Physiology of Domestic Animals	mandatory for A2 major	45	15	15	6
PEP407	Animal Health Protection	mandatory for A2 major	45	15	15	6
	5. SEMESTER					
PEP501	General Fruit Growing	mandatory for A1 major	45	15	15	7
PEP502	Vegetable Growing and Floriculture	mandatory for A1 major	45	30	15	8
PEP503	Olive Growing and Production	mandatory for A1 major/elective for A2	30	15	15	5

		major				
PEP510	Large and Small Ruminant Production and Management	mandatory for A2 major	45	15	15	7
PEP511	Rabbit and Poultry Production and Management	mandatory for A2 major	30	0	15	4
PEP506	Traditional Meat and Milk Products	mandatory for A2 major	45	0	15	6
PEP512	Fisheries	mandatory for A2 major/elective for A1	30	0	15	3
PEP701	Human nutrition	elective	15	15	0	3
PEP307	Farm Management and Agricultural Products Marketing	elective for 3. i 5. semester	30	0	0	3
PEP509	Fundaments of ecology	elective for 3. i 5. semester	30	15	0	4
PEP508	Fungi culture	elective for 3. i 5. semester	30	0	0	3
	6. SEMESTER					
PEP601	Natural Pasture Sustainable Management	mandatory	30	15	0	4
PEP606	Field study	mandatory	0	0	180	6
PEP607	Final thesis	mandatory	0	0	90	6
PEP602	Grape Growing and Wine Production	mandatory for A1 major	30	0	15	5
PEP603	Special Fruit Growing	mandatory for A1 major	30	15	0	5
PEP609	Equine and Swine Production and Management	mandatory for A2 major	30	15	0	5
PEP605	Nutrition of Domestic Animals	mandatory for A2 major	30	15	0	5
PEP608	Integrated plant protection	elective	30	15	0	4
PEP702	Environmental science	elective	30	10	20	6
PEP513	Aquaculture	elective for 4. i 6. semester	30	0	15	4

Underwater science and technology

Duration of the study: 6 semesters (3years)

Total ECTS: 180

Admission requirements: Completed four-year high school and passed state graduation exam for full-time students

Competencies acquired upon finishing the study program:

- use mathematical modelling
- apply statistical methods
- use computer aided engineering
- recognise main archaeological sites and determine their archaeological potential
- explain problems of research methodology and protection of archaeological sites
- date (approximately) underwater archaeological sites
- determine category of archaeological sites and estimate necessity for their conservation
- solve problems in different areas based on the understanding of main physical processes which govern hydrographic properties and ocean dynamics in the Adriatic
- choose optimal construction materials and optimal building technology of for particular underwater construction
- choose optimal structure and structural elements of for particular offshore and underwater building
- estimate effects of coastal and underwater construction on the environment
- recognize negative influence of fresh-water and marine environment on the construction materials and suggest protection methods
- anticipate and categorize possible problems and threats to the environment based on their knowledge on biological processes and organisms.
- propose methods to prevent pollution of freshwater and marine environment and processes of pollution recovery
- classify diversity and various life styles of marine organisms, and describe their adaptations to different environmental conditions
- describe and explain differences of large marine living areas like: open sea, coastal areas, deep sea, coral reefs, and estuaries
- choose culture system according to biological characteristics of cultivated
- predict and resolve coastal management problems
- apply scientific methods to solve practical problems
- perform underwater activities safely, respecting legislations and regulations
- select appropriate support system for underwater operations
- collect, analyse and interpret scientific data
- present scientific results clearly and briefly in written and oral form

- plan project approach to the problems and situations in domestic and international development and economical projects, which take into consideration implementation of methods and tools characteristic for underwater science and technology
- establish and maintain relationship of mutual cooperation, communication and compromise during the project
- independently manage the part of the project assigned to him/her

Professional title acquired upon finishing the study programme: Bachelor (*baccalaureus*) of Bachelor of science (Bsc) in Underwater science and technologies

Module list of the undergraduate study programme by semester:

Course unit code	1. SEMESTER	Status	Hours per week			ECTS
			L	S	E	
PZT101	English language I	required	30	0	30	4
PZT102	Numerical skills of data analysis	required	30	30	0	5
Pzt103	Fundamentals of Physics	required	30	30	0	5
PZT103	Fundamentals of Chemistry	required	30	15	15	5
PZT105	Fundamentals of Biology	required	30	15	15	5
PZT106	Earth Systems	required	30	15	0	5
	2. SEMESTER					
PZT108	English language II	required	30	0	30	4
PZT109	Fundamental skills for scientists & technologists	required	30	30	0	5
PZT110	Introductory oceanography	required	30	15	30	6
PZT111	Engineering experience	required	30	15	15	5
PZT112	Marine geology	required	30	15	15	5
PZT113	Diving systems	required	30	30	0	5
	3. SEMESTER					
PZT201	Support systems for maritime work	required	30	0	30	4
PZT202	Marine biology	required	30	15	15	5
PZT203	Underwater engineering	required	45	15	15	6
PZT204	Coastal oceanography	required	30	15	15	5
PZT205	Introduction to archaeology	required	30	0	30	5
PZT206	English language III	elective	15	0	15	2
PZT207	Diving training I	elective	30	0	75	5
PZT208	Diving medicine	elective	30	0	30	4
PZT209	Marine meteorology	elective	30	0	30	5
PZT115	Biomimicry	elective	30	0	30	5
	4. SEMESTER					
PZT210	Methods in underwater science and technology	required	15	30	30	6

PZT211	Marine ecology	required	30	15	15	5
PZT212	Pollution of aquatic systems	required	30	15	15	5
PZT213	Underwater archaeology	required	30	15	30	6
PZT214	Basic seamanship	required	30	0	0	3
PZT215	English language IV	elective	15	0	15	2
PZT216	Diving training II	elective	30	0	75	5
PZT116	Sustainability of coastal systems	elective	30	0	30	5
	5. SEMESTER					
PZT301	Marine structures	required	30	15	15	5
PZT302	Threats of aquatic ecosystems	required	30	15	15	5
PZT303	Marine conservation	required	30	15	15	5
PZT304	Field course	required	0	0	60	4
PZT305	Personal research I	required	0	0	60	4
PZT306	English language V	elective	15	0	15	2
PZT307	Advanced diving training I	elective	30	0	75	5
	6. SEMESTER					
PZT310	Underwater application of engineering technologies	required	30	0	45	6
PZT311	Aquaculture	required	30	0	15	4
PZT312	Coastal management	required	45	15	15	6
PZT313	Personal research II (thesis)	required				10
PZT314	English language VI	elective	15	0	15	2
PZT315	Advanced diving training II	elective	30	0	75	5
PZT316	Conservation of archaeological finds	elective	30	15	15	5