Guide to the Degree Courses at the Department of Life and Environmental Sciences

A.Y. 2014/2015

UNIVERSITÀ POLITECNICA DELLE MARCHE

The Università Politecnica delle Marche (Ancona - Italy) is one of the youngest and most vibrant among the Italian Universities. It offers undergraduate and graduate degrees in Agriculture, Engineering, Economics, Medicine and Biological and Environmental Sciences. It currently hosts about 16,000 students, divided into 46 degree courses, and its staff includes 1,300 professors, lecturers, and teaching assistants, plus 1.400 post-graduate students and postdocs.
Polo Monte Dago, where the Department of Life and Environmental Sciences is situated, is a modern University campus that can be considered a "city-within-a-city".

A.Y. 2014/2015

Letter of the Director

What do we offer to our students?

The first question that a student should consider for the choice of the University where to study relates to the specific features offered by that University. The answer to this question is not difficult for me, as the educational paths offered by the Department of Life and Environmental Sciences (DiSVA) at the Università Politecnica delle Marche show unique advantages. First, the teaching staff is young, motivated and highly qualified, both at national and international level. In particular, many of the scientists teaching at DiSVA are recognized as leaders in their field of expertise. Second, strong and continuous interactions between the teaching staff and students are assured: according to a well-established tradition, plenty of attention is devoted to students training activities. Third, both the teaching and research laboratories are of state-of-the-art standards and fully equipped. Our strong commitment to provide well-equipped and reconfigurable teaching and learning labs, enables the students to deepen the practical aspects of the various topics, to satisfy their curiosity and to develop their scientific skills. Finally, thanks to a large number of national and international scientific collaborations, DiSVA has always encouraged students to get involved in a wide range of practical and professionalizing activities out of the University, including experimental activities in major research laboratories (e.g., European Large Scale Facilities or laboratories for *High Throughput Protein Production*), training in multi-disciplinary and international biotech and molecular biology research groups, participation to oceanographic or Antarctic scientific expeditions, participation to sampling campaigns (monitoring of inland waters, underwater sample collection, geological sample) and visits to areas hit by earthquakes or other natural disasters. The second question refers to the educational offer plan: a full educational training is offered by DiSVA. The two 1st cycle university degrees (Laurea) in "Biological Sciences" and in "Civil and Environmental Protection" (both based on theoretical and applied general studies), are followed by three 2nd cycle university degrees (Laurea Magistrale) in "Applied and Molecular Biology", "Marine Biology" and "Environmental Sustainability and Civil Protection" (characterized by a strong theoretical background and specialist studies). The Laurea Magistrale includes the preparation of a thesis based on 1-year experimental research activity). The educational offer is completed by a 3rd cycle university degree (Dottorato di ricerca) in "Life and Environmental Sciences", which mainly consists of independent research projects of high quality standard, and by a few Masters programs. Such a wide range of degree programs brings students to a strong and competitive level of skills and expertise that provides an easier access to the jobs market. It is also important to remark that the logical framework in which the different courses offered by DiSVA are enfolded perfectly matches the strengths of the Department, whose most important research expertises are in Marine Biology, Molecular Biology and Environmental Sustainability/Civil Protection. As a consequence, the strong link with the expertise and the skills of our teaching staff, together with their commitment, allows our graduates to achieve their degrees quickly, providing them with an excellent basic knowledge that is appreciated at national and international level.
The contribution of the Department of Life and Environmental Sciences to the training of students at the Università Politecnica delle Marche is not only highlighted by its performances in national rankings and by its international reputation, but its strength is also confirmed by the growing number of students enrolling in our courses. This result is extremely gratifying and we are proud to say that not only the scientific community as a whole appreciates our constant efforts but also, more simply, our students do.

Paolo Mariani
Head of the Department of Life and Environmental Sciences & DiSVA Responsible for Teaching
Università Politecnica delle Marche

Summary

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The Faculty and the Department (in short: Science)

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Brief History of the Faculty of Science and of the Department of Life and Environmental Sciences

The establishment of the Faculty of Science dates back to 1991. On July 2012 the Faculty was integrated into the Department of Life and Environmental Sciences (DiSVA). In 1991 a Degree Course in Biological Sciences (with the specialization in Marine and Oceanography Biology) was assigned to the former University of Ancona. The Course started under the supervision of a technical regulating committee, which became a Faculty Council in 1993, chaired by Prof. Ettore Olmo.

Due to the high number of students, the activation of a second curriculum in Biotechnology was then planned. In 1996, the two curricula were offered to students.

In 2000, the educational offer of the Faculty of Science included a 3-year degree in Biological Sciences and three 2-year Specialist degrees in Marine Biology, Industrial Biology and Biomethodologies. In 2002, a 3-year degree course in Techniques of Environmental Control and Civil Protection was activated at the site of Falconara Marittima (a town close to Ancona). In 2006, a new Specialist degree in Environmental Sustainability and Civil Protection was activated, while the two Specialist degrees in Industrial Biology and in Biomethodologies were replaced by a single degree in Applied Biology.

Today, the DiSVA offers two 3-year Degree Courses in "Biological Sciences" and in "Environmental Sciences and Civil Protection" and three 2-year Master Degrees in "Marine Biology", "Molecular and Applied Biology" and "Environmental Sustainability and Civil Protection", all activated at the Monte Dago Campus. DiSVA got also involved in international educational activities, with the activation of a master course (Master Universitario) in Marine Biology in collaboration with the University "Sam Ratulangi" of Manado (Indonesia). Today, a 1st Level master course (Master Universitario di Primo Livello) in Marine Biology and a 2nd Level master course (Master Universitario di Secondo Livello) in Marine Biology are available at DiSVA.

The Faculty of Science has been very successful over the years, rating first in Italy in the CENSIS ranking in 2003 and 2005, and third in 2009. As a general result, the Faculty of Science ranked third in Italy in the decade 2001-2010. The Department of Life and Environmental Sciences, which today hosts the Faculty of Sciences, was established in 2012 by merging a number of Departments involved in a wide spectrum of basic and applied research topics. The Department is a center of excellence of the Università Politecnica delle Marche and includes more than 100 scientists and technicians that carry out research activities in fields such as analytical and organic chemistry, biophysics, cellular and molecular biology, biochemistry and genetics, microbiology and biotechnology, viral, prokaryotic, fungal, algal, plant and animal systematics, physiology and reproduction, marine biology, ecology, eco-toxicology, oceanography, Earth sciences, risk reduction and civil protection. In the last five years, the scientists of DiSVA published approximately 200 papers in international journals covered by the I.S.I. databases (Web of Science) per year, on average cited more than 2500 times per year. Scientists at DiSVA collaborate directly with numerous research centers and Large Scale facilities worldwide, participating to and leading several national and international research projects (including EU programs from FP5 to FP7a and within H2020). DiSVA participates to the National Antarctic Research Program and is involved in international expeditions to the Arctic Ocean and other oceans.

DiSVA houses the local units of several research consortia (e.g., the Italian Consortium for Marine Science - CoNISMa, the Italian Consortium for Physics of Matter - CNISM, and the High Tech Recycling Center - HTR), and hosts the headquarters of the Italian Association of Oceanology and Limnology (AIOL), the Italian Society of Ecology (SITE), the Italian Society of Neutron Spectroscopy (SISN), the Phycology Working Group of the Italian Botanical Society and the Italian Zoological Union (UZI). It also hosts the editorial office of several international scientific journals (e.g. Chemistry and Ecology, Advances in Oceanography and Limnology, Marine Environmental Research, The Scientific World Journal: Biophysics). Finally, 3 academic spin-off companies (Ecoreach s.r.l., Oce. AN Soc. Coop and EcoTechSystems srl) were set up in DiSVA in recent years, thanks to the initiative of DiSVA's scientists and graduate students.

SPECIFICITY

Since its foundation, and first in Italy, the Faculty of Science of the Università Politecnica delle Marche characterized itself as a center of scientific teaching and training on marine biology. After more than 20 years, marine biology and marine environment still represent a major focus of the research and the teaching activities of the Department, but the merging with different research groups led to the development of new expertise and to the emergence of new research expertises, especially in molecular biology, biophysics and biotechnology.
Another major feature of DiSVA is the large number of international research collaborations with Universities and Research Centers all over the world. Research projects, partnerships and collaborations cover many different fields, from Marine Biology to Environmental Sciences, Advanced Biochemistry, Structural Biology and Applied Biotechnologies. Strong international connections also characterize the teaching activities: DiSVA is involved in Erasmus and Campus World programs and in the organization of International Masters, in collaboration with foreign Universities on specified topics. Finally, DiSVA courses include an unusually large number of laboratory teaching sessions, considered essential to develop the skills necessary for more advanced studies and research or for embarking in a career in biology or in environmental sciences. Moreover, internship in public institutions or private enterprises are required to complete the student curriculum and a thesis (based on at least one year of laboratory work) is required to obtain the Master degree.

Introduction to the Degree Courses at Science

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Investing in education is still one the most important steps we can take for our own and future generations in order to improve our lives and our employment opportunities. Economic studies show that graduates earn more than those who do not own a degree, and that they can also find more easily a well-paid job. However, studying is not only a reliable guarantee for the future: it is, most of all, a possibility to enhance our skills, cultivate our interests, grow culturally and intellectually and, therefore, be able to improve our opportunities in the global market place.

WHY TO ENROLL IN A COURSE IN SCIENCES?

Scientific degrees have always offered many opportunities for employment, and this is more and more true in the frame of the current global crisis. Over the past three decades, the life and environmental sciences achieved major results in terms of discoveries, breakthroughs, innovations, patents, and, above all, in the creation of new jobs.
In Italy, many recent surveys on graduate employment (e.g., Almalaurea or other national or regional reports) show that the demand for graduates in the fields of biology and biotechnology has almost doubled in the last three years. Expertise in the environmental sector will also be increasingly important in the future because of the number of issues related to protection, conservation and recovery of ecosystems and of the environment in general. In this context, the Department of Life and Environmental Sciences at the Università Politecnica delle Marche offers not only general and specific courses in Biological Sciences (LT in Biological Sciences and the two Master degrees, LM, in Applied and Molecular Biology and Marine Biology), but also the only full course in Italy in Civil and Environmental Protection (LT+LM), with strong perspectives for future employment.
A good educational package cannot be offered without a high-quality and skillful teaching staff and a number of fully-equipped facilities available to the students. Even from this point of view, the Università Politecnica delle Marche and the DiSVA have been recognized as Centers of Excellence not only at a national level, but also by the many visiting scientists and foreign professors who have attended our workshops and seminars or have offered courses (including courses in English) for our students. The Department of Life and Environmental Sciences has been ranked among the top 10 research facilities nationwide by the National Agency for Evaluation of Research and University System and for over a decade, and the Faculty of Sciences has been ranked between 1st and 7th place at national level according to the CENSIS classification.

Structures

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NEW YORK - MARCHE STRUCTURAL BIOLOGY CENTER (NY-MaSBIC)

The New York - Marche Structural Biology Center is a core facility for High-Throughput Protein Production (HTPP), the high-efficiency production of proteins and membrane proteins, currently in phase of construction at the DiSVA. This facility is shared with the Dipartimento di Scienze Agrarie, Alimentari ed Ambientali and the Faculty of Medicine and Surgery of the Università Politecnica delle Marche and has been set up within the frame of a strategic partnership with the New York Structural Biology Center (NYSBC, a consortium founded in 2002 by 10 prominent New York academic research institutions, www.nysbc.org). The NY-MaSBiC laboratory will be fully operational at the end of 2014: the laboratory will occupy an area of approximately 200 m2 and will be fully equipped to allow production, expression testing and stability testing for about 500 prokaryotic and 4000-5000 eukaryotic proteins per year. Within the collaboration with NYSBC, this facility will allow to carry out projects in the biological, biotechnological, pharmaceutical, biomedical, and agricultural fields at national and European level. Moreover, the facility will allow establishing and strengthening collaborations with regional enterprises and the Public Health Service; this will facilitate the development of biotechnological science in the Marche region and the founding of start-up enterprises, which will create new jobs in the bio-tech area for young graduates in medical sciences and molecular biology. The new laboratory will also play a key role in the doctoral and postdoctoral training of students and graduates of the Università Politecnica delle Marche.

THE "AQUARIUM" FACILITY

The "Aquarium" facility in construction at the Università Politecnica delle Marche will be a unique infrastructure at National level. With a total water volume of more than 25000 L contained in fiberglass and glass aquaria for approximately 200 mesocosms, the facility wil be subdivided in 3 main areas for temperate, Mediterranean species, tropical species and polar and deep-sea species. The laboratory will also host a phyto- and zoo-plancton culture area (for microalgae, macroalgae, rotifers, Artemia, copepods), a modern Zebrafish system as experimental model for medical and biological studies, and an area for reptiles. Tanks will be equipped with modern recirculating, filtration and light systems to reduce power/hydric consumption. Moreover, the facility has been designed to monitor and maintain the main environmental parameters, thus allowing different applications and types of experiments in controlled conditions: among these, the recovery and maintenance of vulnerable species, studies on the life and reproductive cycle of both invertebrates and vertebrates, feeding trials, and the impact of multiple stressors (pollutants, biological active molecules, acidification) mimicking scenarios of climate change. This facility will represent a top class infrastructure for the study of aquatic organisms.

RESEARCH LABORATORIES

Our Department hosts 27 research laboratories, where the main research activities of the Teaching Staff take place. Below the list and the responsible members of the academic staff.

LABORATORY	SITE	RESPONSIBLE
Biochemistry of Food, Nutrition and Oxidative Stress UV-induced	Engineering *quota 150*	Resp. Prof. Elisabetta Damiani
Structural Biochemistry	Engineering *quota 150*	Resp. Prof. Fabio Tanfani
Molecular Biophysics	Science 1 ground floor	Resp. Prof. Paolo Mariani
Reproductive and Developmental Biology	Science 2 1st floor	Resp. Prof. Oliana Carnevali
Marine Biology and Ecology	Science 2 2nd floor	Resp. Prof. Antonio Pusceddu
Evolutionary Biology and Cytogenetics	Science 3 2nd floor	Resp. Prof. Vincenzo Caputo
Molecular Biology	Engineering *quota 150*	Resp. Prof. Anna La Teana
Marine Botany and Phycology	Science 2 2nd floor	Resp. Prof. Cecilia Totti
Analytical Chemistry for Environment and Food	Science 2 2nd floor	Resp. Prof. Giuseppe Scarponi
Microbial and Molecular Ecology	Science 2 2nd floor	Resp. Prof. Antonio Dell'Anno
Ecotoxicology and Environmental Chemistry	Science 3 1st floor	Resp. Prof. Francesco Regoli, Resp. Prof. Stefania Gorbi
Molecular Phylogenetics	Science 3 2nd floor	Resp. Prof. Adriana Canapa
Plant and Algal Physiology	Science 2 2nd floor	Resp. Prof. Alessandra Norici
General Physiology	Engineering *quota 150*	Resp. Prof. Paolo Migani
Fluorescence	Engineering *quota 150*	Resp. Prof. Rosamaria Fiorini
Applied Genetics	Science 3 1st floor	Resp. Prof. Davide Bizzaro
Evolutionary Genetics	Science 3 2nd floor	Resp. Prof. Marco Barucca
Actea Mobile Laboratory	Tourist Marina of Ancona, Marina Dorica - Pier W2	Resp. Prof. Carlo Cerrano
Microbiology	Science 3 1st floor	Resp. Prof. Francesca Biavasco
Food, Industrial and Environmental Microbiology	Agriculture Ex SAIFET	Resp. Prof. Maurizio Ciani
Molecular Modeling	Engineering *quota 165*	Resp. Prof. Roberta Galeazzi
Oceanography and Civil Protection	Science 2 ground floor	Resp. Prof. Aniello Russo
PALM (PhotoActivated Localization Microscopy)	Science 3 2nd floor	Resp. Prof. Davide Bizzaro
Stratigraphy, Sedimentology and Paleoecology	Science 2 1st floor	Resp. Prof. Alessandra Negri
Organic Synthesis	Engineering *quota 165*	Resp. Prof. Mario Orena
Environmental Technologies	Science 2 2nd floor	Resp. Prof. Francesca Beolchini
Zoology	Science 3 ground floor	Resp. Prof. Carlo Cerrano

More information can be found at ***www.disva.univpm.it***

RESEARCH CENTERS AND SERVICES TO WHICH THE DEPARTMENT OF LIFE AND ENVIRONMENTAL SCIENCES IS ASSOCIATED

- Research and Service Center for Microscopy of Nanostructures (CISMiN);
- Botanical Center for Research and Service;
- Interdepartmental Research Center for the Adriatic and the Balkans.

UNIVERSITY CENTRE FOR DOCUMENTATION (LIBRARIES)

UNIVPM has several libraries located on the various campuses. For Sciences the Technical, Scientific and Biomedical Library is in the Monte Dago campus.

Students can take advantage of the bibliographic and documentary resources of all facilities. In particular, multiple copies of the textbooks recommended for the courses are available, together with PCs for consultation of electronic catalogs, databases and e-journals. The rooms in the library are equipped with a WiFi service. The libraries contain approximately 150,000 volumes, 5,000 periodicals, and at least 6,000 journals in electronic format, dating back to 1995.

BIBLIOGRAPHIC INFORMATION SERVICE

The library provides a large number of on-line databases for bibliographic searches, and dedicated workstations for students are available for this purpose. The bibliographic searches can be guided, on request, by qualified library staff. The search results can be saved on the user's own digital devices but cannot be printed.
Our University is part of the National Library Service (SBN) and the National Periodical Publications Archive Collective (ACNP). Therefore, books or journal articles not available in our libraries can be borrowed from affiliated libraries of other institutions (either free of charge or with the payment of delivery charges).

More information can be found at:
www.cad.univpm.it

Activities for the students

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CLASSROOMS

16 classrooms for a total of 2003 seats, including 582 in large classrooms. The classrooms are equipped with networked computers, overhead projectors and PowerPoint projectors.

GIS ROOM

a space equipped with all modern workstation software for spatial analysis (Geographic Information Systems) and Decision Support Systems. It is used for the development of thematic maps useful for both the prevention and prediction of disasters, for the highlighting of areas such as, for example, marine areas with high or low population density or areas affected by pollutant diffusion.

THE DIDACTIC MUSEUM OF DISVA

Houses a wide range of zoological (both vertebrates and invertebrates), botanical and mineralogical samples. In addition, resin and plastic models of animal organs and systems are present. These materials are used for practical lectures of the courses of Comparative Anatomy, Botany, Geology and Zoology.

LIBRARY

Approximately 20,500 monographs,about 4,500 titles of periodicals, 6 bibliographic databases.

READING ROOMS

Large spaces are available for the students within the three buildings of Sciences and in the South Block Classrooms.

WIRELESS NETWORK

The entire Polo Monte Dago is covered by free high-speed Wi-Fi, available to all students.

Facilities for the students

TEACHING LABS

The Department hosts many teaching laboratories where the students can develop the practical aspects of the subjects studied and satisfy their scientific curiosity. Details about the laboratories and the activities for which they are used are given below.

LABORATORY	SITE	COORDINATOR
Chemistry Laboratory In this structure laboratory teaching experiences are carried out for the courses of basic (organic and inorganic) and analytical chemistry.	Science 1 1st floor	Prof. Giuseppe Scarponi
Experimental Biology 1 Laboratory Laboratory SB1 is equipped with microscopes and stereo microscopes used for the observation of histological and biological samples as part of the practical activities for the courses of comparative anatomy, zoology, histology and cytology, marine biology and botany.	Science 1 1st floor	Prof. Vincenzo Caputo Barucchi
Experimental Biology 2 Laboratory Used for laboratory experiments for the courses of biochemistry, molecular biology and microbiological contamination.	Science 1 1st floor	Prof. Davide Bizzaro
Computer Lab The computer lab is used for the teaching activities of the statistics and bioinformatics courses. In addition, students can access the Internet and use a printing device.	Science 1 1st floor	Prof. Giuseppe Scarponi
Physics Laboratory In this laboratory learning experiences are carried out for the course of physics. The laboratory allows many different experiments of classical physics (mechanics, fluid mechanics, thermodynamics and electrology).	Science 1 ground floor	Prof. Paolo Mariani

TUTORING

The University provides a tutoring service for students enrolled in Sciences in order to introduce the first year students to the courses and help them in the preparation of first and second year exams.

TEACHING ASSISTANTS

The Department collaborates with teaching assistants responsible for arranging extra practical sessions out of the hours officially scheduled.

SEMINARS

At the beginning of each academic year the Department organizes a series of seminars to update and integrate the syllabus of the various courses.
The seminars, held by highly qualified Italian and foreign speakers, address general issues or examine more thoroughly some specific topics included in the teaching syllabus. Certified attendance of the seminars is recognized with credits (CFU) (more information can be found at www.disva.univpm.it).

SUPPLEMENTARY COURSES

In addition to the official courses, each year a series of supplementary courses are offered to both undergraduate and Master students. The subjects and the teachers proposed for these courses are communicated at the beginning of the academic year (www.disva.univpm.it).

EDUCATIONAL TRIPS

Educational travels are frequently organized at DiSVA to support the regular scientific and teaching programs, and the participation to these trips is recognized. Usually, the planned educational trips allow students to carry out field activities (scientific diving, botany, zoology and geology surveying campaigns, etc.) or visit facilities and sites (field sites, museums, aquariums, industrial installations, research laboratories, large scale facilities, etc.) that are of special interest for scientific and teaching purposes.

VOCATIONAL TRAINING

The Didactic Regulations for each syllabus determine the specific types of activity to be carried out during any periods of training.
Training activities may be carried out in public or private organizations or using the University scientific facilities and may involve more than one organization, in Italy or abroad. The type of final assessment and any relative credits are indicated in the course syllabus regulations. Application for practical training must be submitted at the beginning of each academic year in which this type of activity is required. Students of the Master degree courses must carry out an internship with public authorities or private enterprises out of the Università Politecnica delle Marche, according to a specific agreement between the University and the host organization.
A booklet in which the trainee must periodically report the activities carried out will be supplied to the student at the beginning of the internship. In order to certify attendance this record must be countersigned by a representative of the host organization.

RECOGNITION OF PREVIOUS STUDIES

Students who have carried out previous University studies and who wish to transfer to DiSVA degree courses may request the Didactics Support Office information about the recognition of exams and course attendance. The Department Council should formally accept the recognition of previous studies.

More information can be found at:
www.disva.univpm.it

Courses Offered

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HIGH SCHOOL

First level degree
BIOLOGICAL SCIENCE
3

First level degree
ENVIRONMENTAL SCIENCES AND CIVIL PROTECTION
3

Second level degree
APPLIED AND MOLECULAR BIOLOGY
2

Second level degree
MARINE BIOLOGY
2

Second level degree
ENVIRONMENTAL SUSTAINABILITY AND CIVIL PROTECTION
2

1st level Master
MARINE BIOLOGY ON-LINE
1

2nd level Master
MARINE BIOLOGY ON-LINE
1

PhD Course
LIFE AND ENVIRONMENTAL SCIENCES
- *Marine Biology and Ecology Curriculum*
- *Biomolecular Sciences Curriculum*
- *Civil and Environmental Protection Curriculum*

3

HOW THE COURSES ARE ORGANIZED

The Italian University system currently offers 1st, 2nd and 3rd cycle programs and degrees. The 1st cycle degree offered by University is the "Laurea" (abbreviated as "L"), lasting three years and providing undergraduate students with an adequate expertise of general scientific principles and mastery of scientific methods, as well as specific professional skills. The access is guaranteed to students holding a foreign school leaving qualification that satisfies the requirements for access to University education in the awarding country. The "Laurea" is awarded to students who attain a total of 180 credits. The 2nd cycle degree is the "Laurea Magistrale" (abbreviated as "LM"), lasting 2 years. For the access to the LM, a 1st cycle High Education qualification (bachelor-level) awarded by an Italian University, an accredited foreign University or university-level institution is required. The "Laurea Magistrale" is aimed at providing graduates with an advanced level of education and training for highly qualified professions in specific areas. The "Laurea Magistrale" degree is awarded to graduates who have obtained a total of 300 credits, including those awarded for the "Laurea". The 3rd cycle degree, lasting 3 years, is the "Dottorato di Ricerca" (DR), fully academic in nature and providing postgraduates with training for highly specialized research. For the access, students should have a 2nd cycle degree (Master-level) awarded by an Italian University, an accredited foreign university or a University-level High Educational institution. Moreover, the 2nd cycle degree must cover 90-120 ECTS credits.
In any case, National Universities offer a few Master Degrees, both for undergraduate and postgraduate students: the "Master Universitario di 1° livello" (MU1) is a 2nd cycle degree which lasts one year and in which students holding a 1st cycle qualification degree (bachelor-level) can accede; the "Master Universitario di 2 livello" (MU2) is a 3rd cycle degree, lasting two years, and reserved to students holding a 2nd cycle degree (Master-level).

WHAT ARE "CREDITS"?

Degree courses are structured in credits (crediti formativi universitari - CFU). One university credit corresponds to 25 hours of work per student, including attendance of lectures, individual study time and practical work. The average annual workload for a full-time student is conventionally fixed to 60 credits. For all courses at DiSVA, 1 CFU corresponds to 8 hours of class teaching (class lectures). In addition, each course includes at least 1 CFU of laboratory practice.

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First level degrees

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Biological Sciences
Environmental Sciences and Civil Protection

First level degrees at Science

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First level degrees in Biological Science and in Environmental Sciences and Civil Protection last three years. Both courses include 20 exams and work experience in public or private laboratories. No admission exam is needed to access the courses. However, at the beginning of the course, the student will have to take a test to verify his/her knowledge of basic topics.

1st level degrees, are characterized by both theoretical and applied studies. Their aim is to provide undergraduates with adequate knowledge of general scientific principles, mastery of related methods, and specific professional skills.
For the admission an Italian school leaving qualification, or a comparable foreign certification, is required. The workload is of 180 ECTS credits.

KNOWLEDGE OF FOREIGN LANGUAGES AND LEVEL REQUIRED: ENGLISH

Placement Test.
The students enrolled on the first year of the degree course must take a placement test, organized by the University Language Centre (CSAL). The placement test is run at the beginning of each academic year to assess the students' initial knowledge of the English language. The end of course final assessment consists in a computer-based test (grammar exercises, reading, listening, pronunciation) and an oral exam.
Students who have already obtained an internationally recognized language certificate, such as KET, PET, FCE, CAE, CPE, may ask for its recognition and may be exempted from the final assessment.

PROPAEDEUTICS

In order to take the third year exams, the students enrolled on the first level degree courses (Biological Sciences and Environmental Sciences and Civil Protection) are required to have passed the English Language test.

FIRST LEVEL DEGREE COURSE FINAL EXAM

The final exam consists in a discussion of a short paper ("tesi") concerning a subject chosen by the student in agreement with a Professor who acts as the academic tutor.

The Graduation Panel (made by 7 professors) may assign a final grade out of 110 corresponding to the average grade obtained in the exams, with the possibility to increase the grade by a maximum of 7 marks, of which 5 can be attributed for the whole academic career and 2 for the assessment of the paper presented during the final exam. "Cum laude" (Honors) may be assigned to students who have an average higher than 102.51.

When students plan to graduate, they have to submit an application to the Registrar's Office. All information concerning deadlines and forms to fill is available on the website at ***www.univpm.it*** - Registrar's Office - Sciences.

Biological Sciences (Laurea)

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OBJECTIVES

At the end of this course of study, graduates in Biological Sciences will have acquired operational and applied skills in the fields of laboratory biology (analytical and industrial) and applied biology (environmental).
This background will allow them to perform scientific and operational tasks to support productive and technological activities and services which deal with analysis, control and management issues.
Our graduates will also be familiar with methods of scientific inquiry, and have a good knowledge of English, including the specific language used for biological and scientific disciplines, as well as adequate skills for communication and information management. They will be able to work not only interactively as part of a group using advanced technology and equipment, but also with a certain level of autonomy which will allow them to readily enter the job market.
For this goal, in addition to the fundamental subjects of chemistry, physics, mathematics and statistics, the course also includes studies aimed at the acquisition of theoretical and experimental knowledge of the molecular and structural organization of microorganisms and functional aspects of animal and plant organisms, mechanisms of inheritance and development, ecological interaction and biological evolution processes.
Great importance is also given to laboratory work and practical activities in the field, as well as internships in the public sector (research or control institutes) or private organizations (companies, private laboratories), thereby facilitating career choices through a direct knowledge of the professional world.

CAREER OPPORTUNITIES

The degree course in Biological Sciences provides graduates with the professional skills required for technical professions concerning health and life sciences, as defined by the ISTAT classification. The professional outcomes expected for graduates include chemical, clinical and environmental analyses in public and private institutions, (public and private laboratories for analysis, public research organizations); public and private structures for basic and applied research (universities, National Research Council, pharmaceutical, cosmetic, and food industries); consultancy, private and public sector scientific reporting and promoting, the profession of junior biologist as regulated by the National Order of Biologists.

This course prepares graduates for the following professions:

- Biologists and similar professions;
- Biochemists;
- Botanists;
- Zoologists;
- Ecologists;
- Biochemical laboratory technicians.

First year (1° and 2° part time)

	CREDITS
Mathematics	8
Physics	8
Chemistry I (general and inorganic)	8
Zoology	8
Cytology and Histology	8
Ecology	7
Optional Credits *	6
English	4

Second year (3° and 4° part time)

	CREDITS
Botany	8
Chemistry II (organic)	8
General Physiology	9
Biochemistry	8
Molecular Biology	8
Genetics	8
Combined Course:	12
› Biology Laboratory	
› Statistics for Experimental Sciences	

Third year (5° and 6° part time)

	CREDITS
Comparative Anatomy	8
Developmental Biology	8
Plant Physiology	8
Cell Biology and Cytogenetic	6
General Microbiology	8
Marine Biology	6
Optional Credits *	6
Practical Training	5
Final Exam	7

** The student may choose among the following subjects or within the subjects offered by other degree courses of the university.*

Courses for Optional Credits *

	CREDITS
Human Anatomy	6
Bioethics	6
Ethology	6
Pharmacology	6
Biomedical Laboratory Safety	6

The programs of the courses are available on the website ***www.disva.univpm.it***

Environmental Sciences and Civil Protection (Laurea)

Guide to the Degree Courses
at the Departement of Life and Environmental Sciences

OBJECTIVES

At the end of this course of study, graduates in Environmental Sciences and Civil Protection will have acquired a thorough knowledge of environmental control systems and of the most advanced technologies for the solution of environmental problems.
This course aims to train professionals who will be able to manage environmental monitoring systems for pollution remediation and environmental restoration, in order to recover degraded environments, to evaluate the possible alterations due to catastrophic events or to the impact of human activities.
Graduates will be able to coordinate the various activities related to civil protection, such as analysis and risk prediction, prevention and management of emergencies, rescue, and post-emergency return to normality. These issues are both complex and relevant, and require the development of innovative methods, which can be acquired through a multi-disciplinary university training as well as through in-the-field experience.
For this goal, in addition to a basic knowledge of subjects such as chemistry, physics, mathematics, statistics and natural sciences, the course provides insights into the biotic and abiotic characteristics of ecosystems, thermodynamics and heat transfer.
There will also be specific courses related to the theoretical and methodological study of environmental protection, such as ecology, environmental impact assessment, environmental legal aspects, methods of environmental clean-up and methodologies to study environmental health.
The theoretical and methodological study of civil protection will also be considered, including prevention and forecasting of natural disasters and emergencies; rules of civil protection, public health emergencies; fundamentals of geo-climatic risks; computer science and telecommunications for civil protection.
Our students will be facilitated in their future career choices as they will be required to carry out practical work in university laboratories, research centers and regional and national civil protection coordination centers, public bodies or private companies involved in environmental and civil protection issues.

CAREER OPPORTUNITIES

The degree course in Environmental Sciences and Civil Protection provides graduates with the professional skills typical of technical professions concerning physical and natural sciences, as defined by the ISTAT classification. The professional outcomes expected for graduates include access to public or private organizations involved in monitoring and protection of the environment, assessment of environmental impact and recovery of modified natural environments (Regional Agencies for environmental protection, National and Regional Agencies for civil protection, etc.), public and private institutions for applied research concerning natural environmental conditions and pollution issues (University, CNR).

This course prepares graduates for the following professions:

- Lab technician for environmental chemical, biological, microbiological analysis;
- Expert in the management of civil protection activities;
- Environmental Monitoring Technician;
- Environmental Recovery Technologist;
- Expert in Environmental Impact Assessment.

First year (1° and 2° part time)

	CREDITS
Mathematical and Statistical Methods	9
Combined Course:	12
› General Chemistry (and inorganic)	
› Organic Chemistry	
Physics	9
Combined Course: Geology and Geological Surveying	12
› Fundamental of Earth Sciences	
› Field Surveying and Geological Cartography	
Fundamentals of Biology	7
Animal Biodiversity	7
English	4

Second year (3° and 4° part time)

	CREDITS
Plant Biodiversity	7
Safety and Environmental Analytical Chemistry	8
Disaster and Civil Protection	7
Fundamentals of Oceanography, Meteorology and Climate	6
Applied Chemistry for Environmental Protection	7
Environmental Technical Physics	7
Fundamentals of Ecological Systems Analysis	8
Environmental Microbiology	7
Optional Credits *	6

Third year (5° and 6° part time)

	CREDITS
Ecotoxicology and Environmental Impact Assessment	8
ICT for Emergency and Environmental Protection	7
Forecasting and Prevention of Natural Disaster	9
Applied Ecotechnology	8
Civil Protection Organization	6
Optional Credits*	6
Practical Training	5
Final Exam	8

** The student may choose among the following subjects or within the subjects offered by other degree courses of the university.*

Courses for Optional Credits *

	CREDITS
Analysis of Pollutants	6
Sanitary Emergencies	6
Statistics for Experimental Sciences	6
Environmental Recovery Techniques	6
Applied Zoology	6

The programs of the courses are available on the website ***www.disva.univpm.it***

Second Level Degrees
Postgraduate Degree Courses

Guide to the Degree Courses
at the Departement of Life and Environmental Sciences

Applied and Molecular Biology

Marine Biology

Environmental Sustainability and Civil Protection

Second Level Degrees at Science

Guide to the Degree Courses
at the Departement of Life and Environmental Sciences

ADMISSION TO POSTGRADUATE DEGREE COURSES

A three-year Degree, or an equivalent academic qualification from a foreign university is required for enrollment in the Postgraduate Degree Courses at Sciences. The specific curricular pre-requisites for the postgraduate degree courses can be found in the website www.disva.univpm.it. For application procedures, please consult www.univpm.it.
The Didactic Regulations may set specific access criteria and assess the adequacy of personal preparation. Provisional enrollment is also possible for students who are enrolled in a three-year Degree Course but have not yet passed the final graduation exam, provided they regularize their position by the 28th of February of the calendar year following enrollment.
During the courses of study, activities out of the university, such as internships in companies or periods of study in other Italian and foreign universities, even in the context of international agreements, are always encouraged.
Attendance is compulsory only for internships but is also strongly recommended for laboratory activities. There are no propaedeutical requirements.

FINAL EXAM

The final exam involves the discussion of a thesis written by the student and reporting the results of an original research planned and carried out personally by the student under the supervision of a tutor. For this purpose the student must work in a laboratory at the Department of Life and Environmental Sciences or another Faculty/Department of the Università Politecnica delle Marche for at least one year. If the Department considers it appropriate, the work for the preparation of the thesis may be carried out in another Italian or foreign University laboratory, or within other private or public organizations.
Application for the thesis can be made by the 31st of July after having obtained at least 30 credits, with subsequent deadlines of 31 October, 31 January and 15 March. The Graduation Panel (made up of 9 professors) may assign a final grade out of 110 corresponding to the average grade obtained in the exams, with the possibility to increase the grade by a maximum of 10 marks. "Cum laude" (Honors) may be assigned to students who have an average of no less than 102.51, if the Tutor presents an official request to the Director of the Department at least ten days before the final exam. The subjects for second level degree theses are regularly updated and can be found at *www.disva.univpm.it*

Applied and Molecular Biology (Laurea Magistrale)

Guide to the Degree Courses at the Departement of Life and Environmental Sciences

This course has a duration of two years

OBJECTIVES

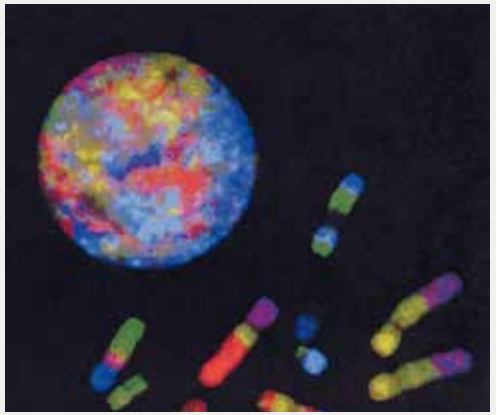
The primary purpose of this course is the formation of high-level experts in the fields of Molecular Biology, Biochemistry, Microbiology and Genetics.
This course trains specialists in molecular biological processes and biological analytical methods, and their industrial and diagnostic applications, through the study of advanced methods for the analysis of biological systems. It also gives the students an understanding of the design and use of natural bioactive molecules. Our graduates in Applied and Molecular Biology will be able to manage work and/or research activities in the biological and chemical sector, and manage and coordinate activities in analytical and research laboratories.
The training activities are aimed at extending the basic knowledge of biology and its applications, with particular regard to molecular, biochemical and biotechnological applications. The relationships between molecules and between molecules and cells, both in normal and modified conditions, are also studied. Graduates in Applied and Molecular Biology will be familiar with the techniques used to understand biomolecular phenomena and acquire expertise (in terms of research, development and production) in the field of both applied biology and biotechnology. Lectures and practical laboratory activities will provide at least 30 total credits (240 hours), focusing in particular on understanding biological, molecular, chemical and biotechnological methodologies, and analysis of bioinformatic data.
The distinctive feature of the course is the molecular, biotechnological and interdisciplinary approach to the study of complex biological problems, aimed at understanding the functioning of living systems by means of advanced techniques of chemical, molecular and cellular biology. This approach takes advantage of major national and international research infrastructures such as genomics, metagenomics, proteomics, and structural biology laboratories and synchrotron light source facilities. The knowledge of functional, structural and bioinformatic analysis of macromolecules and biological systems, and the design of compounds with biological, pharmacological and biotechnological activity will be developed during the course.

CAREER OPPORTUNITIES

The course in Applied and Molecular Biology provides graduates with professional skills for operational activities typical of technical professions concerning health and life sciences, and specialist activities in research and training, etc., as defined by the ISTAT classification. The professional outcomes expected for graduates include research in universities and public institutions (CNR, Istituto Superiore di Sanità), advanced biotechnological and biological research for pharmaceuticals, cosmetics and food products; "Quality Control" for pharmaceutical and food industries, scientific consultancy in pharmaceutical industries, science teaching.

This course prepares graduates for the following professions:

- Biologists and similar professions;
- Biochemists;
- Biophysicists;
- Biotechnologists;
- Botanists;
- Zoologists;
- Microbiologists.



First year (1° and 2° part time)

	CREDITS
Biochemistry and Biotechnology of proteins	8
Cellular Biotechnology	6
Combined Course: Bioinformatics	10
› Module 1	
› Module 2	
Biochemical Analysis	6
Combined Course: Biomolecular Technologies	12
› Applied Genetic	
› Advanced Molecular Biology	
Biotechnology of Microorganisms	8
Biomolecular Nanotechnologies	8
Optional Credits *	6

Second year (3° and 4° part time)

	CREDITS
Genetic Engineering	6
Biomedical Bacteriology	6
Diagnostic Microbiology	7
Modelling of Biological Systems	6
Practical Training or other Linguistic Skills	5
Optional Credits *	6
Thesis	20

** The student may choose among the following subjects or within the subjects offered by other degree courses of the university.*

Courses for Optional Credits *

	CREDITS
Chemical Analysis of Foods	6
Food Biochemistry	6
Molecular Biophysics	6
Fermentation Biotechnology	6
Plant Biotechnology	6
Molecular Genetic	6
Laboratory of Bioactive Molecules	6
Food Microbiology	6

The practical training must be carried out in laboratory out of the Università Politecnica delle Marche for 120 hours.

The programs of the courses are available on the website ***www.disva.univpm.it***

Marine Biology (Laurea Magistrale)

Guide to the Degree Courses at the Departement of Life and Environmental Sciences

This course has a duration of two years

OBJECTIVES

Graduates in Marine Biology are biologists with expertise in the study of the marine environment with particular reference to: biodiversity, interaction between living organisms and the environment, evaluation, management and increase of biological resources, methodologies for environmental impact assessment consequent to different human activities, recovery systems for degraded marine environments, protection of biodiversity, conservation of marine ecosystems.
To acquire these skills, this course not only extends the basic knowledge of biology and its applications (with particular regard to ecological and marine applications) but also teaches useful techniques for the study and understanding of marine ecosystems and sampling techniques in order to gain expertise in the field of marine biology. Aspects of research, health monitoring and environmental quality of marine ecosystems, as well as those related to the conservation and management of marine resources, are also taken into account. The training activities involve biological and ecological methodologies, the assessment of marine resources, the human impact on the marine environment and the processing of ecological and environmental data. At least 30 credits (240 hours) are allocated to practical activities, including activities on boats or research vessels, and underwater activities for scientific sampling (a diving certification will be issued by the University to students who attend the training course). Fieldtrips to selected marine protected areas in Italy and abroad are part of the scheduled activities. Many practical laboratory activities will be carried out within the "core facility" of our "Marine Research Laboratory".

Course in scientific diving techniques

The profession of marine biologist offers a wide range of job opportunities in the international context. Scientific diving operations are undoubtedly some of the most important skills that a marine biologist can acquire.
Students enrolled in the Second Level degree course in Marine Biology can attend a free diving course for beginners (optional on request). In this way, students with a diving license will be able to fully exploit the opportunities offered by our training programs and take part in practical activities that apply the main methods of underwater sampling. It will be possible to scuba dive to acquire expertise in various techniques, such as the observation of the morphological profiles of the seabed, photographic sampling and use of specific surveying tools to investigate marine animals, algae and plants , identify species and carry out visual biodiversity surveys.

Mobile Laboratory "Actea"

"Actea" is a boat equipped to carry out studies and research in the coastal marine environment. It provides scientific support for scuba diving and is fitted with a winch to lower into the sea scientific instrumentation such as sensors for the measurement of the main environmental parameters, samplers for marine sediments, a grab bucket, box corer, multi corer, hydrological bottles to collect water samples at various depths. It can host on board up to six people and is used for practical training for various courses. Students also have the opportunity to get involved (for example during internships or thesis preparation) in specific activities that include scientific expeditions at sea with other research vessels.

CAREER OPPORTUNITIES

The course in Marine Biology provides graduates with professional skills for activities required for technical professions in the field of health and life sciences, and for specialists in research and training, as defined by the ISTAT classification. The professional outcomes expected for the graduates include research in universities and public institutions involved in environmental management (OGS, CNR, Ispra, ENEA-National Agency for Alternative Energy, Environment Departments, Regional Agencies for Environmental Protection, Marine Protected Areas), science teaching, activities in private companies operating in the environmental area, especially marine, and employment in public and private aquariums.

This course prepares graduates for the following professions:

- Biologists and similar professions;
- Botanists;
- Zoologists;
- Ecologists;
- Aquarium experts in public or private institutions;
- Managers of Marine Protected Areas;
- Environmental consultants;
- Aquiculturists and Seafood Farmers.

First year (1° and 2° part time)

	CREDITS
Marine Biology and Ecology	7
Combined Course:	12
› Oceanography	
› Marine Sedimentary Environment	
Marine Animal Biodiversity	7
Marine Algal and Plant Biodiversity	7
Ecophysiology of Algae	7
Physiology of Marine Animals	7
Biology of Reproduction of Marine Organisms	7
Optional Credits *	6

Second year (3° and 4° part time)

	CREDITS
Marine Microbiology	7
Applied Marine Ecology	7
Marine Ecotoxicology	7
Aquaculture, Reproduction and Development of Ornamental and Commercial Species	7
Optional Credits *	6
Practical Training or other Linguistic Skills	6
Thesis	20

** The student may choose among the following subjects or within the subjects offered by other degree courses of the university.*

Courses for Optional Credits *

	CREDITS
Bioinformatics	6
Evolutionary Biology of Marine Vertebrates	6
Algal Biotechnology	6
Conservation of Nature and its Resources	6
Fundamentals of Environmental Impact Assessment	6
Underwater Scientific methodology	6

The practical training must be carried out in a laboratory out of the Università Politecnica delle Marche for 150 hours.

The programs of the courses are available on the website ***www.disva.univpm.it***

Environmental Sustainability and Civil Protection (Laurea Magistrale)

Guide to the Degree Courses at the Departement of Life and Environmental Sciences

This course has a duration of two years

OBJECTIVES

This course addresses the topics of sustainable development, environmental management and civil protection. The graduates will also acquire an interdisciplinary preparation covering scientific, legal and managerial aspects, that will allow an integrated approach to the problems posed by environmental degradation and major natural and/or anthropic emergencies, as well as the necessary competence to propose measures for preventive monitoring, emergency management and the recovery of damaged environments. The teaching activities are therefore focused on problems related to different types of environmental risks (biological, chemical, geological and climatic), an understanding of economic, legislative, environmental and civil protection issues, work on methodologies for environmental recovery and activities concerning general aspects and applications of environmental sustainability, with particular reference to the study of alternative energy resources. Theoretical and/or practical activities in the field of integrated management of major emergencies will also be carried out.
The distinctive features of the course are agreements with public bodies such as the National and Regional Civil Protection Agencies, National Research Council, ARPAM, State Forestry Corps, Fire Department, which allow laboratory demonstrations and field activities to be performed with the direct involvement of the experts, the facilities and the equipment of the above mentioned agencies. In this way, students can complete their studies through the application of theoretical knowledge in real or simulated situations, even in the aftermath of recent events.

CAREER OPPORTUNITIES

The course in Environmental Sustainability and Civil Protection provides graduates with professional skills for activities typical of technical professions concerning the sciences and similar subjects, specialist activities in the recovery and conservation of the territory, specialist activities in training and research as defined by the ISTAT classification.
The professional outcomes for graduates include access to managerial positions in public institutions (including the Civil Protection Agency) or private structures responsible for the control and protection of the environment or environmental impact assessment and recovery of damaged environments; public or private environmental research organizations dealing with alternative energy resources and civil protection (CNR, ARPA, Ispra).

This course prepares graduates for the following professions:

- Geologists;
- Geophysicists;
- Meteorologists;
- Planners, landscape architects and specialists in the recovery and conservation of the territory;
- Managers of environmental, chemical, biological and microbiological analysis laboratories;
- Civil protection coordinators;
- Emergency Planners (plan development);
- Environmental protection strategy planners;
- Experts in energy and environmental certification for buildings;
- Teachers of scientific and technical subjects.

First year (1° and 2° part time)	CREDITS
Environmental Sustainability	8
Chemical Risk and Ecocompatible Chemistry	8
Biological and Ecological Risk	8
Combined Course:	12
› Geological Risk	
› Climatic Risk	
Energetic Resources and Alternative Energies	6
GIS Tools for Environmental and Civil Protection	6
Combined Course:	12
› Environmental and Civil Protection	
› Chemical Environmental Monitoring	

Second year (3° and 4° part time)	CREDITS
Disaster Risk Reduction	7
Emergency Management	6
Integrated Systems for Environment Management and Remediation	6
Conservation of Nature and its Resources	6
Optional Credits *	12
Practical Training or other Linguistic Skills	5
Thesis	18

** The student may choose among the following subjects or within the subjects offered by other degree courses of the university.*

Courses for Optional Credits *	CREDITS
Characterization of industrial Emissions	6
Medicine of Disaster	6
Fire Prevention and Industrial Risk Control	6
Advanced Techniques in Environmental Chemical Analysis	6

The practical training must be carried out in laboratory out of the Università Politecnica delle Marche for 120 hours.

The programs of the courses are available on the website ***www.disva.univpm.it***

PhD Course and Masters

Guide to the Degree Courses
at the Departement of Life and Environmental Sciences

PhD course in Life and Environmental Sciences

Guide to the Degree Courses
at the Departement of Life and Environmental Sciences

PhD programs represent the third level of University education in Italy, and are designed to provide students with the specialized knowledge and skills required to carry out independently high quality research and research-related activities in public or private institutions. Application for a PhD program at the UNIVPM requires a master degree (Laurea Magistrale or Specialistica). To be admitted candidates must pass a competitive selection based on qualifications and oral interviews. The PhD Degree is awarded at the end of a three years program, after successful completion of the requirements, including the writing of a dissertation and its oral presentation and defense.

Marine Biology and Ecology Curriculum

The curriculum in "Marine Biology and Ecology" stems from the awareness of the scientific, but also social and economic issues related to the study and management of the marine environment and its resources. In the current international context, this curriculum was conceived with the goal of forming professional workers able to conduct independently research in marine sciences, both basic and applied. The curriculum in "Biology and Marine Ecology" aims to develop to the highest level the ability of the student to conduct independent research and provide high-level expertise in the field of environmental management. The training program requires that the student acquires theoretical knowledge, technical skills, methodological rigor and openness necessary for the typically interdisciplinary research in the field of marine biology. The student will be trained in research planning, its practical execution, collection and analysis of data and interpretation of results.

Biomolecular Sciences Curriculum

The curriculum in "Biomolecular Sciences" aims to train experts in the strategic areas of public and private scientific research and public and private industry that deals with biomolecular sciences. Within the disciplines that relate to this scientific area, biological problems are studied and resolved through an interdisciplinary approach and through the use of advanced techniques of chemical, molecular and cellular biology. Both the world of public and private research and of industry and manufacturing are increasingly inclined to accept new opportunities arising from the life sciences and, in particular, the biomolecular sciences. So new perspectives of work in the field of basic research and applied research can start. The curriculum will provide the future PhD with all the necessary theoretical and practical knowledge that will enable him to fit into research groups, even in the industry, making his own original and positive contribution. The student will acquire the necessary theoretical knowledge through specific and advanced courses, and will acquire adequate practical skills in the laboratory under the constant and careful guidance of a Tutor following original and multidisciplinary field of research. At the same time he will acquire the ability to critically evaluate the results obtained in their research and to present.

Civil and Environmental Protection Curriculum

The PhD program in "Civil and Environmental Protection" addresses the need to develop models of human-environment interactions that are safe and sustainable. The increasing number of natural and anthropogenic disasters is putting a strain on the capacity of civil and environmental protection agencies to respond to increasingly complex emergencies and with progressively global implications. Hence, the need to train a new generation of researchers and managers in the field of civil protection, disaster risk reduction, and environmental protection, equipped with the necessary theoretical knowledge and managerial skills. They will need to operate locally and internationally, both for the immediate resolution of crisis, and for the strategic risk mitigation and natural resources management of a certain region. This program is geared toward a multidisciplinary approach on environmental protection and disaster risk reduction. The student will be trained in design and management of research projects, data collection, and analysis and interpretation of results to define theoretical models. Moreover, the program, besides being a test-bed of students' scientific rigor, their critical thinking skills and individual creativity, gives them an important opportunity to contribute to advance scientific knowledge in the field of civil and environmental protection.

For more information ***www.disva.univpm.it/courses offered/PhD school.***

A.Y. 2014/2015

Masters on line in Marine Biology

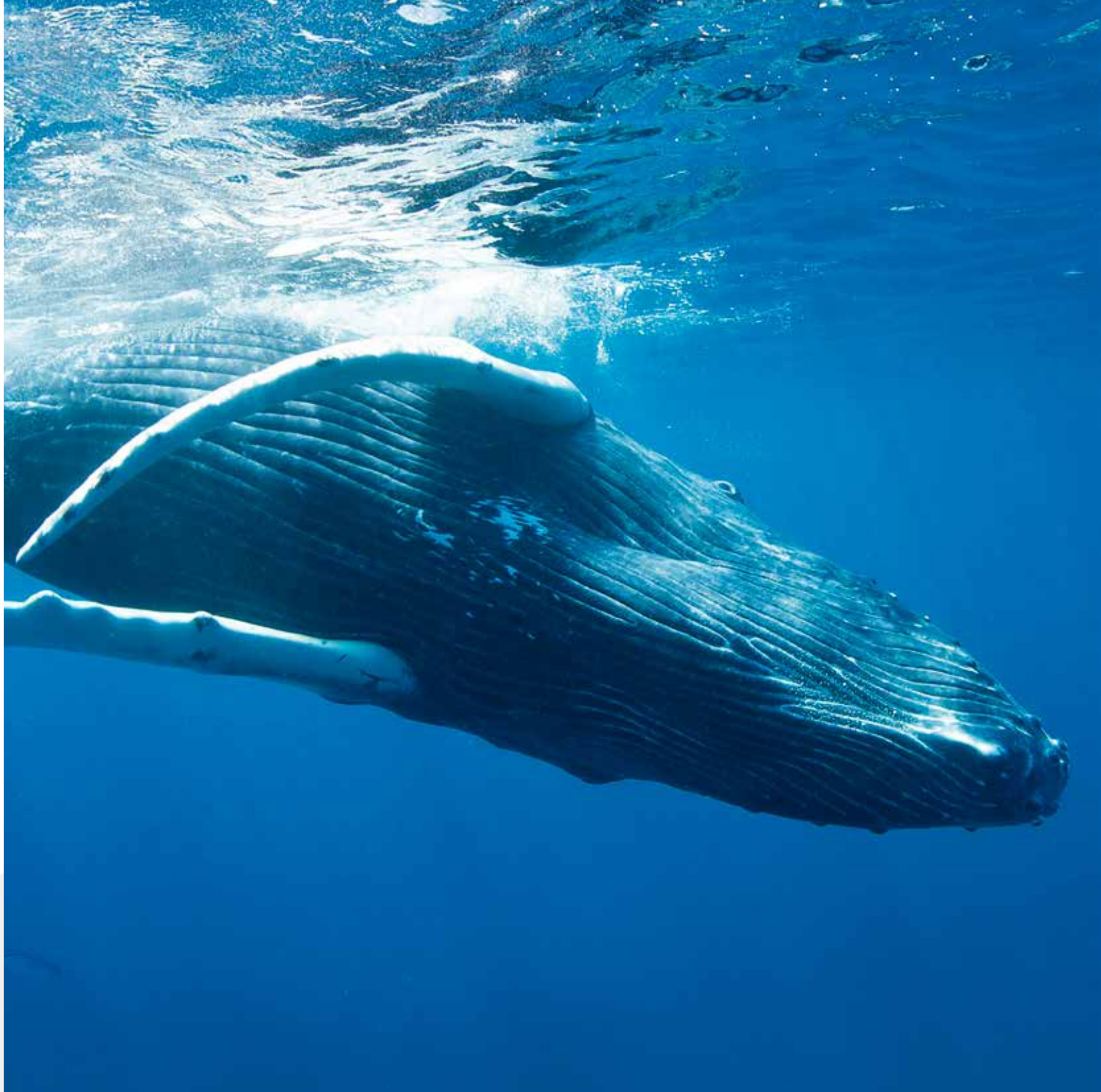
Guide to the Degree Courses
at the Departement of Life and Environmental Sciences

Two Masters in Marine Biology are active at Science:

- **1st level** - lasts one year, reserved to students holding a 1st cycle qualification degree (Bachelor-level).
- **2nd level** - lasts two years, reserved to students holding a 2nd cycle degree (Master-level).

The aim of the Master Courses in Marine Biology is to acquire basic and applied skills in Marine Biology, with special insights on marine ecosystems, as well as a thorough knowledge of the sampling procedures, of the technical-scientific studies and reports useful in searches at sea and in counseling activities.

For more information ***www.disva.univpm.it/courses offered/Master.***



Educational Activities

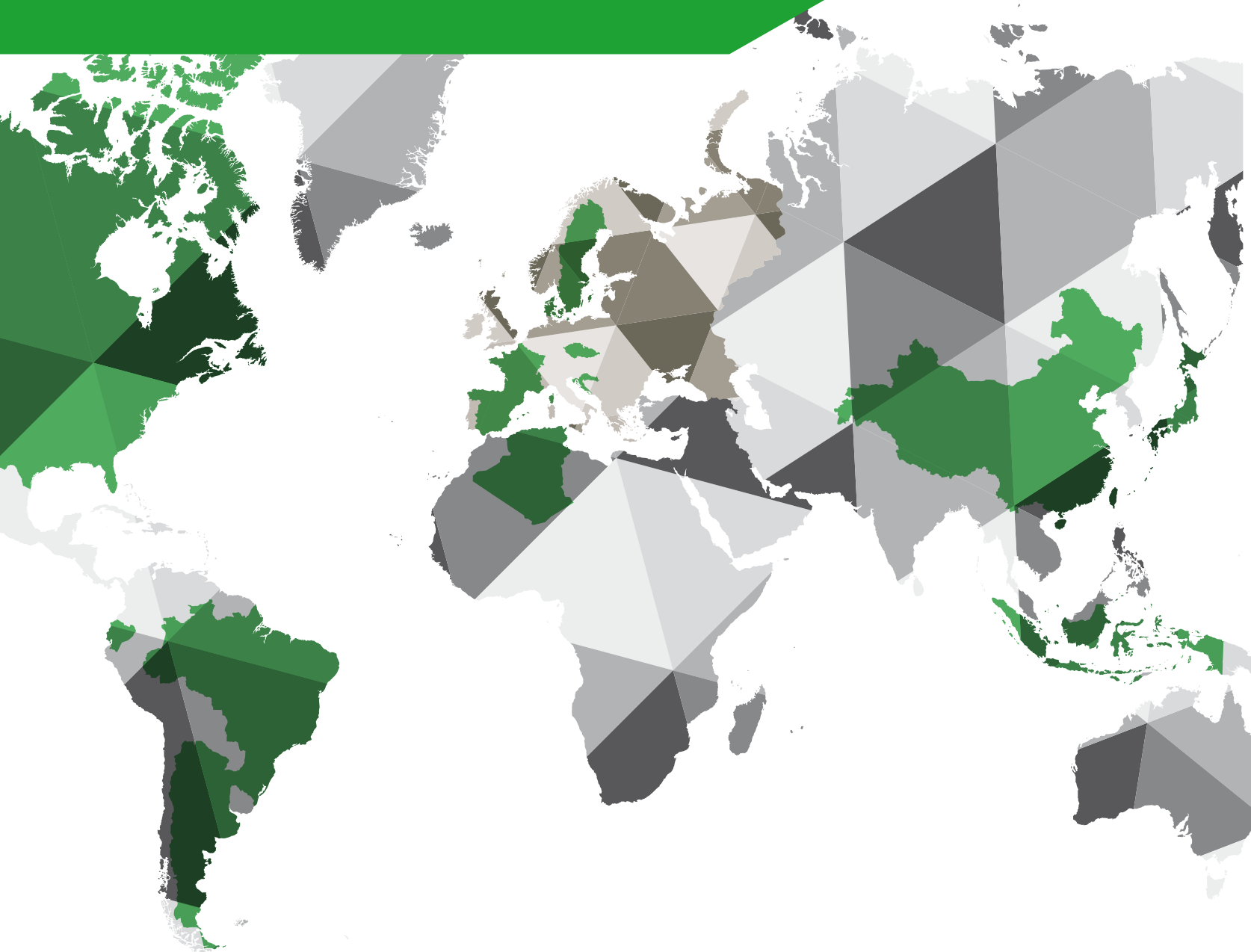
Guide to the Degree Courses
at the Departement of Life and Environmental Sciences

The training scheme for the attainment of the Sciences Degrees, in addition to class lectures, includes field-based activities (exercises in the area, oceanographic, diving and scientific expeditions in enviroments as diverse as seas, glaciers, and quake-hit areas), and practical activities in laboratories abroad.

We also offer seminars, supplementary courses, educational trips, internships and apprenticeships, practical activities in workshops at internal and external laboratories for the preparation of the thesis.
The course of study involves the participation of doctoral students in research projects carried out in collaboration with highly qualified foreign institutions.

Studying abroad

Guide to the Degree Courses
at the Departement of Life and Environmental Sciences



A study period in a foreign partner University is a great opportunity to enhance your education. More and more students want to take advantage of this opportunity. In foreign institutions students can prepare their theses, attend courses and take exams that will be recognized by the University of origin and will become an integral part of the students' academic curriculum. This will allow students to expand their education experience to a European dimension and widen their horizons.

An internship abroad can also create a "bridge" that may become extremely valuable for future access the job market.

Our University strongly believes in the value of these activities and encourages its students to get involved in exchange programs not only by making specific arrangements so that the students depend as little as possible on their family income, but also by providing them with appropriate language training.

Study in Europe

Guide to the Degree Courses
at the Departement of Life and Environmental Sciences

ERASMUS PLUS

Erasmus+ is a program based on a strong international background (i.e. cooperation with Partner Countries) in the field of higher education.
Erasmus+ will support the following main Actions targeting cooperation with Partner Countries:
- International credit mobility of individuals and Joint Master Degrees (under Key Action 1) promoting the mobility of learners and staff from and to Partner Countries;
- Capacity Building projects in higher education (under Key Action 2) promoting cooperation and partnerships that have an impact on the modernisation and internationalisation of higher education institutions and systems in Partner Countries, with a special focus on Partner Countries neighbouring the EU;
- Support to policy dialogue (under Key Action 3) through the network of Higher Education Reform Experts in Partner Countries neighbouring the EU, the international alumni association, policy dialogue with partner countries and international attractiveness and promotion events.
For more detailed information: ***http://ec.europa.eu/programmes/erasmus-plus/.***

Data Sheet

Institution
Università Politecnica delle Marche

Erasmus Code
I ANCONA01

Erasmus Office
Institutional Coordinator Luciana Martini
Phone +39 071 2202318
Fax +39 071 2202359
i.martini@univpm.it
international.mobility@univpm.it

Address
Università Politecnica delle Marche
Servizio Didattica
Via Oberdan n.12
60122 Ancona, Italia

Opening Hours
Monday - Thursday from 11.00 a.m. to 1.00 p.m.
Wednesday from 3.00 p.m. to 4.30 p.m.

Italian Language Course
Baker Frances Marie
Phone +39 071 2207170
f.m.baker@univpm.it

The Erasmus+ studentis required to arrive at the Università Politecnica delle Marche at least a week before the beginning of class lectures.
During that week the student will attend the "Welcome Day". The student will receive an e-mail with the updated relevant information.

The student should:
- Make sure to have received the Acceptance Letter.
- Make sure that his/her passport/identity card is valid.
- Obtain the necessary visa/residence permit (if required).
- Bring his/her European Health Insurance Card/Private Insurance.

Main Erasmus Partner Institutions
(continuous implementation)

Belgium:
Universiteit Gent

Croatia:
University of Split

France:
Universite d'Angers

Germany:
Universität Leipzig

Lithuania:
Vilniaus Gedimino Technikos Universitetas (VGTU)

Norway:
Universitet I Bergen
Norges Teknisk Naturavitenskapelige Universitet

Poland:
Uniwersytet Gdansky
Akademia Medyczna W Gdansku

Portugal:
Instituto Politécnico de Beja
Instituto Politécnico de Leiria

Slovakia:
Zilinskà Univerzita V Ziline

Spain:
Universidad de Almerìa
Universidad de Còrdoba
Universidad de la Coruña
Universidad Autònoma de Madrid
Universidad de les Illes Balears
Universidad de Navarra
Universidad de Valencia
Universidad Politécnica de Valencia-Etsiamn

Turkey:
Suleyman Demirel University

THESIS PREPARATION - CURRICULAR INTERNSHIP - PLACEMENT ABROAD

In order to encourage international mobility projects, our University selects undergraduate and postgraduate students who wish to prepare their thesis and/or carry out a curricular internship or placement period in European and extra-European countries. The selection procedures are aimed at covering the travel and subsistence expenses to which the students will be subjected during their time abroad.

CAMPUSWORLD

CampusWorld is a Università Politecnica delle Marche program, in collaboration with the Ancona Chamber of Commerce and UBI Bank, aimed at supporting and promoting technological innovation and training.
It is a program designed for undergraduate and graduate students at the Università Politecnica delle Marche attending courses in Agriculture, Economics, Engineering and Science, who want to do an internship with our project partners all over the world.

The stay at the host organization cannot be less than 3 months and a week or more than 6 months.

More information can be found at ***www.univpm.it*** - International Relations.

LIST OF THE LIFE AND ENVIRONMENTAL SCIENCES DEPARTMENT'S MAIN INTERNATIONAL PARTNERS

- University of Angers (France)
- School of Medicine (IISPV) Universitat Rovira i Virgili (URV) - Tarragona (Spain)
- Faculty of Sciences, University of Cadiz - Puerto Real, (Spain)
- University of Copenhagen (Denmark)
- Institute Oceanography and Fisheries (Croatia)
- University of Southern Denmark (Denmark)
- Institute of Microbiology of the Czech Academy of Sciences (Czech Republic)
- University of South Bohemia Ceske Budejovice (Czech Republic)
- Stockholm University - Department of Biochemistry and Biothysics - (Sweden)
- University of Umea (Sweden)
- Universitè du 7 Novembre a Carthage (Tunisia)
- Ecole Normale Superieur de Kouba-Alger (Algeria)
- Memorial University of Newfoundland (Canada)
- The United States Geological Survey Woods Hole Coastal and Marine Science Center (USGS) (USA)
- University of Delaware (USA)
- University of Wisconsin - Milwaukee (USA)
- Sbarro Healt Research Organization - Philadelphia (USA)
- Estacion de Fotobiologia Playa Union (EFPU) (Argentina)
- Universidade de Sao Paulo
- Universidade Catolica de Brasilia (Brasil)
- Federal University of Rio De Janeiro (Brasil)
- Universidad Peninsula de Santa Elena (Ecuador)
- Tianjin University of Science and Technology (China)
- China Zhejiang Ocean University (China)
- Kwansei Gakuin University (Japan)
- University of Tsukuba (Japan)
- Korallion Lab (Maldives)
- Sam Ratulangi University of Manado (Indonesia)

More information can be found at:
www.disva.univpm.it

Job placement and opportunities

Univpm students and graduates can post their CVs in the dedicated pages within our website. Businesses and professional firms looking for graduates to hire, regularly check this database. This tool proved to be a valuable starting point to move more quickly and successfully in the jobs market.
Science also offers a wide range of training and guidance activities that facilitate access to laboratories, institutions and companies out of the University, with the aim of creating a good balance between study and work in the educational processes and facilitating career choices through direct knowledge of the jobs market.

All members of the academic and administrative staff of Sciences collaborate to real-time updates of the Job Placement and Opportunities page on the department website (***www.disva.univpm.it***). Job and research opportunities (scholarships, Phd, PostDoc positions etc..) in companies and academic intistutions, both national and international, institutions, are listed.

Academic calendar

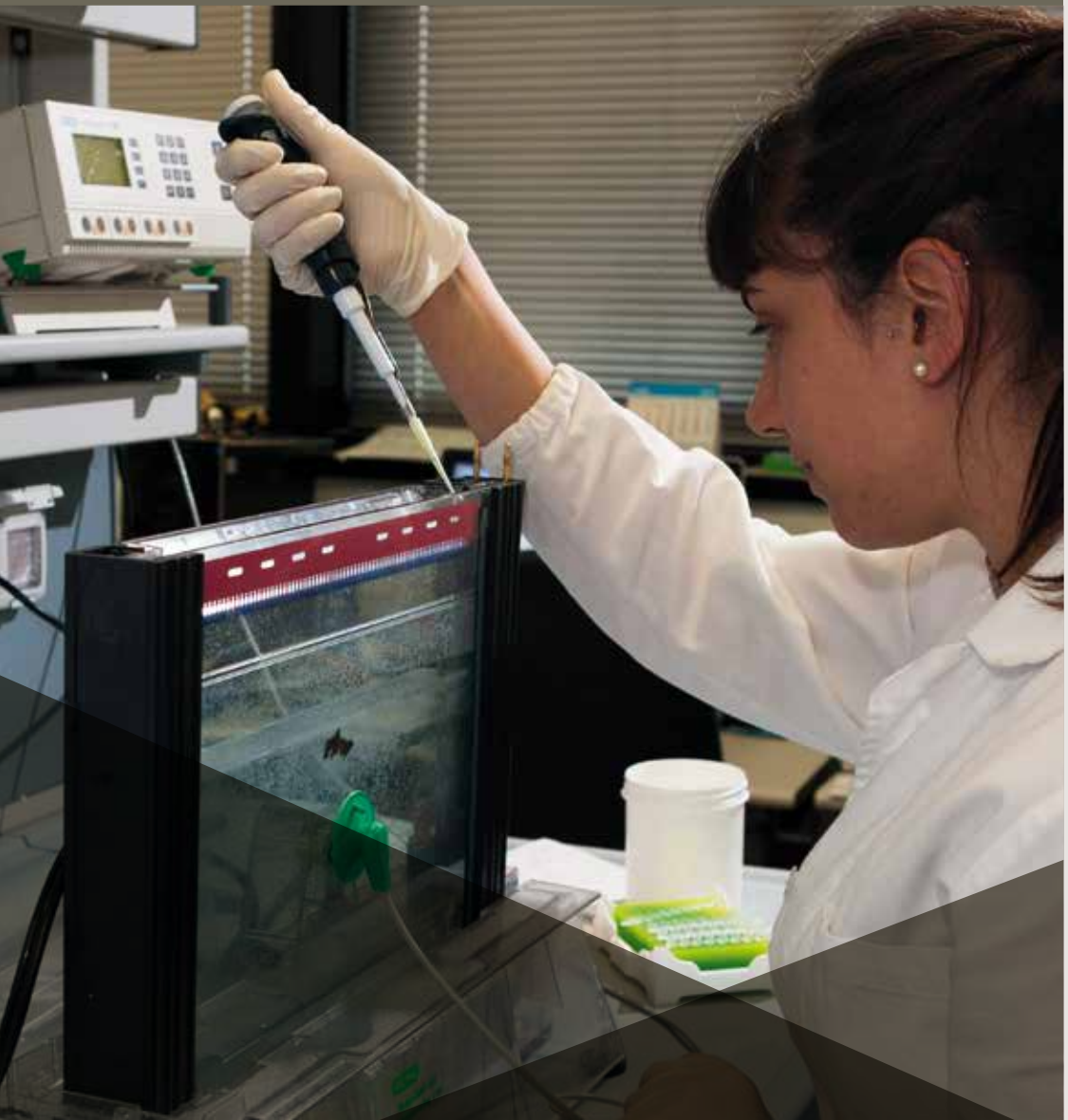
Guide to the Degree Courses
at the Departement of Life and Environmental Sciences

ACADEMIC CALENDAR 2014/2015

LECTURES	FROM	TO
First semester	29 September 2014	17 January 2015
Second semester	16 February 2015	30 May 2015
Periodical assessment *(with suspension of classes exclusively for the courses where it is planned)*	05 November 2014	07 November 2014
	30 March 2015	01 April 2015
Suspension of teaching activities:		
Christmas	22 December 2014	06 January 2015
Easter	02 April 2015	07 April 2015

EXAMS	FROM	TO
Supplementary session Academic Year 2013/2014	19 January 2015	14 February 2015
Summer session Academic Year 2014/2015	19 January 2015	14 February 2015
	08 April 2015	10 April 2015
	01 June 2015	31 July 2015
Autumn session Academic Year 2014/2015	01 September 2015	30 September 2015
	14 December 2015	19 December 2015
Supplementary session Academic Year 2014/20015		February 2016 (to be defined)

GUIDANCE INFORMATION



Regulations applicable to all Degree Courses

Guide to the Degree Courses
at the Departement of Life and Environmental Sciences

Curricula and individual study plans

In order to choose the optional subjects the student must apply at the start of the academic year in which the subjects are timetabled. The specific Didactics Committee will award the credits for each of the subjects chosen directly by the student.

Teaching activities, exams and other forms of assessment

Methods of assessment are determined by the Department, on the basis of proposals made by the Didactics Committee and in accordance with art.17 of the University Didactic Regulations.
In all cases:

- students cannot repeat any examn they have already passed;
- any exams that are invalidated must be repeated.

Any written or practical tests passed as part of an exam are valid for one year. The result of the test must be made official within 20 days from the test date. Any exceptions must be justified and authorized by the Director of the Department.
The integrated courses require a joint assessment.
Each syllabus may involve a periodical assessment, a positive result of which may be considered for the final exam. The result of the periodical assessment is valid for one year.
The starting dates of the exam sessions cannot be postponed under any circumstances.

Split courses

If the high number of students taking any one particular course requires the splitting of the whole group in two or more groups, each student will be assigned to a specific group. It will only be possible to change from one group to another if there is a mutual exchange with a student from the other group or if a motivated application is approved by the Didactics Committee.

Part time students

Conditions for the application of the status of part-time student

The status of part-time student may be required at the time of enrollment and is maintained until graduation, unless the student renounces to it. The shift to a different course of study leads to the loss of the status of part-time student. Therefore, if wishing to maintain the part-time status in the new course of study, the student will have to submit a new request.

Enrollment

The enrollment procedure is carried out online by logging on to ***www.univpm.it***. There is a link with the application form on which it is required to provide personal details, such as the possession of the qualification required for admission to the course, and details of the fees payment. After receiving confirmation that the application has been accepted, the applicant will print the form, sign it and attach the following documents:

- Receipt of payment of the first fees installment.
- 2 identical recent passport-size photos signed on the back.
- Copy of identity document.
- For foreign students: a copy of residence permit and the original diploma (with certificated translation in Italian), together with a "statement of validity".

Sciences Registrar's Office Opening

Monday - Tuesday - Thursday - Friday
from 10.00 a.m. to 1.00 p.m.

Wednesday from 3.00 p.m. to 4.30 p.m.

The application form, together with the above mentioned documents, must be mailed to the address indicated on the form. The date reported on the postmark will certify that the application was submitted and mailed before the deadline.

Students from Abroad: Everything to Know

Guide to the Degree Courses
at the Departement of Life and Environmental Sciences

Before leaving for Italy, exchange students should complete a number of tasks and procedures to make their arrival and admission at the University easier. You can find complete information at this website:
http://www.study-in-italy.it/

REGISTRAR'S OFFICE AT UNIVPM

The Registrar's Office deals with all the administrative and didactic procedures concerning:

- Academic records, from enrollment to final graduation for students of all courses run either in Ancona or in other locations;
- Professional Practice Qualification (Esame di Stato);
- Enrollment in all courses.

The online enrollment service is accessible via the "Students" section of the website.

TUITION AND FEES

The total amount of Tuition and Fees that an enrolled student has to pay per year for a first-cycle degree, second cycle Master's degree (whether single cycle or not), is proportional to the financial situation of the applicant's family (except for distance learning courses, schools of specialization, training courses and Master's degree courses with fixed fees).

The payment is divided in two instalments, the first of which must be paid upon enrollment or matriculation and the second, if required, in May.
The amount of the first installment is Euro 450,39.
The amount of the second instalment is calculated on the basis of the income bracket and/or possible exemption. Students who do not apply for or are not entitled to reductions pay the maximum amount.

SCIENCE REGISTRAR'S OFFICE

4th building Faculty of Engineering - Monte Dago - Ancona
e-mail *(always indicate the sender's phone number)*
segreteria.agraria-scienze@univpm.it
Phone +39 71 2204344/4236

Please visit the Registrar's Office at Science: www.univpm.it/Students/Registrar's Office/Registrar's Office-Sciences.

ITALIAN LANGUAGE COURSES

CSAL (Centro di supporto all'apprendimento delle lingue - Language Learning Centre)
Piazzale Martelli
Phone +39 071 2207170
Fax +39 071 2207169

Since most of the lectures are given in Italian, it is strongly recommended that students have a good general knowledge of Italian in order to understand the lectures.

The CSAL runs a course of Italian as a foreign language for all the students on University LLP-ERASMUS and other international projects. The aim of this course is both to acquaint students with the Italian language and to provide more specific knowledge of the technical language used in each faculty. Lectures are given by expert teachers who develop a syllabus specifically tailored to meet the language needs of students from different cultural backgrounds and make use of modern technology. An entrance test is organised at the beginning of October prior to an intensive 40-hour course consisting of 8 hours tuition per week.

ADMINISTRATIVE PROCEDURES

Visas

Students from EU countries do not need a visa to enter and stay in Italy. Other international students must obtain a visa before arrival, unless exempt on the basis of agreements between Italy and the country of origin of the student. Application for the visa must be submitted in advance to the nearest Italian embassy or consulate. The reason for entry in Italy must be clearly explained.

Health

E.U students must bring their Health Card with them. All other students who wish to have access to healthcare services wil have to go to one of the places indicated below:

- Poliambulatorio Viale tel. +39 071 87051 (opening hours: from 7.30 a.m. to 12.30 a.m., Monday-Saturday; from 3.00 p.m. to 5.00 p.m. Monday-Friday);
- Poliambulatorio 2000 AN tel. 071 87051 - (opening hours: from 7.30 a.m. to 12.30 a.m., Monday-Saturday; from 3.00 p.m. to 5.00 p.m. Monday/Wednesday/Friday);
- Presidio Distrettuale Brecce Bianche tel. +39 071 87051 (opening hours: from 7.30 a.m. to 12.30 a.m., Monday- Friday; from 3 p.m. to 5 p.m. Tuesday).

E.U students just have to show their Health Card. If you buy drugs, remember to keep the receipt, so that you can request a reimbursement in your own country.

Residence Permits

If you want to stay in Italy for more than 3 months, you will have to go to the main police station (Questura) within a fortnight since your arrival to apply for a foreigner's residence permit:
Questura - Via Gervasoni n° 19 - Ancona.

You will need:

- A valid passport or ID card;
- 3 passport photos;
- A letter from the University proving that you are a student (this document will be given;
- to you by the External Relations Office - Ripartizione Relazioni Esterne).

Information from the Ministero degli Affari Esteri
http://www.esteri.it/MAE/EN/Ministero/Servizi/Stranieri/Opportunita/default.htm.

ERSU Regional Agency for the Right to Higher Education

As part of its institutional responsibilities this Agency arranges grants and assistance in favor of both the student body as a whole and individuals.
The main actions carried out by ERSU are:

- Scholarships.
- Student loans.
- Accommodation.
- Assistance for disabled students.
- Contributions for the participation of students in international exchange programs.
- Part-time work.

E.R.S.U. Regione Marche
Ente Regionale Diritto allo Studio Universitario
Vicolo della Serpe, 1 - 60121 Ancona
Tel. +39 071.227411 - Fax +39 071.57516
website www.ersu-ancona.it

Sports and Leisure Time

The University Sports Group (CSU) facilities are open to all students and staff. Facilities for most team games, such as basketball, football, volleyball, etc... as well as tennis, kickboxing, are available.
There is also a gym for aerobics, a swimming pool and some agreements for skiing, sailing, and horse riding. So bring your trainers with you, if you would like to take part in these activities during your stay in Ancona!
The University Sports Group aims to promote sport activities and initiatives; promote intra- and inter-university events; draw up plans for the development of sports infrastructures.
Contact the main CSU office or those open in the faculties (Engineering, Economics, and Medicine) to sign up for different courses, ask for information or apply for a CSU card.

Living in the city

Ancona offers excellent conditions for study and research in a stimulating and comfortable environment. It is located on the central Adriatic coast and it is one of Italy's most important ports. It is a city of great historical and artistic interest, and its historical city centre is full of monuments, elegant shops and characteristic meeting places for young people.
For tourists, it offers six kilometres of clean sandy beaches. Not far from Ancona, there are several holiday resorts along the Riviera del Conero which each year are awarded the Blue Flag by the Foundation for Environmental Education (FEE), in recognition of the high environmental and infrastructural standards achieved.

Territory and Surroundings

The Ancona promontory extends from the Mount Conero and stretches out into a series of cliffs, which have been given different names: Trave, Passetto, and Due Sorelle.
Between Passetto and the port, the shoreline is made by cliffs forming three hills, (the Cardeto, the Cappuccini and the Guasco,) where most of the old city centre and the wonderful Cathedral of San Ciriaco (built 1017 A.D.) are situated.

The Astagno hill in the south is crowned by the bastion of the Citadel. As is the case for all Adriatic towns, the sun rises from the sea; however Ancona is unique in that, because of the "elbow", during the summer the sun also sets over the sea, in front of Mount Ardizio, Pesaro, which marks the edge of the gulf of Ancona.

The fishing port, Mandracchio, which is located around the Lazzaretto designed by Vanvitelli, is very characteristic. To appreciate and feel the atmosphere, the best time for a visit is at dawn, when the fishing boats return and the fish market opens. At Passetto, on the lowest slopes of the Conero, a series of caves, fashioned long ago as simple shelters for boats, have been transformed into seaside dwellings, often fitted with all modern comforts. These caves can be reached walking from the Monumento ai Caduti (the War Memorial) and it is worth going for a stroll along the beach in order to see them.

Twelve kilometers from the town, on the way to Mount Conero, is the Portonovo peninsula. Here there are two noteworthy buildings: the Guard Tower, built by order of Pope Clement XI; and the five-naved Basilica dedicated to Santa Maria di Portonovo.

South of Ancona there are various places of grat touristic interest: Sirolo; Numana; Loreto with its sanctuary; Recanati, birth place of the poet Giacomo Leopardi; Camerano and Castelfidardo, home of the accordion factories. To the north there are Senigallia and Jesi and, in the Fabriano area, the remarkable Frasassi caves.

A.Y. 2014/2015

MAP OF POLO MONTE DAGO

A ENTRANCE
Via Brecce Bianche (upper)

B ENTRANCE
Via Brecce Bianche (bottom)

1 SCIENCE (BUILDING 1)
Front Office / Lecture Halls S2 S3 S4 S5 S6 SM / Didactic Labs / Ny-MaSBIC lab

2 SCIENCE (BUILDING 2)
Department of Life and Environmental Sciences / Didactic Unit / GIS Room / Adminstrative Secretary

3 SCIENCE (BUILDING 3)
Department of Life and Environmental Sciences / "Aula Azzurra" (Azure Hall)

4 COMPLESSO BELLUSCHI
Department of Life and Environmental Sciences / Labs at Q150

5 COMPLESSO BELLUSCHI
Department of Life and Environmental Sciences / Labs at Q165

6 PALAZZINA ORSINI
Department of Life and Environmental Sciences Labs, Ground floor, 1st floor, 2nd floor

7 AULA "BARTOLA" - "AULA MAGNA AGRARIA" (GREAT HALL)

8 STUDENTS' OFFICE

9 INFRASTRUCTURE MARINE / AQUATIC AQUARIA AND MESOCOSMS

10 LABORATORY FOR OCEANIC EXPERIMENTS

11 ENGINEERING
Lecture Halls G1, G2, "Aula Magna di Ateneo" (Great Hall)

BAS SOUTH LECTURE HALLS
Halls A4, A5, A6, A9/10, A12, B6, B9, B10, B11, B12

CONTACTS

RECTORATE
Rector: Prof. Ing. Sauro Longhi
Vice-Rector: Prof. Gian Luca Gregori

P.zza Roma, 22 - 60121 Ancona
Phone +39 071 2202214
Fax +39 071 2202213

SCIENCES DIDACTIC UNIT
Director: Prof. Paolo Mariani
Tel. +39 071 2204644

Via Brecce Bianche - Ancona
Phone +39 071 2204511 - 4512 - 4645
Fax +39 071 2204513

Reception
Phone +39 071 2204660
didattica.scienze@univpm.it
www.disva.univpm.it

Opening times
Monday - Friday from 8.30 a.m. to 1.30 p.m.
Wednesday from 3.00 p.m. to 4.30 p.m.

REGISTRAR'S OFFICE FOR SCIENCES
Engineering, 4° building
Monte Dago - Ancona
Phone +39 071 2204341
segreteria.agraria-scienze@univpm.it

Opening Hours

To 31 August 2014
Monday - Thursday from 11.00 a.m. to 1.00 p.m.
Wednesday from 3.00 p.m. to 4.30 p.m.

From 01 September to 31 December 2014
Monday - Tuesday - Thursday - Friday
from 10.00 a.m. to 1.00 p.m.
Wednesday from 3.00 p.m. to 4.30 p.m.

MAURIZIO PARADISI Photo / **TONIDIGRIGIO** Graphic Design / **ERREBI GRAFICHE RIPESI** Print

SCIENCES DIDACTIC UNIT
Via Brecce Bianche 60131 (AN)
Phone +39 071 2204511 - 4512 - 4645
Fax +39 071 2204513
www.disva.univpm.it