







Annex A

PH.D. COURSE OF AGRICULTURE, FOOD AND ENVIRONMENTAL SCIENCES

Coordinator Prof. Bruno Mezzetti

Scientific	AGR/01, AGR/02, AGR/03, AGR/05, AGR/07, AGR/09, AGR/10, AGR/11, AGR/12, AGR/13, AGR/14, AGR/15, AGR/16, AGR/17, BIO/03, BIO/10
Areas:	AGR/16, AGR/17, BIO/03, BIO/10

	Examination based on qualifications: maximum score 40/100 Interview: maximum score 60/100
Interview	26th July 2023, at 9.30 a.m. CET in presence at Aula D3A Telematic mode (TEAMS Platform) for candidates residing and / or domiciled abroad who request it when submitting the application
covered by the exam:	The interview consists of n. 2 identical questions for all candidates, concerning the previous activities carried out by the candidate and the proposal of a research activity to be developed within the PhD themes. The knowledge of a foreign language will also be tested by reading a passage (English, French, Spanish or German).

N. 9 ordinary positions	In detail: n. 4 with scholarship financed by the University n. 1 with scholarship co-financed by Ministerial Decree no. 118/2023 – (PNRR Research project and University) n. 1 with scholarship co-financed by Ministerial Decree no. 117/2023 and by Salvi Vivai S.S. Agricultural Company with research project entitled " <i>Development of protocol techniques for in vitro multiplication and subsequent evaluation of production efficiency and phenotypic matching by agamic multiplication of small-fruited strawberry" n. 1 with scholarship co-financed by Ministerial Decree no. 117/2023 and by the F.IN.A.F. srl Company with a research project entitled "<i>Radical Wellness</i>"</i>
	n. 2 without scholarship
N. 1 position only for students with a degree obtained abroad	with scholarship financed by the University









PH.D. COURSE IN ECONOMICS

Coordinator Prof. Marco Cucculelli

Scientific Areas:	SECS-P/01, SECS-P/02, SECS-P/03, SECS-P/06, SECS-P/05, SECS-P/12, SECS-S/03, SPS/09, SPS/07

	Examination based on qualifications: maximum score 30/100 Interview: maximum score 70/100
schedule	25th July 2023 at 10.00 a.m. CET in presence at the Faculty of Economics Telematic mode (TEAMS Platform) for candidates residing and / or domiciled abroad who request it when submitting the application
Examination topics:	Microeconomics - Macroeconomics - Mathematics - Statistics - Econometrics - Finance

N. 8 ordinary positions	In detail: n. 4 with scholarship financed by the University n. 1 with scholarship co-financed by Ministerial Decree no. 118/2023 (Public Administration research project and University) n. 1 with scholarship co-financed by Ministerial Decree no. 118/2023 (Cultural Heritage research project and University) n. 2 without scholarship
----------------------------	--

The following documents are required when submitting the application, in addition to other qualification documents, in accordance with the art.4 of the Call for Applications:

- A copy of the Master Thesis
- Cover letter (max. 2 documents)
- A Research work (max. 3 pages)



program.

Scientific







PH.D. COURSE OF MANAGEMENT AND LAW

with the following curricula:

- 1) BUSINESS ECONOMICS AND MANAGEMENT
- 2) ECONOMIC LAW

Coordinator Prof.ssa Caterina Lucarelli

Scientific Areas:	SECS-P/07, SECS-P/08, SECS-P/11, SECS-P/10, SECS-S/06, IUS/01, IUS/07, IUS/12, IUS/10, IUS/09
Method of selection	Examination based on qualifications: maximum score 30/100 Interview: maximum score 70/100
Interview schedule	25 th July 2023 at 2.00 p.m. CET in presence at Sala Consiglio DIMA Telematic mode (TEAMS Platform) for candidates residing and / or domiciled abroad who request it when submitting the application
Examination topics:	Curriculum "Business Economics and Management": Topics concerning the economic-business area, such as accounting and budgeting, planning and monitoring, organization, strategy, marketing, finance, financial intermediation. Candidate's motivations: research project. Curriculum "Economic Law": Business and contracts. Arbitration and jurisdiction. Arbitration in international relationships. Dejurisdictionalization. Competition law and market regulation. The role of independent authorities. The protection of weak parties and market efficiency. Public procurement. New trends in tax law. Intergenerational transmission of wealth. Candidate's motivations: research project. The interview is designed to test the knowledge of the English and Italian languages. In order to carry out the interview, basic knowledge of Italian Language is required; the candidates who do not meet this requirement will not be considered suitable for the admission to the PhD

The following documents are required when submitting the application, in addition to other qualification documents, in accordance with the art.4 of the Call for Applications:

- A copy of the Master Thesis

A synthetic Research work to be discussed during the interview









PHD SCHOOL IN ENGINEERING SCIENCE

PH.D. COURSE OF CIVIL, ENVIRONMENTAL, AND BUILDING ENGINEERING AND ARCHITECTURE

with the following curricula:

- 1) CIVIL, ENVIRONMENTAL AND BUILDING ENGINEERING AND ARCHITECTURE
- 2) DIGITAL, SUSTAINABLE AND RESILIENT BUILT ENVIRONMENTS

Coordinator Prof. Francesco Fatone

Scientific
Areas:

ICAR/01, ICAR/02, ICAR/04, ICAR/06, ICAR/07, ICAR/08, ICAR/09, ICAR/10, ICAR/11, ICAR/14, ICAR/17, ICAR/18, ING-IND/25, GEO/05, ICAR/03, IUS/07, ICAR/19, CHIM/07, ICAR/20, MAT/03

Method of selection	Examination based on qualifications: maximum score 30/100 Interview: maximum score 70/100
Interview schedule	27th July 2023 at 9.30 a.m. CET in presence at the aula IDRA of the DICEA Department Telematic mode (TEAMS Platform) for candidates residing and / or domiciled abroad who request it when submitting the application
Examination topics:	Curricula "Civil, Environmental and Building Engineering and Architecture" and "Digital, Sustainable and Resilient Built Environments" Technical Architecture, Building Production, Construction Science, Construction Technique, 4 PF Concrete and Steel Structures, Buildings in seismic areas, Road materials and pavements, Road maintenance and safety, Hydraulics, Hydraulic constructions, Fluid mechanics, Environmental hydraulics, Maritime hydraulics, Maritime constructions, Geotechnics, Land Foundations and Consolidation, Special Geotechnical Works, Environmental Geotechnics, Applied Geology, Chemical Plants, Sanitary Environmental Engineering, History of Architecture, Design, Survey, Architectural
	Composition, Restoration, Topography, Safety at work and on construction sites, History of architecture, Drawing, Relief, Architectural Composition, Restoration, Geometry.

In detail:

- n. 4 with scholarship financed by the University
- n. **2** with scholarship co-financed by Ministerial Decree no. 118/2023 (PNRR Research project and University)
- n. **1** with scholarship co-financed through the Development Projects by excellence department DICEA for the curriculum "Digital, Sustainable and Resilient Built Environments"
- n. 1 with scholarship financed through the Cohesion/SISMA Project

N. 16 ordinary positions

- n. **1** with scholarship co-financed by Ministerial Decree no. 117/2023 and by Amplia Infrastructures Spa Company for the research project entitled "Advanced characterization of plant-packed draining and hypodraining mixtures to evaluate the influence of milled content and tepid production temperatures"
- n. **1** with scholarship co-financed by Ministerial Decree no. 117/2023 and by the BMI srl Company for the research project entitled "Study, analysis and development of advanced systems for monitoring structures and infrastructure"
- n. 1 with scholarship co-financed by Ministerial Decree no. 117/2023 and by Geoteam Associati Studio tecnico geom. Samuele Crucianelli and ing. Vania Feliziani for the research project entitled "Disaster risk reduction and climate change adaption. Innovative technologies and tools for spatial planning of urban systems and historic centers."
- n. 5 without scholarship









N. 1 position only for	
a degree	with scholarship financed by the University
obtained abroad	



Scientific







PH.D. COURSE OF INFORMATION ENGINEERING

with the following curricula:

- 1) BIOMEDICAL, ELECTRONICS, TELECOMMUNICATION ENGINEERING AND NANOTECHNOLOGY
- 2) INFORMATICS, MANAGEMENT AND AUTOMATICS ENGINEERING

Coordinator Prof. Franco Chiaraluce

ING-INF/01, ING-INF/02, ING-INF/03, ING-INF/04, ING-INF/05, ING-INF/06, ING-IND/31, ING-INF/07,

Areas:	MAT/09, SECS-P/06, FIS/01, BIO/09, MED/09, ING-IND/35, ING-IND/33, CHIM/07
Method of	Titles: maximum score 30/100
selection	Exams (interview): maximum score 70/100
Interview schedule	28th July 2023 at 9.00 a.m. CET in presence at the Aula AT2 of the Faculty of Engineering, Via Brecce Bianche 12 - Ancona Telematic mode (TEAMS Platform) for candidates residing and / or domiciled abroad who request it when submitting the application
Examination topics:	Curriculum "Biomedical, Electronics, Telecommunication Engineering and Nanotechnologies": General issues on the following interdisciplinary topics: Electromagnetic fields; Antennas; Microwaves; Photonics; Nano-electronics and Nano-photonics; Biological systems models; Bioengineering of the physiological systems; Biomechanics of movement; Data processing and biological signals; Electronics; Telecommunications; Electrotechnics; Electrical measurements; Microelectronics; Technologies for telecommunications systems; Circuits and algorithms for signal processing; Cryptography and techniques for information protection; Network security. Curriculum "Informatics, Management and Automatics Engineering": General issues on the following interdisciplinary topics: Automatics; Control and filtering; Economics-management engineering; Interpretation and simulation of the behavior of physiological systems; Mechatronics; Operational research; Robotics; Information systems; Intelligent systems; Data analytics; Data science; Software security

	E
N. 12 ordinary positions	In detail: n. 5 with scholarship financed by the University n. 1 with scholarship co-financed by Ministerial Decree no. 118/2023 (Public Administration research project and University) n. 1 with scholarship co-financed by Ministerial Decree no. 117/2023 and by the Talent srl Company for the research project entitled " <i>Study of advanced mechatronic tools for educational robotics</i> " n. 1 with scholarship co-financed by Ministerial Decree no. 117/2023 and by the Peacs BV Company for the research project entitled " <i>Electro-mechanical imaging of the heart</i> " n. 1 with scholarship co-financed by Ministerial Decree no. 117/2023 and by the Ariston Spa Company for the research project entitled " <i>Development of Advanced Control Algorithms for Heating-Cooling-Sanitary Water Systems</i> "
	n. 3 without scholarship
N. 1 position only for students with a degree obtained abroad	with scholarship financed by the University









A copy of the **list of University exams** taken and grades achieved is required when submitting the application, in addition to other qualification documents, in accordance with art. 4 of the Call for Applications.









PH.D. COURSE OF INDUSTRIAL ENGINEERING

with the following curricula:

- 1) MECHANICAL ENGINEERING
- 2) ENERGY ENGINEERING
- 3) MATERIALS ENGINEERING

Coordinator Prof. Giovanni Di Nicola

Scientific	ING-IND/06, ING-IND/13, ING-IND/14, ING-IND/15, ING-IND/21, ING-IND/16, ING-IND/17, ING-IND/09, ING-
Areas:	IND/10, ING-IND/11, ING-IND/22, ING-IND/12, FIS-01, MAT/03, MAT/05, ING-IND/08

34 11 1 6	T:U : 20 (4.00
Method of	Titles: maximum score 30/100
selection	Exams (interview): maximum score 70/100
Interview schedule	26 th July 2023 at 9 a.m. CET in presence at Aula EN4 - Faculty of Engineering - Polo Montedago - via Brecce Bianche - Ancona. Telematic mode (TEAMS Platform) for candidates residing and / or domiciled abroad who request it when submitting the application
Examination topics:	The candidates will be interviewed about their past and present research activities and about their proposal for a Ph.D. research project, related to the topics of the industrial engineering course, with particular reference to the research fields related to the three curricula, as listed below: Curriculum "Mechanical Engineering": Drawing and Methods of Industrial Engineering, Applied Mechanics, Robotics, Metallurgy, Mechanic and Thermal Measurements, Biomedical Instrumentation, Mechanical Design and Machine Construction, Manufacturing systems and technologies. Curriculum "Energy Engineering": Energetics, environmental engineering physics, Industrial Engineering physics, Fluid mechanics, Industrial plants, Mechanical plants, Logistics, Machines, Energetic systems. Curriculum "Materials Engineering": Biomaterials, Corrosion and materials protection, Construction material science and technology, Plastic and composite technolog









In detail:

- n. **5** with scholarship financed by the University
- n. **1** with scholarship co-financed by Ministerial Decree no. 118/2023 (Public Administration research project and University)
- n. 2 with scholarship through the Cohesion/SISMA Project;
- n. 1 with scholarship financed by the National Center for Sustainable Mobility MOST project
- n. 2 with scholarship funded by the EU Horizon European project Agilehand
- n. 1 with scholarship funded by the European Horizon EU project GreenMarine
- n. **1** with scholarship funded by the EU Horizon EU project Reconstruct "Integrated solutions for circularity in buildings and the construction sector"
- n. 1 with scholarship co-funded by Ministerial Decree no. 117/2023 and the Company I-Labs Industry
 S.Car.L. for the research project entitled "Applications of artificial intelligence and new ICT technologies to the control of industrial robots"

N. 27 ordinary positions

- n. 1 with scholarship co-funded by Ministerial Decree no. 117/2023 and the Company Liferesult srl for the research project entitled "Study and development of a software tool for the management of work-related risks"
- n. **1** with scholarship co-funded by Ministerial Decree no. 117/2023 and the Company Citieffe srl for the research project entitled "*Development of a diaphyseal and metaphyseal fracture diagnosis system installable on external long bone fixators*"
- n. 1 with scholarship co-funded by Ministerial Decree no. 117/2023 and the Clivet Spa Company for the research project entitled "Innovative control logics for more efficient management of heat pumps"
- n. 1 with scholarship co-funded by Ministerial Decree no. 117/2023 and the Nextlab Srl Company for the research project entitled "Study and development of data-driven methods and tools to support the product development process"
- n. **1** with scholarship co-funded by Ministerial Decree no. 117/2023 and the Company Centauroos srl for the research project entitled "*Use of recycled aggregates for cement mix suitable for 3d printing*"
- n. **1** with scholarship co-funded by Ministerial Decree no. 117/2023 and the Company CRH Nederland BV for the research project entitled "*Identification, validation and development of Admixtures of low-carbon concrete*"
- n. 7 without scholarship

N. 1 position only for students with a degree obtained

abroad

students with With scholarship financed by the University









PH.D. SCHOOL OF MEDICINE AND SURGERY PH.D. COURSE OF HUMAN HEALTH

Coordinator Prof. Mario Guerrieri

Scientific Areas:	BIO/09, BIO/16, BIO/17, MED/02, MED/04, MED/05, MED/06, MED/09, MED/12, MED/13, MED/15, MED/16, MED/18, MED/19, MED/23, MED/25, MED/26, MED/27, MED/30, MED/31, MED/33, MED/34, MED/35, MED/44, MED/46
	Examination based on qualifications: maximum score 40/100 Interview: maximum score 60/100
Interview schedule	25th July 2023 at 3 p.m. CET in presence at Aula O – Polo Murri Telematic mode (TEAMS Platform) for candidates residing and / or domiciled abroad who request it when submitting the application
Examination topics:	Physiology, Human Anatomy, Histology, History of Medicine, General Pathology and Clinical Pathology, Medical Oncology, Internal Medicine, Gastroenterology, Endocrinology, Blood Diseases, Rheumatology, General Surgery, Plastic Surgery, Neurology, Neurosurgery, Musculoskeletal System Diseases, Physical Medicine and Rehabilitation, Cutaneous and Sexually Transmitted Diseases, Occupational Medicine.

N. 13 ordinary positions	In detail: n. 5 with scholarship financed by the University n. 1 with scholarship co-financed by Ministerial Decree no. 118/2023 – (PNRR Research project and University)
	n. 1 with scholarship co-financed by Ministerial Decree no. 117/2023 and the Farinelli Onlus Foundation for the research project entitled " <i>Nursing and clinical monitoring of immune and endothelial complications in patients with acute Leukemia, Lymphoma and Myeloma undergoing cellular therapies (Hemopoietic Stem Cell Transplantation and CAR-T)" n. 1 with a scholarship co-financed by Ministerial Decree no. 117/2023 and Kos Care Srl Company for the research project entitled "<i>Technologically assisted rehabilitation for functional recovery of the upper limb after a stroke</i>"</i>
	n. 2 with scholarship financed by the research project Heal Italia
	n. 3 without scholarship
N. 1 position only for students with a degree obtained abroad	with scholarship financed by the University

When submitting the application, in accordance with the art. 4 of the Call for Applications, students shall submit, in addition to other qualification documents, the following documents:

- Max. 5 research works published on SCOPUS and WOS. Only English publications rewieved on Scopus and Wos will be considered valid. Abstracts or other types of publications will not be examined.
- A research work in English, as defined in the model attached to the Call for Applications. The presentation of the research should be in English (annex B). There will be an English test for those who won't present their work in English.









PH.D. COURSE OF BIOMEDICAL SCIENCES

Coordinator Prof. Francesco Paolo Busardò

Scientific
Areas:

BIO/10, BIO/11, BIO/12, BIO/13, BIO/14, FIS/07, M-FIL/02, MED/01, MED/07, MED/08, MED/10, MED/11, MED/17, MED/20, MED/24, MED/28, MED/36, MED/37, MED/38, MED/40, MED/41, MED/42, MED/43, MED/46, MED/49, MED/50

	Examination based on qualifications: maximum score 40/100 Interview: maximum score 60/100
Interview	25 th July 2023 at 9.00 a.m. CET in presence at Aula O – Polo Murri
schedule	Telematic mode (TEAMS Platform) for candidates residing and / or domiciled abroad who request it when submitting the application
	Applied Physics, Biochemistry, Applied Biology, Pharmacology, Medical Statistics, Microbiology and Clinical Microbiology, Pathological Anatomy, Respiratory System Diseases, Cardiovascular Diseases,
Examination	Infectious Diseases, Pediatrics Surgery and Child Health, Urology, Odontostomatological Diseases, Otolaryngology, Diagnostic Imaging and Radiotherapy, Neuroradiology, General and Specialized
-	Pediatrics, Gynecology and Obstetrics, Anaesthesiology, General and Applied Hygiene, Forensic Medicine, Physiology, General Pathology.

N. 13 ordinary positions	In detail: n. 5 with scholarship financed by the University n. 1 with scholarship co-financed by Ministerial Decree no. 118/2023 – (PNRR Research project and University)
	n. 2 with scholarship financed by the research project Heal Italia
	n. 1 with scholarship financed by the Istituto Superiore di Sanità for the research project entitled "Pharmacatoxicology of new synthetic opiods and analytical strategies for their determination in conventional and unconventional biological matrices"
	n. 4 without scholarship
N. 1 position only for students with a degree obtained abroad	with scholarship financed by the University

When submitting the application, in accordance with the art. 4 of the Call for Applications, students shall submit, in addition to other qualification documents, the following documents:

- Max. 5 research works published on SCOPUS and WOS. Only English publications rewieved on SCOPUS and WOS will be considered valid. Abstracts or other types of publications will not be examined;
- A research work in English, as defined in the model attached to the Call for Applications (annex B). The presentation of the research should be in English. There will be an English test for those who won't present their work in English.









PH.D. COURSE OF LIFE AND ENVIRONMENTAL SCIENCES

With the following curricula:

- 1) MARINE BIOLOGY AND ECOLOGY
- 2) BIOMOLECULAR SCIENCES
- 3) CIVIL AND ENVIRONMENTAL PROTECTION

Coordinator Prof. Paolo Mariani

Scientific	
Areas:	

FIS/07, CHIM/01, CHIM/03, CHIM/06, GEO/01, GEO/12 M-GGR/01, BIO/01, BIO/04, BIO/05, BIO/06, BIO/07, BIO/09, BIO/10, BIO/11, BIO/13, BIO/16, BIO/18, BIO/19, MED/07, AGR/16, ING-IND/26

Method of selection

Examination based on qualifications: maximum score 30/100. Max 20/100 for the Research Proposal submitted in relation to the topics identified for the XXXIX cycle as part of the PhD research activities and framed within the curricular organization of the course and indicated in the point "Examination topics". Minimum score for admission to the interview is 15/100.

Interview: maximum score 70/100

Dates and interview

27th July 2023 at 9.00 a.m. CET in presence at the Aula Azzurra (Scienze3, Monte Dago) or in **location of the** telematic mode (Teams Platform), chosen by the candidate during the submission of the application

> Candidates will be interviewed on subjects related to the Academic Fields and Disciplines List (Settori Scientifico-Disciplinari) of reference for the Doctoral Course and on their previous scientific activities (including the topic of their master thesis, or in progress for the achievement of the qualification that allows access to the Doctorate). They will be also asked to present their PhD research proposal. The research proposal should refer to one of the topics listed below, and identified among the different scientific areas of the PhD program.

The topics identified for the Ordinary Session of the XXXIX cycle are as follows:

Curriculum Biomolecular Sciences:

- IR spectroscopy for the analysis of biological fluids: a new tool for early stage diagnosis
- Cardiovascular diseases: implications of the host-microbiota interaction in conditions of reduced sensitivity to glucocorticoids (*scholarship co-financed by Ministerial Decree no. 117/2023 and by* Società Laboratorio Analisi AB srl)

Examination topics:

- Development and delivery of anti-tumor agents derived from flavones targeting the specific Tyrosine Kinase EGFR receptors
- OxInflammation and mitochondrial dynamics in pathological conditions associated with neurological disorders and cognitive impairment.
- The use of functional yeasts and its metabolites as biotechnological tool for functional food and beverages
- Strategies to reduce antibiotic resistance spread by using natural compounds or alternative drugs with antimicrobial activity against multi-resistant bacteria.

Curriculum Marine Biology and Ecology:

- Conservation of the mesophotic marine biodiversity and scientific diving techniques.
- Effects of anthropogenic threats on Mediterranean Sea turtle reproduction and embryo development









Genetics and genomics as tools to improve monitoring of cetaceans in Mediterranean sea.

Curriculum Civil and Environmental Protection

- New microscopic techniques for the detection of microplastics in biological samples
- Cellular mechanisms behind tolerance and responsiveness to multiple environmental stressors in marine species
- Towards the implementation of the new European Critical Raw Materials Act: development of innovative approaches for the extraction of strategic metals from residues, based on biotechnologies and/or other environmentally sustainable processes
- Air quality and industrial and waste management emissions: impacts and source apportionment evaluation (scholarship financed by Società Ascoli Servizi Comunali srl)

Candidates will also explain the reasons for choosing the topic of their Research Proposal and how they intend to develop it in practice. The Committee will verify the aptitude of the candidate for scientific research. Linguistic proficiency in English will also be assessed.

Overall evaluation criteria: clarity, competence and methodological accuracy of exposition.

In detail:

- n. 4 with scholarship financed by the University
- n. **2** with scholarship co-financed by Ministerial Decree no. 118/2023 (Public Administration research project and University)

N. 11 ordinary positions

- n. 1 with scholarship financed by Società Ascoli Servizi Comunali srl for the research project entitled "WEB platform for dispersal model to assess the impact of Emissions generated at the Waste Treatment and Disposal Facility"
- n. **1** with scholarship co-financed by Ministerial Decree no. 117/2023 and the Società Laboratorio Analisi AB srl for the research project entitled "Cardiovascular disease: implications of host-microbiota interaction under conditions of reduced glucorticoid sensitivity"
- n. 3 without scholarship

N. 1 position only for students with a degree obtained abroad

with scholarship financed by the University

When submitting the application, in accordance with the art. 4 of the Call for Applications, students shall submit, in addition to other qualification documents, the following documents:

 A PhD research proposal in English, as defined in the model attached to the Call for Applications (annex C) and referring to the issues identified in the context of doctoral research activities. The presentation of the research will be exposed if possible in English during the interview.

Please consider that:

- candidates may submit only one research proposal;
- In case of admission, the research proposal submitted will not necessarily be assigned to the student.
- **Abstract of the thesis carried out** (or in progress) for the achievement of the qualification that allows access to the Doctorate (Specialist or master's degree / old system degree / AFAM second level academic deg) of max. 5.000 characters (spaces included).







