

Minor in Blue Economy and Growth

Courses' Catalogue



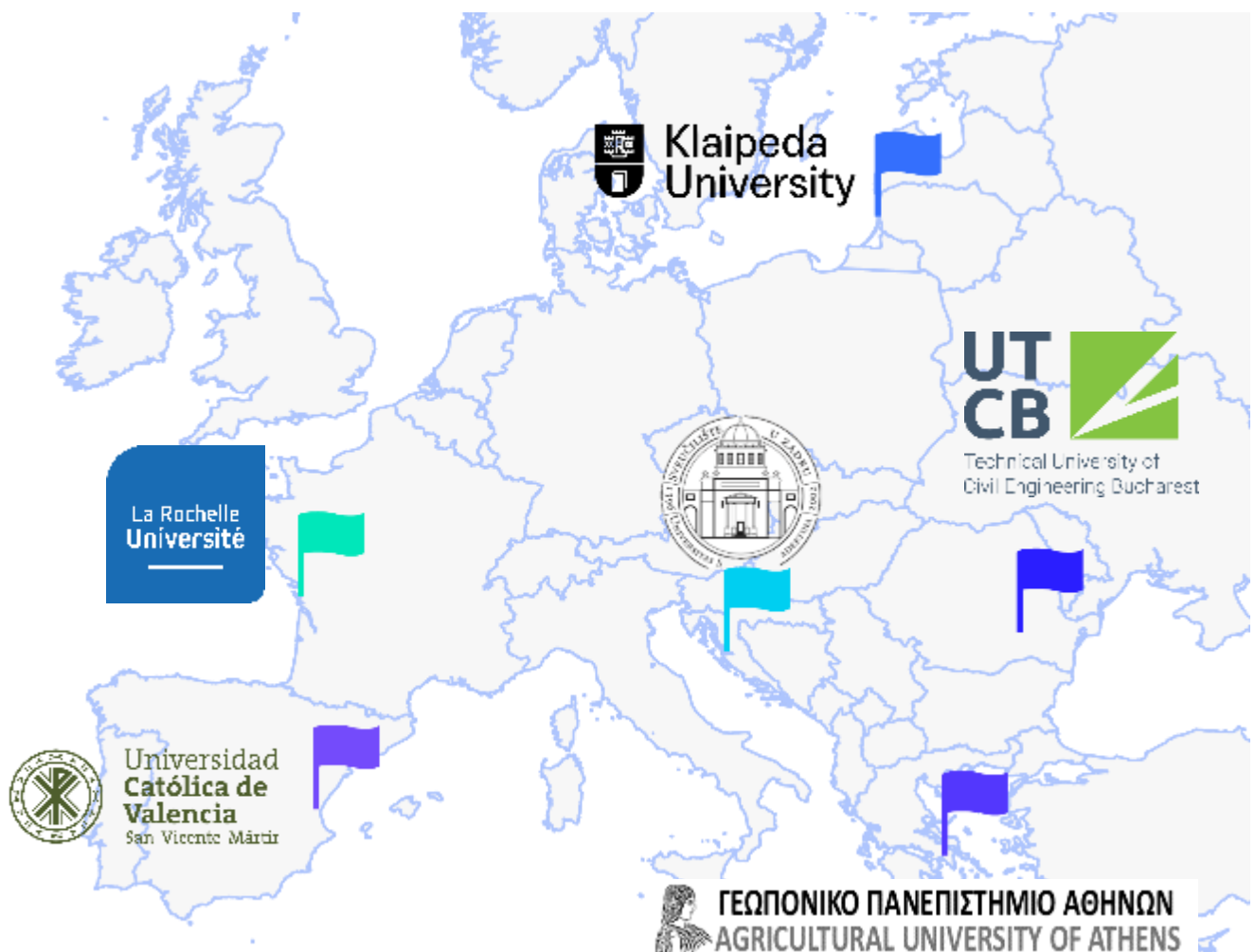
Co-funded by the
Erasmus+ Programme
of the European Union

Your university at EU-CONEXUS

The European University for Smart Urban Coastal Sustainability (EU-CONEXUS) is a transnational European higher education and research institution that covers the smart urban sustainable coastal development from a global point of view.

EU-CONEXUS is formed by 9 European universities, which are located in Croatia, Greece, France, Lithuania, Romania and Spain:

- University of Zadar (UNIZD),
- Agricultural University of Athens (AUA),
- La Rochelle Université (LRUniv),
- Klaipeda University (KU),
- Technical University of Civil Engineering Bucharest (UTCB),
- Universidad Católica de Valencia (UCV),
- University of Rostock (UROS)
- Waterford Institute of Technology (WIT)
- Frederick University (FredU)



EU-CONEXUS has chosen a focus on urban and semi-urban coastlines because they are increasingly densely populated areas and very important for trade, aquaculture and fisheries, energy, tourism. At the same time, these coastlines are the most vulnerable areas with regard to the consequences of climate change.

Universities and research institutions have a central role to play in promoting the 'Blue Economy' and 'Blue Growth' and to contribute to the skills and competences of the graduates who can work in a complex and challenging labour market. New approach is needed with regard to the organisation of studies and research therefore, 9 universities joined together to merge their strength and know-how in interdisciplinary short-term and degree programmes and to offer the students to study at international inter-campus European University.

Studying at any of above-mentioned university, you can also study at EU-CONEXUS. Choose international courses, joint short-term and degree programmes, benefit from academic and cultural exchange, and receive not only up-to-market knowledge and competences but also enriched curricula, which will be reflected in your European degree and Diploma Supplement.

EU-CONEXUS OPENS UP OPPORTUNITIES TO INTERNATIONAL CURRICULA, CAREER AND EXPERIENCE



What is Minor and how it is compatible with your Bachelor's study programme

EU-CONEXUS Minor programmes are one of these options to construct flexible, international, multidisciplinary curricula and to receive up-to-date competences that are highly required in the labour market. The 9 EU-CONEXUS universities created international joint Minor programmes, which you can choose studying Bachelor's at your university.

Minor's programme (sometimes called specialisation) is a specific interdisciplinary set of courses in the same or different field of studies, that you can select freely and make up your own set choosing 30 ECTS throughout your studies (for example, one course during one semester parallel to other courses of your chosen study programme).

- Depending on your study programme, you can choose Minor programme **as a part** or **additionally** to your study curricula.
- EU-CONEXUS Minor programme consists of **five sectors**; each of them offers several courses that you may choose from.

In order to receive Minor's certificate, during your studies you have to be studied **30 ECTS** from:

- minimum **2 different sectors**;
- **3 different** (one could be yours) **EU-CONEXUS universities**,
- **5 courses** in total, maximum 2 courses from your home university.

At the end of your Bachelor's studies you will be awarded with Minor's certificate, and all the courses will be included in your Diploma Supplement.

If you do not wish to attend the full Minor's programme, you can always choose only the courses that interest you and enjoy some of the benefits of the EU-CONEXUS experience and to have them listed in your Diploma Supplement¹.

EU-CONEXUS Minor's programme is also an **academic exchange** experience. Choosing any of EU-CONEXUS courses you will be studying with classmates from different universities in Europe and will gain not only knowledge but also learn about different cultures, languages, markets and gain intercultural experience and improve your English language skills. Each EU-CONEXUS course is considered as academic exchange (similar to Erasmus+) and will be included in the Diploma Supplement to prove your international curriculum.

¹ Minor's certificate will be awarded **only** to the students who follow the general requirements of Minor's.

Minor in Blue Economy and Growth

EU-CONEXUS invites all students of Bachelor's to shape freely their study programmes and to choose the Minor in Blue Economy and Growth.

Seas and oceans are drivers for our economy and have great potential for innovation and growth. Blue economy promotes a sustainable use of ocean resources for economic growth while preserving the health of ocean ecosystems.

The EU-CONEXUS Minor in Blue Economy and Growth provides you competences and professional skills related to the main industrial and service sectors of the blue economy, which are among the main established and emerging economic maritime sectors:

- Aquaculture and Fisheries
- Marine Biotechnology
- Ocean Energy
- Transport and Shipbuilding
- Coastal and Maritime Tourism

The learning outcomes of this minor will be achieved under practical and professional activities.

Shape your Minor and enrich your knowledge and proficiency in Sustainable Blue Economy!

How to obtain the EU-CONEXUS Minor's certificate



30 ECTS
(6 ECTS per course)



5 courses per Minor



min. 3 universities



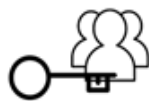
min. 2 sectors



a) part of your study programme
or
b) extra ECTS



English B2



For all BSc students;
(groups of 10-30 students)



Feb 2021



Mobility:
2020/21: virtual
2022 → blended or virtual



Diploma Supplement
+ EU-CONEXUS Minor certificate

How to choose sectors and courses

- **Choose the sectors.** Sectors are the areas into which the Minor's programme is divided. The Minor's programme consists of 5 thematic areas (sectors) into which the Minor of Blue Economy and Growth is focused. You can choose freely the sectors of your interest or the most relevant to your Bachelor's studies. To receive Minor's certificate you must have chosen courses from minimum 2 sectors by the end of your Bachelor's studies.
- **Choose the topic.** Topic is a field of study that could be comprised by 1 (then the title matches with the title of the course) or more courses with similar or compatible contents. Each sector consists of 3 topics, 15 topics in total. Number of topics you choose has no effect to receive Minor's certificate.
- **Choose the courses.** Course refers to a series of lectures, discussions, or other lectures in a particular subject. Course lasts one academic term and is measured in European credits (ECTS). All EU-CONEXUS Minor's courses consist of 6 ECTS and are taught in *English*. You can choose 1-2 courses per semester (consult with the coordinator at your university). Pay attention in which semester, by which university the course is offered and read the prerequisites to be eligible to study the course. The course may be taught only virtually where you will be studying with the classmates from 6 different universities, or to include short term academic exchange at the university which offers this course when you can meet all the teachers and classmates in real life (blended) ([see Appendix 1](#)). To receive Minor's certificate you must have chosen courses from minimum 3 different universities (one of them could be your university) by the end of your Bachelor's studies.
- **Remember:** The Minor's courses can be part of your predefined study programme or extra 'optional' courses.
- You can join the Minor's programme starting from any semester. The first intake is spring semester of 2020/2021. Just note, if you take 1 course per semester, you will need 5 semesters to gather required 30 ECTS of the Minor's programme. [Sign up NOW!](#)

| | | |
|--|--|---------|
| Aquaculture and Fisheries | | Sector |
| 1. Sustainable Aquaculture | | Topic |
| 1.1. Aquaculture (UCV) | | |
| 1.2. Aquaculture (AUA) | | Courses |
| 2. Fisheries (UCV) | | |
| 3. Built Facilities for Aquaculture (UTCB) | | |

How to apply

Minor courses can be offered by your home university or any other EU-CONEXUS university. All you need to do is to choose the courses and fill in the application at your home university.

Please check your university's website or contact Minor Officer at your university for more details. One thing we can assure: the procedure is simple, and paperwork is minimal, while Minor Officer will always consult and help you with everything.

Contacts of Minors' officers

| University | Name | Surname | E-mail address |
|------------|------------|------------|--|
| UCV | Malgorzata | Musinska | malgorzata.musinska@ucv.es |
| AUA | Vera | Charitou | vera.charitou@aua.gr |
| LRUniv | Stephanie | Chiron | stephanie.chiron@univ-lr.fr |
| UTCB | Ramona | Diac | ramona.diac@utcb.ro |
| KU | Ingrida | Rukavice | ingrida.rukavice@ku.lt |
| UNIZD | Ljerka | Morović | lmorovic@unizd.hr |
| UROS | Mawuena | Martens | mawuena.martens@uni-rostock.de |
| WIT | Nabla | Kennedy | nkennedy@wit.ie |
| FU | Varnavas | Mytilineos | ad.mv@frederick.ac.cy |

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| Sectors and courses | |
|---|--|
| Aquaculture and Fisheries | |
| 1. Sustainable Aquaculture | |
| 1.1. Aquaculture (UCV) | |
| 1.2. Aquaculture (AUA) | |
| 2. Fisheries (UCV) | |
| 3. Built Facilities for Aquaculture (UTCB) | |
| Marine Biotechnology | |
| 4. Blue Biomass Applications | |
| 4.1. Production of Biomass for Blue Applications (LRUniv) | |
| 4.2. Functional and Nutritional Properties of Blue Resources (LRUniv) | |
| 5. Biotechnology of Marine Bioactive Molecules | |
| 5.1. Biotechnology and Nanobiotechnology of Marine Bioactive Molecules (AUA) | |
| 5.2. Marine Biotechnology (UCV) | |
| 5.3. Introduction to Sustainable Chemistry (UROS) | |
| 6. Microbial Nanobiotechnology | |
| 6.1. Introduction to Microbial Biotechnology (UNIZD) | |
| 6.2. Enzymes and Microbes as Tools for Blue Biotechnology (LRUniv) | |
| 6.3. Modern and innovative insight on industrial microbiology and biotechnology (LRUniv) | |
| Ocean energy | |
| 7. Bioenergy and Waste to Energy (UROS) | |
| 8. Energy from Renewable Resources I (wind, waves, tidal, currents) (UTCB) | |
| 9. Energy from Renewable Resources II (solar, hydrothermal, biomass, osmotic, OTEC) (UTCB) | |
| Transport and Shipbuilding | |
| 10. Sustainable Development of the Maritime Economy (KU) | |
| 11. Basics of Green Shipping (KU) | |
| 12. Sustainable Transport Engineering for Coastal Region | |
| 12.1. Sea Transport Development Basics (KU) | |
| 12.2. Sustainable Transport Engineering for Coastal Region (UTCB) | |
| Coastal and Maritime Tourism | |
| 13. Sustainable Tourism Development | |
| 13.1. Sustainable Tourism Development (AUA) | |
| 13.2. Sustainable Tourism Development (KU) | |
| 14. Entrepreneurship, Creativity and Innovation Management | |
| 14.1. Entrepreneurship (AUA) | |
| 14.2. Entrepreneurship (UNIZD) | |
| 14.3. Creativity and Innovation Management (UCV) | |
| 14.4. Entrepreneurship and innovation around sustainable tourism (LRUniv) | |
| 15. Introduction to Underwater Archaeology (UNIZD) | |
| 16.1 Introduction to Environmental and Resource Economics (UROS) | |
| 16.2 Environmental Economics (LRUniv) | |
| 16.3 Ocean governance and blue economy (LRUniv) | |



Aquaculture and Fisheries Sector

Aquaculture is the farming of finfish, shellfish and aquatic plants. Aquaculture is one of the world's fastest growing food sectors that already provides the planet with about half of all the fish consumed. In Europe, aquaculture accounts for about 20% of fish production and is known for its high quality, sustainability and consumer protection standards. The sector is mainly composed of SMEs or micro-enterprises in coastal and rural areas. In fisheries, the goal is to foster a dynamic fishing industry and to maximise catches, but also to ensure a fair standard of living for fishing communities. We need to make sure that fishing practices do not harm the ability of fish populations to reproduce, by making fishing fleets more selective and by eliminating the practice of discarding unwanted or undersized fish.

The academic offer of the Aquaculture and Fisheries sector will, therefore, provide you with knowledge in aquaculture methods, systems and species, as well as in the identification, conservation and exploitation of marine resources. The aim is to acquire the necessary expertise to manage aquaculture farms and fish stocks, to ensure the sustainability of

aquaculture and fisheries and finally to recognise the environmental and socio-economic implications of the activities in this sector.

To learn more and gain the competences in Aquaculture and Fisheries we recommend to choose from the following **courses**:

| Sector | Topic | Course | Semester | ECTS | University |
|---------------------------|-------------------------------------|---------------------------------------|----------|------|------------|
| Aquaculture and Fisheries | 1. Sustainable Aquaculture | 1.1. Aquaculture | Spring | 6 | UCV |
| | | 1.2. Aquaculture | Autumn | 6 | AUA |
| | 2. Fisheries | 2.1. Fisheries | Spring | 6 | UCV |
| | 3. Built Facilities for Aquaculture | 3.1. Built Facilities for Aquaculture | Spring | 6 | UTCB |

Employability

Aquaculture enterprises, Aquafeed industry, Fishing fleet, Seafood value chain (including processing, exporting, marketing, logistics, sales, etc.), Coastal resources management, Public administration, Environmental and business consultancies, Environmental protection regional development, Fishing tourism.

| | | |
|---|------------------|---------|
| Topic: Sustainable Aquaculture | | |
| Course: Aquaculture | | |
| University: Universidad Católica de Valencia | | |
| 6 ECTS | Language: | English |
| What will you learn: | | |
| <p>Aquaculture is the cultivation of aquatic animals and plants, especially fish, shellfish, and seaweed, in natural or controlled marine or freshwater environments. During this course, the student will learn the zootechnical principles for captive production of aquatic organisms. This course will also describe the fundamentals of aquaculture engineering. The content of the course will help the student to recognise the environmental and socioeconomic implications of aquaculture and will emphasize the aquaculture as a sustainable economic activity. To complete the training, the student will learn to develop breeding plans for aquaculture facilities and to manage small-scale marine crops.</p> | | |
| Course activities: | | |
| <p>Technical visit to land-based fish farm, Technical visit to sea cages fish farm.</p> | | |
| Soft skills: | | |
| Analytical skills, research, written communication. | | |
| Prerequisites: | | |
| Basic concepts in biology (animal classification and main characteristics). | | |
| More information: | | |
| https://www.ucv.es/oferta-academica/grados/grado-en-ciencias-del-mar/seccion/guias-docentes/fichero/ficheroguiadocenteingles/id/273001/plan/2008/mod/2016 | | |

| | | |
|---|------------------|---------|
| Topic: Sustainable Aquaculture | | |
| Course: Aquaculture | | |
| University: Agricultural University of Athens | | |
| 6 ECTS | Language: | English |
| What will you learn: | | |
| <p>Aquaculture is the farming of aquatic organisms including fish, mollusks, crustaceans and aquatic plants. The course content covers the following units: Basis of aquaculture, History of aquaculture and its present state, Aquaculture species, Different systems of aquaculture, Production phases of aquaculture, Selection of sites for aquaculture, Water quality for aquaculture, Selection of species for culture, Design and construction of aquafarms, Nutrition and feeds, Live feed, Harvesting and post-harvest technology, Marketing of aquaculture products, Farm management, Sustainability and environmental management of aquaculture. Students will undertake laboratory-based training on zootechnical practices, the function of Recirculating Aquaculture System, monitoring water quality and the maintenance of live feed (phytoplankton, rotifers, <i>Artemia</i>).</p> | | |
| Course activities: | | |
| <p>Technical visit to an off-shore fish farm with floating cages, Technical visit to a fish hatchery.</p> | | |
| Soft skills: | | |
| Analytical skills, research, group/team working, problem solving, presentation. | | |
| Prerequisites: | | |
| Basic concepts in biology (animal classification and main characteristics). | | |
| More information: | | |
| http://www.european.aua.gr/?page_id=780 Department of Animal Science | | |

| | | |
|---|------------------|---------|
| Topic: Fisheries | | |
| Course: Fisheries | | |
| University: Universidad Católica de Valencia | | |
| 6 ECTS | Language: | English |
| What will you learn: | | |
| <p>The student taking this subject will understand conceptually and value the importance of the study of marine living resources in the context of today's science and society.</p> <p>The student will be able to identify the main exploited marine resources, know their biology, locate and understand the location of the main fishing grounds.</p> <p>The student will learn the main techniques of search and extraction of marine living resources and apply the protocols in their evaluation. The student will know diverse experiences of management of marine living resources and will be able to recognise the environmental and socio-economic implications of the fishing activity.</p> | | |
| Course activities: | | |
| Technical visit to a fishing port. Laboratory and informatics practices. | | |
| Soft skills: | | |
| Analytical skills, group/team working, written communication, project management. | | |
| Prerequisites: | | |
| Basic concepts in biology (animal classification and main characteristics). | | |
| More information: | | |
| https://www.ucv.es/oferta-academica/grados/grado-en-ciencias-del-mar/seccion/guias-docentes/fichero/ficheroquiadocenteingles/id/273009/plan/2008/mod/2016 | | |

| | | |
|---|------------------|---------|
| Topic: Built Facilities for Aquaculture | | |
| Course: Built Facilities for Aquaculture | | |
| University: Technical University of Civil Engineering Bucharest | | |
| 6 ECTS | Language: | English |
| What will you learn: | | |
| <p>The design and construction of built facilities for aquaculture must address multiple challenges: understanding the biological aspects in relation with the local climate and geography, environmental aspects, salinity effects, tidal effects, access to the facilities, resisting weather impact, quality of water for adequate living conditions for aquaculture, the storage of aquaculture products, etc. Therefore, the course addresses at a general level elementary engineering and services aspects, keeping water freshness and aeration, measures to control water pollution, ensuring adequate conditions of air humidity, temperature and velocity during preservation by chilling, packaging of frozen products, increasing aquaculture products storage life.</p> | | |
| Course activities: | | |
| Experts' lecture. | | |
| Soft skills: | | |
| Analytical skills, group/team working, international communication, intercultural skills, innovation/creativity. | | |
| Prerequisites: | | |
| Computer literacy, basic use of Microsoft Office package. The course will introduce all the necessary technical notions. | | |
| More information: | | |
| https://utcb.ro/en/eu-conexus/minor-programmes/blue-economy-and-growth/built-facilities-for-aquaculture/ | | |



Marine Biotechnology Sector

Marine biotechnology is key to reveal the potential of marine bio-resources. This potential remains largely untapped and should be discovered. Marine resources could produce new products and processes, and help address the global challenges of food, energy, health and sustainability.

From GLOBE NEWSWIRE published on 4 March 2019 – ‘The **global marine biotechnology market** is expected to grow significantly **from USD 3,500.4 million** in 2017 to **USD 6,500.6 million** in 2024(.). The growth in the market is attributed to the rising usage of marine biotechnology in various industries, advances in drug discovery and growing expenditure in R&D activities. Moreover, increasing demand for eco-friendly products is further propelling the market growth’.

The marine biotechnology sector is composed of 'big pharma', start-up, SMEs or micro-enterprises everywhere in the world. From operators to PhD graduates, this growing sector need skilled people aware of technics useful to produce biomasses, extract, purify, and characterised biomolecules. Innovation is also one keyword of this still emerging sector.

The academic offer of the Marine Biotechnology sector will, therefore, provide you with knowledge in marine technology in general, to discover this area. Then, courses that are more specific will give you tools to produce biomasses, use marine living organisms and understand functionalities.

To learn more and gain the competences in Marine Biotechnology we recommend to choose from the following **courses**:

| Sector | Topic | Course | Semester | ECTS | University |
|----------------------|--|---|----------|------|------------|
| Marine Biotechnology | 4. Blue Biomass Applications | 4.1. Production of Biomass for Blue Applications | Spring | 6 | LRUniv |
| | | 4.2. Functional and Nutritional Properties of Blue Resources | Spring | 6 | LRUniv |
| | 5. Biotechnology of Marine Bioactive Molecules | 5.1. Biotechnology of Marine Bioactive Molecules | Spring | 6 | AUA |
| | | 5.2. Marine Biotechnology | Autumn | 6 | UCV |
| | | 5.3 Introduction to Sustainable Chemistry | Autumn | 6 | UROS |
| | 6. Microbial Nanobiotechnology | 6.1. Introduction to Microbial Biotechnology | Spring | 6 | UNIZD |
| | | 6.2. Enzymes and Microbes as Tools for Blue Biotechnology | Spring | 6 | LRUniv |
| | | 6.3. Modern and innovative insight on industrial microbiology and biotechnology | Autumn | 6 | LRUniv |

Employability

Agrifood industry using marine resources (algae's, fishes by-products), biotechnology companies, biomasses processing companies, pharmaceutical companies using marine bio sourced molecules.

| | | |
|---|------------------|---------|
| Topic: Blue Biomasses Application | | |
| Course: Production of Biomasses for Blue Applications | | |
| University: La Rochelle Université | | |
| 6 ECTS | Language: | English |
| What will you learn: | | |
| <p>Oceans are great sources of various molecules with plenty of applications. To be able to propose enough actives on the market, resources from the sea must be produced in adequate conditions. 'Production of biomasses for blue application' will describe blue biomasses available; introduce production and biomasses conversion strategies to obtain valuable actives. The subject will enable the student to learn which the main blue biomasses from marine sources are. They will also learn which challenges they will have to face in this domain.</p> <p>Students will follow online courses with teachers and experts and undertake group works to acquire and improve their knowledge.</p> | | |
| Course activities: | | |
| The student will learn to develop the whole scientific process from bibliographical survey to scientific writing allowing them to go from the idea to generate interesting compound to the market. | | |
| Soft skills: | | |
| Analytical skills, group/team working, research (scientific writing and oral presentation), ICT skills. | | |
| Prerequisites: | | |
| Background in 1) basic biochemistry (hydrocarbons, proteins, lipids), 2) basic analytical and processing methods. | | |
| More information: | | |
| https://formations.univ-larochelle.fr/licence-sciences-sante | | |

| | | |
|---|------------------|---------|
| Topic: Blue Biomasses Application | | |
| Course: Functional and Nutritional Properties of Blue Resources | | |
| University: La Rochelle Université | | |
| 6 ECTS | Language: | English |
| What will you learn: | | |
| <p>Blue resources are extracted from Oceans. They are unique and possess plenty of applications. To understand what actives are already on the market and which are opportunities, students will learn how what are functional properties and how to demonstrate them. They will also learn the contribution of blue molecules to health through nutritional properties. "Functional and nutritional properties of blue resources" will first describe how ingredients behave during preparation and cooking, how they affect the finished food product in terms of how it looks, tastes, and feels. Functional properties include dextrinisation, caramelisation, flavour preserving, jelling, denaturation, coagulation, gluten formation, shortening, plasticity, aeration, flakiness, retention of moisture, sensory attributes. Then, the marine originating ingredient will be discussed and nutritional properties described.</p> <p>Students will undertake group works to acquire and improve their knowledge.</p> | | |
| Course activities: | | |
| The student will learn to develop the whole scientific process from bibliographical survey to scientific writing allowing them to go from the idea of a blue bioactive compound to the market. | | |
| Soft skills: | | |
| Analytical skills, group/team working, research (scientific writing and oral presentation), ICT skills. | | |
| Prerequisites: | | |
| Background in biochemistry, structure-function relationship. | | |
| More information: | | |
| https://formations.univ-larochelle.fr/licence-sciences-sante | | |

| | | |
|--|------------------|---------|
| Topic: Biotechnology of Marine Bioactive Molecules | | |
| Course: Biotechnology of Marine Bioactive Molecules | | |
| University: Agricultural University of Athens | | |
| 6 ECTS | Language: | English |
| What will you learn: | | |
| <p>Biotechnology involves the application of science and technology to produce knowledge, goods and services for the improvement of human health. Therefore, the course of Biotechnology and Nanobiotechnology of Marine Bioactive molecules will describe the characteristics of marine molecules or extracts, introduce bioprospecting strategies (mass production, marketing-oriented tools), screening techniques of bioactivity (<i>in vitro</i>-methods, <i>in vivo</i>-methods, biomass extraction, metabolomics), methods for immobilizing/entrapping biomolecules and molecular interaction and modelling. The subject will enable the student to learn the main biotechnological applications of marine bioactive molecules in human health and nutrition or personal care products (cosmeceuticals, cosmetics). Students will undertake laboratory-based training and practical experience in state-of-the-art laboratory techniques (omic technologies, cell-culture, PCRs, synthesis and extraction of RNA, electrophoresis, etc.).</p> | | |
| Course activities: | | |
| The student will learn to develop the whole scientific process (from sampling to scientific writing). | | |
| Soft skills: | | |
| Analytical skills, group/team working, ICT skills, autonomous work, work in a multidisciplinary environment, innovation/creativity (promotion of free, creative and inductive thought). | | |
| Prerequisites: | | |
| Basic background in: 1) biochemistry (hydrocarbons, proteins, lipids), other biomolecules RNA, DNA. 2) cell biology (photosynthesis, metabolism, etc.). 3) taxonomy. 4) bioinformatics. | | |
| More information: | | |
| The link is not available yet. | | |

| | | |
|---|------------------|---------|
| Topic: Biotechnology of Marine Bioactive Molecules | | |
| Course: Marine Biotechnology | | |
| University: Universidad Católica de Valencia | | |
| 6 ECTS | Language: | English |
| What will you learn: | | |
| <p>Marine biotechnology involves the application of science and technology to produce knowledge, goods, and services from marine biological resources. Therefore, the course of Marine Biotechnology will describe the characteristics of secondary metabolites; introduce bioprospecting strategies and screening techniques of marine organisms and a wide range of biotechnologies (treatment technology, bioremediation, on-site and 'ex-situ' technologies). The subject will enable the student to learn the main biotechnological applications in marine animals, human health, aquaculture, and food safety. Students will undertake laboratory-based training and practical experience in some of these techniques (PCRs, synthesis and extraction of RNA, electrophoresis, etc.).</p> | | |
| Course activities: | | |
| The student will learn to develop the whole scientific process (from sampling to scientific writing). | | |
| Soft skills: | | |
| Analytical skills, group/team working, research (scientific writing and oral presentation), ICT skills. | | |
| Prerequisites: | | |
| Basic background in 1) biochemistry (hydrocarbons, proteins, lipids), other biomolecules RNA, DNA. 2) Marine Biology (photosynthesis, metabolism, etc.). 3) Fisiology | | |
| More information: | | |
| https://www.ucv.es/oferta-academica/grados/grado-en-ciencias-del-mar/seccion/guias-docentes/fichero/ficheroquiadocenteingles/id/270227/plan/2008/mod/2016 | | |

| | | |
|---|------------------|---------|
| Topic: Biotechnology of Marine Bioactive Molecules | | |
| Course: Introduction to Sustainable Chemistry | | |
| University: University of Rostock | | |
| 6 ECTS | Language: | English |
| What will you learn: | | |
| <p>The course serves to build up the understanding of the concept of sustainability in chemistry and the chemical industry. In particular, methodological and technological competences of sustainable management, the measurability of sustainability in chemistry and the development of biobased synthesis routes are taught.</p> <p>Furthermore, additional qualifications in the field of the development of sustainable products as well as theoretical contexts for a sustainable chemical industry will be acquired and trained.</p> <p>This course is planned so that students have the opportunity:</p> <ol style="list-style-type: none"> 1. to LEARN about green chemistry, prevention of pollution at the source, protection of the environment and human beings, which all lead to sustainable development, 2. to use REAL-WORLD examples to make connections between green chemistry and our everyday life, 3. to BECOME FAMILIAR with green chemistry assessment and metrics, 4. to OPEN OUR MINDS about green chemistry in the developed and developing countries, 5. to CAPTURE the importance of political, societal and business drivers in the success of green chemistry, 6. to ENRICH existing knowledge about general and organic chemistry while learning about green chemistry and sustainability concepts, 7. to GAIN general academic development in writing and oral presentation skills while working on a green chemistry topic, and 8. to DEVELOP critical thinking and analytical skills, as well as leadership, communication and discussion abilities. | | |
| Course activities: | | |
| Asynchronous materials about green chemistry and its 12 principles Discussions about green things, lab safety in chemistry, corporate social responsibility (CSR) Practising calculations: carbon footprint Project-based teaching: students work in groups for small projects Presentation-based teaching: students work in groups for presentations Reviewing of research papers and discussions about them | | |
| Soft skills: | | |
| Scientific & critical thinking, team-work skill, presentation skill, problem-solving skill, | | |
| Prerequisites: | | |
| None | | |

| | | |
|--|------------------|---------|
| Topic: Microbial Nanobiotechnology | | |
| Course: Introduction to Microbial Biotechnology | | |
| University: University of Zadar | | |
| 6 ECTS | Language: | English |
| What will you learn: | | |
| Introduction to microbial biotechnology presents the scientific knowledge for the use of microorganisms and their metabolites in various activities such as the production of goods in food, feed and pharmaceutical industry, agronomy and medicine. To achieve this the course will describe the characteristics of secondary metabolites, introduce bioprospecting strategies and enzymology as well as screening techniques applied in microbial biotechnology. During the course, the student will be acknowledged with the main biotechnological applications of bacteria, yeasts and fungi and their metabolites in human and animal health and wellbeing, agriculture and food processing and safety. Students will undertake laboratory-based training in some of these techniques. | | |
| Course activities: | | |
| Guest lectures in probiotics, group project preparation, visit to a biotech company. | | |
| Soft skills: | | |
| Group/team working, problem solving, research, presentation, international communication. | | |
| Prerequisites: | | |
| Basic background in: 1) biochemistry (hydrocarbons, proteins, lipids, enzymes), 2) biology of the prokaryotic and eukaryotic cell (structure, metabolism, etc.). | | |
| More information: | | |
| The link is not available yet. | | |

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|--|------------------|---------|
| Topic: Microbial Nanobiotechnology | | |
| Course: Enzymes and Microbes as Tools for Blue Biotechnology | | |
| University: La Rochelle Université | | |
| 6 ECTS | Language: | English |
| What will you learn: | | |
| <p>Conversion of blue originating biomasses into valuable molecules needs specific tools. Enzymes and microbes carefully chosen can be included in conversion processes. With 'Enzymes and microbe as tools for blue Biotechnology', students will learn more about enzymology applied to blue biotechnology: marine examples of oxidoreductases, hydrolases, transferases, isomerases, ligases, and lyases ready for food and pharmaceutical applications. Then, the use of microorganisms in conversion processes for the production of goods in various domains will be discussed.</p> <p>Methods to select adequate enzyme and microorganisms to reach conversion goals will be presented.</p> | | |
| Course activities: | | |
| Group project work. | | |
| Soft skills: | | |
| Group/team working, problem solving, research, presentation, international communication. | | |
| Prerequisites: | | |
| Basic background in: 1) biochemistry 2) enzymology 3) microbiology. | | |
| More information: | | |
| https://formations.univ-larochelle.fr/licence-sciences-sante | | |

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|--|------------------|---------|
| Topic: Microbial Nanobiotechnology | | |
| Course: Modern and innovative insight on industrial microbiology and biotechnology | | |
| University: La Rochelle Université | | |
| 6 ECTS | Language: | English |
| What will you learn: | | |
| <p>The purpose of this course is to enable students to learn the cutting-edge technologies and strategies used in microbiology and industrial biotechnology based on molecular tools to meet current needs in different fields of applications.</p> <p>You will learn about:</p> <ul style="list-style-type: none"> - new tools and technologies especially genetic engineering, genomics and metagenomics, proteomics, bioinformatics and such like new areas promise exciting horizons for man's continued exploitation of microorganisms. - new approaches have become available for the utilization of some physiological microbial growth of immobilized cells such as biofilms, in which new genetical regulation and biochemical products can be selectively produced. By this way, microbiology has addressed itself to some current problems such as the fight against cancer by the production of anti-tumor antibiotics; it has changed the traditional practice in a number of areas: for example the deep sea has now joined the soil as the medium for the search for new bioactive chemicals such as antibiotics. - greater consciousness of the effect of the use of non-renewable and non-environmentally friendly commodities has increased the call in some quarters for the use of more and renewable and sources of energy, has led to a search for alternate fermentation substrates. | | |
| Course activities: | | |
| Lectures | | |
| Soft skills: | | |
| Strategy and the new techniques to be able to propose or analyze a production scheme for a bioactives. | | |
| Prerequisites: | | |
| Background in: microbiology, molecular biology and biochemical engineering | | |
| More information: | | |
| https://formations.univ-larochelle.fr/licence-sciences-sante | | |



Ocean Energy Sector

Ocean energy is abundant, geographically diverse and renewable. Under favourable regulatory and economic conditions, ocean energy could meet 10% of the European Union's power demand by 2050, based on clean, renewable and infinite domestic resources. Together with the first generation of renewable energy technologies, such as solar and wind, EU will reach its objective of reducing greenhouse gas emissions to 80–95 % below 1990 levels by 2050 when power generated by the ocean energy sector could avoid the equivalent of 276m tonnes of CO₂ emissions annually.²

Within the Minor of Blue Economy and Growth, the 'Ocean Energy' sector welcomes students eager to learn more about Blue and renewable energy, and marine mineral resources, with courses that will deepen the knowledge and practical use of classical or unconventional sources of mechanical and thermal energy in the oceans and from the coastal area. Students will study the fundamentals and practical applications of the capture,

² Ocean Energy Strategic Roadmap Building Ocean Energy For Europe-
<https://webgate.ec.europa.eu/maritimeforum/en/frontpage/1036>

conversion, and shore transmission of energy from wind, waves, tides and sea currents, as well as solar energy, chemical energy of biomass and thermal energy of the oceans.

To learn more and gain the competences in Ocean Energy we recommend to choose from the following **courses**:

| Sector | Topic | Course | Semester | ECTS | University |
|--------------|--|---|----------|------|------------|
| Ocean energy | 7. Bioenergy and Waste to Energy | 7.1. Bioenergy and Waste to Energy | Autumn | 6 | UROS |
| | 8. Energy from Renewable Resources I (wind, waves, tidal, currents) | 8.1. Energy from Renewable Resources I (wind, waves, tidal, currents) | Spring | 6 | UTCB |
| | 9. Energy from Renewable Resources II (solar, hydrothermal, biomass, osmotic, OTEC) | 9.1. Energy from Renewable Resources II (solar, hydrothermal, biomass, osmotic, OTEC) | Spring | 6 | UTCB |

Employability

Renewable energies sector, aquaculture engineering, offshore industries, environment protection.

| | | |
|--|------------------|---------|
| Topic: Bioenergy and Waste to Energy | | |
| Course: Bioenergy and Waste to Energy | | |
| University: University of Rostock | | |
| 6 ECTS | Language: | English |
| What will you learn: | | |
| <p>This module will introduce students to fundamental principles of waste management, with particular emphasis on energy recovery. Waste generation and waste characterisation are examined, as are techniques for waste collection, storage, transport, and utilisation (including recycling and recovery). The focus of the module is on the application of engineering science to develop integrated waste management systems incorporating energy recovery.</p> <p>The bioenergy part of the module provides general knowledge on biomass abundance and management, the chemical composition of important biomass resources, and all major biomass conversion technologies. The following technologies will be introduced: - thermo-chemical, physico-chemical, biochemical. The technologies are linked to their respective raw materials as well as to limitations and chances for bioenergy considering aspects of both management and technology.</p> <p>On completion of this module students should be able to: Explain the waste management hierarchy. Describe the key waste management legislation at the national and EU levels. Specify the essential elements to be included in a waste management plan. Outline the main features in the design principles and operation of biogas, composting and incineration plants. Highlight the key features and calculate design parameters and efficiencies of waste-to-energy technologies such as anaerobic digestion, incineration and hydrothermal carbonization.</p> | | |
| Course activities: | | |
| <p>The course includes an intensive and detailed lecture from the experts of the field, followed by a presentation by students on the selected topics related to waste to energy and bioenergy, and a written examination. Both the written examination and the presentation delivered by students will be monitored and evaluated for the final results the students.</p> | | |
| Soft skills: | | |
| <p>Presentation skills, how to structure a presentation so that the audience can follow it easily. Design Thinking - problem-solving and creating new ideas, understanding of the design thinking process.</p> | | |
| Prerequisites: | | |
| <p>Basic knowledge about waste management, waste to energy, energy conversion as well as renewable energy conversion technologies</p> | | |

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|--|------------------|---------|
| Course: Energy from Renewable Sources I | | |
| Topic: Energy from Renewable Sources I | | |
| University: Technical University of Civil Engineering Bucharest | | |
| 6 ECTS | Language: | English |
| What will you learn: | | |
| Starting from the definition of renewable energy, the course will focus on mechanical energy sources (wind and water). The time variability of the resources will be discussed in conjunction to human consumption habits. Energy transportation networks will be discussed along with the conversion of the mechanical energy of the ocean into electrical energy and transporting it to shore. Elements related to electric generators, transformation systems, protection and safety systems and intelligent control of ocean power plants would be studied. Students will become familiar with the differences between efficiency and capacity factors as well as between installed power and energy production. | | |
| Course activities: | | |
| Some of the lectures will include virtual laboratory demonstrations. | | |
| Soft skills: | | |
| Analytical skills, problem solving, Innovation/creativity, presentation, ICT skills. | | |
| Prerequisites: | | |
| Computer literacy, basic use of Microsoft Office package. The course will introduce all the necessary technical notions. | | |
| More information: | | |
| https://utcb.ro/en/eu-conexus/minor-programmes/blue-economy-and-growth/energy-from-renewable-resources-i-wind-waves-tidal-currents/ | | |

| | | |
|---|------------------|---------|
| Topic: Energy from Renewable Resources II | | |
| Course: Energy from Renewable Resources II | | |
| University: Technical University of Civil Engineering Bucharest | | |
| 6 ECTS | Language: | English |
| What will you learn: | | |
| <p>This course is addressed to students eager to know more about renewable sources of thermal energy in the seas and oceans as well as in the coastal area. We will study the potential of ocean energy sources and processes of thermal energy conversion with widely used installations and equipment such as solar thermal panels and photovoltaic panels, cycles of solar electric conversion, hydrothermal (marine) heat pumps, and the energy use of ocean or coastal biomass. Among the installations still in development, the cycles of OTEC (Ocean Thermal Energy Conversion) and osmotic (based on the difference in salinity) plants will be studied.</p> | | |
| Course activities: | | |
| | | |
| Soft skills: | | |
| Analytical skills, group/team working, problem solving, presentation, international communication. | | |
| Prerequisites: | | |
| Computer literacy, basic use of Microsoft Office package. The course will introduce all the necessary technical notions. | | |
| More information: | | |
| https://utcb.ro/en/eu-conexus/minor-programmes/blue-economy-and-growth/energy-from-renewable-resources-ii-solar-hydrothermal-biomass-osmotic-otec/ | | |



Transport and Shipbuilding Sector

Rapidly growing trade and the need for effective means of transport and its systems accompany globalisation. Shipping has been playing a crucial role here therefore the impact of shipping and seaport sector on the regional socio-economic activity is undeniable. To compete successfully, the need to understand how the global transport business ecosystem works, how to find the new innovative ways of transporting cargoes and passengers, how to develop more efficient mechanisms to deal with climate change.

Shipping is still responsible for approximately 2.5% of global greenhouse gas (GHG) emissions and represents approximately 13% of the overall EU GHG emissions from the transport sector in 2015. Further decrease in shipping emissions is obligatory in green-minded Europe, which call for greening of shipping and ports.

There are known many solutions how to reduce the impact from ships in operation but still not enough to meet IMO requirements in 2050. A new context presents designers and engineers with new opportunities. Similarly, maritime law, finance, broking and insurance can all benefit from the growing volume of sea trade.

To learn more and gain the competences in Transport and Shipbuilding we recommend to choose from the following **courses**:

| Sector | Topic | Course | Semester | ECTS | University |
|----------------------------|---|--|----------|------|------------|
| Transport and Shipbuilding | 10. Sustainable Development of the Maritime Economy | 10.1. Sustainable Development of the Maritime Economy | Autumn | 6 | KU |
| | 11. Basics of Green Shipping | 11.1. Basics of Green Shipping | Autumn | 6 | KU |
| | 12. Sustainable Transport Engineering for Coastal Region | 12.1. Sea Transport Development Basics | Autumn | 6 | KU |
| | | 12.2. Sustainable Transport Engineering for Coastal Region | Spring | 6 | UTCB |

Employability

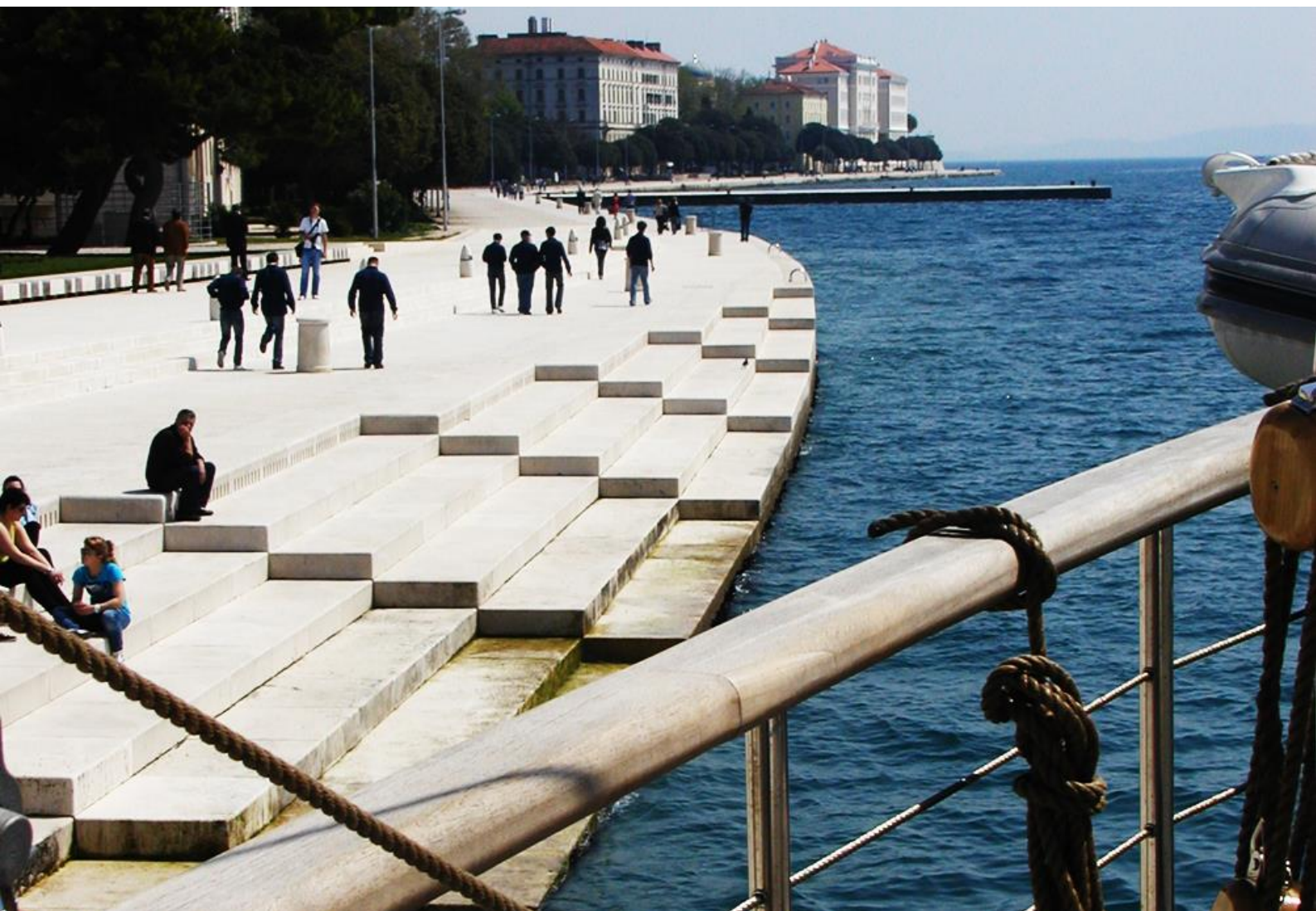
Seaport authorities, Agencies, Associations, Forwarding, Container, Ro-ro terminals, Stevedoring, Cruise ship terminals, Travel agencies serving cruise vessel tourists, Ship suppliers, Ship repair, building, technical services, Shipping companies, Customs agents, etc.

| | | |
|--|------------------|---------|
| Topic: Sustainable Development of Maritime Economy | | |
| Course: Sustainable Development of Maritime Economy | | |
| University: Klaipeda University | | |
| 6 ECTS | Language: | English |
| What will you learn: | | |
| <p>The course is designed to study theoretical and practical aspects of maritime economy from a sustainable development point of view, to introduce to different cases and practices of sustainable maritime economy growth solutions. The course is based on knowledge of the maritime complex structure and the emerging environmental issues such as the impact of maritime transport on the environment of global and local scale, the impact of economic development of maritime industry on the interconnection of the ecosystem in ports structures, sustainable environmental and technological solutions in the maritime industry. The importance and main principles of sustainable development in the Maritime Economy will be analysed in depth. Particular attention will be given to main innovative solutions for ensuring Sustainable development of Maritime Economy.</p> | | |
| Course activities: | | |
| Case study, international group project, interactive seminars, site/field visit, analysis of maritime development projects, analysis of strategical management plans. | | |
| Soft skills: | | |
| Analytical skills of problems solving, analysis of case studies, group/team working, presentation, international communication. | | |
| Prerequisites: | | |
| Basics of Economics, Strategic Management/Industrial management, Basics of Sustainable growth. | | |
| More information: | | |
| The link is not available yet. | | |

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|--|------------------|---------|
| Topic: Basics of Green Shipping | | |
| Course: Basics of Green shipping | | |
| University: Klaipeda University | | |
| 6 ECTS | Language: | English |
| What will you learn: | | |
| <p>Green shipping refers to the reduced use of resources and energy to transport people and goods by ship and is specifically concerned with the protection of the global environment from greenhouse gases and environmental pollutants generated by ships. The course is designed to study scalable solutions for efficient and environmentally friendly shipping, to be acquainted with the concepts and key indicators of green shipping and green port, to be able to select the optimal green shipping solutions for ships, ports, waterways, access to port terminals based on the economic, environmental and social efficiency.</p> | | |
| Course activities: | | |
| Case study, interactive seminars. | | |
| Soft skills: | | |
| Analytical skills of problems solving, analysis of case studies, presentation, international communication. | | |
| Prerequisites: | | |
| Would help if the student has knowledge in the field of Geography of Ports and Waterways, Basics of Sustainable growth. | | |
| More information: | | |
| The link is not available yet. | | |

| | | |
|--|------------------|---------|
| Topic: Sustainable Transport Engineering for Coastal Region | | |
| Course: Maritime Transport Development Basics | | |
| University: Klaipeda University | | |
| 6 ECTS | Language: | English |
| What will you learn: | | |
| <p>Maritime transport is the backbone of world trade and globalisation. Maritime transport as a vital link in an international logistics chain exists in conjunction with the many shore-side infrastructures, services and personnel for cargo handling and delivery. Considering it, the course is designed to study theoretical and practical aspects of maritime transportation system development based on an assessment of the current situation, future prospects and analysis of arising problems. Particular attention will be given to the latest transportation methods under different conditions including an organisation of transportation of oversized cargo; ports and waterways planning including dredging; exploiting the existing motorways of the sea and the development of the new motorways of the sea; the environmental impact and risk assessment in maritime transport.</p> | | |
| Course activities: | | |
| Group work, one-to-one tutorials, analysis of motorways of the sea and port development projects, site/field visits, experts' lectures. | | |
| Soft skills: | | |
| Analytical skills of problems solving, development of critical thinking through case studies, group/team working, presentation, international communication. | | |
| Prerequisites: | | |
| Would help if the student has knowledge in the field of Geography of Ports and Waterways, Basics of Port Organisation and Logistics. | | |
| More information: | | |
| The link is not available yet. | | |

| | | |
|--|------------------|---------|
| Topic: Sustainable Transport Engineering for Coastal Region | | |
| Course: Sustainable Transport Engineering for Coastal Region | | |
| University: Technical University of Civil Engineering Bucharest | | |
| 6 ECTS | Language: | English |
| What will you learn: | | |
| <p>This course introduces the fundamentals of transport engineering focusing on the peculiarities of the coastal regions (high density of population and built environment, high traffic due to coastal economy and tourism, various natural hazards, protection of historic heritage, etc.). The transport network includes roads, railways, and bridges ensuring not only the regular activities in the area but also ensuring the functionality of the port. Within the course, students will discover the fundamentals of conception, design, and construction of transport network, as well as the principles and solutions of smart management. Sustainability, environmental protection, and development challenges are also addressed from a European perspective.</p> | | |
| Course activities: | | |
| Group project. | | |
| Soft skills: | | |
| Analytical skills, problem solving, presentation, innovation/creativity, project management. | | |
| Prerequisites: | | |
| Computer literacy, basic use of Microsoft Office package. The course will introduce all the necessary technical notions. | | |
| More information: | | |
| https://utcb.ro/en/eu-conexus/minor-programmes/blue-economy-and-growth/sustainable-transport-engineering-for-coastal-region/ | | |



Coastal and Maritime Tourism Sector

Today's tourists seek a unique and customised holiday experience, not only traditionally offered packages of beautiful coast, beach, and sun. These changes on the demand side require reaction and adaptation by operators and destinations, i.e. enhancing the levels of creativity and adaptability in tourism businesses. The sector should, besides traditional offer, develop new products promoting attractiveness and accessibility of coastal and marine archaeology, maritime heritage, underwater tourism, and eno-gastronomic activities, among other activities. During that, process focus of all stakeholders in tourism should be on sustainable tourism.

The academic offer of the Coastal and Maritime Tourism sector will, therefore, provide you knowledge in entrepreneurship in tourism, in creation of new tourism product which is more aligned with new tourist's needs, in creating of products that balance tourist needs and sustainability.

To learn more and gain the competences in Coastal and Maritime Tourism we recommend to choose from the following **courses**:

| Sector | Topic | Course | Semester | ECTS | University |
|------------------------------|--|--|----------|------|------------|
| Coastal and Maritime Tourism | 13. Sustainable Tourism Development | 13.1. Sustainable Tourism Development | Autumn | 6 | AUA |
| | | 13.2. Sustainable Tourism Development | Spring | 6 | KU |
| | 14. Entrepreneurship, Creativity and Innovation Management | 14.1. Entrepreneurship | Spring | 6 | AUA |
| | | 14.2. Entrepreneurship | Autumn | 6 | UNIZD |
| | | 14.3. Creativity and Innovation Management | Spring | 6 | UCV |
| | | 14.4. Entrepreneurship and innovation around sustainable tourism | Spring | 6 | LRUniv |
| | 15. Introduction to Underwater Archaeology | 15.1. Introduction to Underwater Archaeology | Autumn | 6 | UNIZD |
| | 16. Sustainable Blue Economy | 16.1 Introduction to Environmental and Resource Economics | Spring | 6 | UROS |
| | | 16.2 Environmental Economics | Spring | 6 | LRUniv |
| | | 16.3 Ocean governance and blue economy | Spring | 6 | LRUniv |

Employability

Expertise in Coastal and Maritime Tourism is required in economic sectors that are related to tourism: public and private sector, hotel industry, gastro industry, entertainment industry, local community organisations, regional development, etc.

| | | |
|---|------------------|---------|
| Topic: Sustainable Tourism Development | | |
| Course: Sustainable Tourism Development | | |
| University: Agricultural University of Athens | | |
| 6 ECTS | Language: | English |
| What will you learn: | | |
| <p>This course will 'navigate' students through the concepts of environmental impact, sustainability and the challenges proposed in the New Economics paradigm, from which tourism can borrow examples of development. The module aims at explaining the nature of externalities generated by tourism, the difference between the generation of income and wellbeing, analysing environmental impacts caused by tourism, understanding the difference between renewable and non-renewable resources and the treatment of the environment as a sink. The module will provide the basic tools for economic valuation that could be employed for all-inclusive pricing of tourism products, which will also enable full compensation for the environmental impact caused by tourism, particularly for socially fair pricing of open-access resources. Besides major policy events and summits from which new deadlines for correcting environmental damaging behaviours, there are various tools available, through which unsustainable cases can be remedied or even circumvented (e.g. taxes, permits, ownership, subsidies, laws and controls, corporate social responsibility, special designation, tradable rights, tourism eco-labelling, certification and award schemes, ecotourism approaches, etc.).</p> | | |
| Course activities: | | |
| Presentation of case studies and movies. The student will have the opportunity to reflect on major case studies and observe what he/she learns through movies and YouTube material. | | |
| Soft skills: | | |
| Group/team working, research (scientific writing and oral presentation), ICT skills. | | |
| Prerequisites: | | |
| None. | | |
| More information: | | |
| The link is not available yet. | | |

| | | |
|---|------------------|---------|
| Topic: Sustainable Tourism Development | | |
| Course: Sustainable Tourism Development | | |
| University: Klaipeda University | | |
| 6 ECTS | Language: | English |
| What will you learn: | | |
| <p>The course is intended to introduce students with the concepts of sustainable tourism development, its patterns, principles and their practical application in tourism management. During the course, students will gain an understanding of the strengths and challenges of tourism as a tool for sustainable development, key actors in sustainable tourism, their impact and interaction within each other. The course helps to form a systematic knowledge about the impacts of the tourism industry on destinations and local communities, to understand how sustainable tourism works within a different type of tourism sectors and types of tourism.</p> | | |
| Course activities: | | |
| <p>Students will improve their analytical and creative skills working on group tasks, which are aimed to help to understand the topic better and to trigger professional curiosity.</p> | | |
| Soft skills: | | |
| <p>Analytical skills, group/team working, problem solving, presentation, innovation/creativity.</p> | | |
| Prerequisites: | | |
| <p>None.</p> | | |
| More information: | | |
| <p>The link is not available yet.</p> | | |

| | | |
|---|------------------|---------|
| Topic: Entrepreneurship, Creativity and Innovation Management | | |
| Course: Entrepreneurship | | |
| University: Agricultural University of Athens | | |
| 6 ECTS | Language: | English |
| What will you learn: | | |
| Sustainable tourism development presupposes the economic sustainability of the businesses, which very much relies on the knowledge of fundamental entrepreneurship skills and the management of creativity of innovation. These can guarantee the perennial flourishing of a tourism business. The course will start with the concept of entrepreneurship, the steps for successful entrepreneurship, the nature of startups, what constitutes corporate entrepreneurship, the acknowledgement of entrepreneurial opportunities in coastal and marine tourism. The course will also explain the different definitions of innovation, its implementation and how innovation is incorporated in the tourism business. By the end of the course, the student will be able to recognise creative and innovative opportunities and will be able to turn them to the benefit of a tourism business. | | |
| Course activities | | |
| Presentation of case studies and movies, interviews with successful entrepreneurs, success stories. The student will have the opportunity to reflect on major case studies and observe what he/she learns through movies and YouTube material. Foremost the student will have the opportunity to observe success stories of various entrepreneurs. | | |
| Soft skills: | | |
| Group/team working, research (scientific writing and oral presentation), ICT skills. | | |
| Prerequisites: | | |
| None | | |
| More information: | | |
| The link is not available yet. | | |

| | | |
|--|------------------|---------|
| Topic: Entrepreneurship, Creativity and Innovation Management | | |
| Course: Entrepreneurship | | |
| University: University of Zadar | | |
| 6 ECTS | Language: | English |
| What will you learn: | | |
| The course content covers the following units: entrepreneurship and entrepreneurs in general, the significance and role of entrepreneurship in social and economic development, enterprise models and their characteristics, the development of and perspectives for enterprise in the EU, stimulating enterprise, and innovative entrepreneurship. During the course, students will learn to make a simple business plan. | | |
| Course activities: | | |
| The student will learn to create a simple business plan for an innovative business idea. | | |
| Soft skills: | | |
| Analytical skills, group/team working, problem solving, research, presentation, Innovation/creativity, project management. | | |
| Prerequisites: | | |
| Background in finance (investment, revenues and expenses). | | |
| More information: | | |
| https://www.unizd.hr/Portals/0/ms/syllabi/20_21_ECON_W_Entrepreneurship.pdf?ver=2020-03-09-152454-363 | | |

| | | |
|--|------------------|---------|
| Topic: Entrepreneurship, Creativity and Innovation Management | | |
| Course: Creativity and Innovation Management | | |
| University: Universidad Católica de Valencia | | |
| 6 ECTS | Language: | English |
| What will you learn: | | |
| The course will lead the students to acquire basic concepts and tools to implement and operate innovation management in an organisation, as well as the skills and values needed to carry out a collaborative creative work aimed at achieving objectives of improvement and innovation. Students will learn the basic concepts of managing innovation and creativity, the innovation strategy and value creation, how to build the innovative organization and finally to follow the whole innovation process: from the idea to the market. | | |
| Course activities: | | |
| Innovative learning experience (case method teaching), experts' lectures, work with entrepreneurs. | | |
| Soft skills: | | |
| Group/team working, innovation/creativity, international communication, project management. | | |
| Prerequisites: | | |
| None. | | |
| More information: | | |
| https://www.ucv.es/oferta-academica/grados/grado-en-administracion-y-direccion-de-empresas/seccion/guias-docentes/fichero/ficheroquiadocenteingles/id/302016/plan/2008/mod/2016 | | |

| | | |
|--|------------------|---------|
| Topic: Entrepreneurship, Creativity and Innovation Management | | |
| Course: Entrepreneurship and innovation around sustainable tourism | | |
| University: La Rochelle Université | | |
| 6 ECTS | Language: | English |
| What will you learn: | | |
| <p>At the end of this minor, students will have acquired the basic tools to formalize an idea into a project through creativity sessions. Then we will teach them what innovation is and how it is inseparable from entrepreneurship. All of the entrepreneurial concepts addressed are in line with societal, environmental and sustainable issues.</p> <ul style="list-style-type: none"> • Get to know each other - definition of social entrepreneurship and meeting with entrepreneurs • Example of innovation & sustainable entrepreneurship • How to innovate - tools and methods - • Business Model Canvas • Escape game - Get to know each other - campus visit • Project Market around sustainable tourism- <p>3 days to answer a problematic of a local partner around sustainable tourism. Creativity workshop, brainstorming and formalization of the idea with a prototype and a presentation in the form of a pitch</p> | | |
| Course activities: | | |
| <p>The students will have exchanges with entrepreneurs around innovation. They will discover the stages of project development through online and distance learning courses. They will be invited to La Rochelle to work together on a project market on the theme of innovation and sustainable development. Problem proposed by a local partner.</p> | | |
| Soft skills: | | |
| Analytical skills, group/team working, problem solving, research, presentation, Innovation/creativity, project management. | | |
| Prerequisites: | | |
| None. | | |

| | | |
|--|------------------|---------|
| Topic: Introduction to Underwater Archaeology | | |
| Course: Introduction to Underwater Archaeology | | |
| University: University of Zadar | | |
| 6 ECTS | Language: | English |
| What will you learn: | | |
| <p>The course introduces the students to the specific area of research within the scientific field of archaeology. Although sharing the same methodology with land archaeology, the underwater archaeology requires specific technological equipment and diving skills. The course presents the history of the underwater archaeology in the world, a variety of underwater archaeological sites, basic methodology and technics of underwater research, and development of underwater archaeology in Croatia. It focuses on the specific underwater archaeological sites to explain the diversity of underwater cultural heritage, and different approaches needed for their exploration.</p> | | |
| Course activities: | | |
| <p>The students will have the opportunity to visit the archaeological site in shallow water and experience the work in the field.</p> | | |
| Soft skills: | | |
| <p>Analytical skills, group/team working, research, presentation, project management.</p> | | |
| Prerequisites: | | |
| <p>None.</p> | | |
| More information: | | |
| <p>https://www.unizd.hr/Portals/0/ms/syllabi/20_21_ARCHAE_W_Introduction%20to%20underwater%20archaeology.pdf?ver=2020-03-06-154928-167</p> | | |

| | | |
|--|------------------|---------|
| Topic: Sustainable Blue Economy | | |
| Course: Introduction to Environmental and Resource Economics | | |
| University: University of Rostock | | |
| 6 ECTS | Language: | English |
| What will you learn: | | |
| <p>You will acquire competences:</p> <ul style="list-style-type: none"> • to apply analytical tools of microeconomic theory to environmental issues • to apply tools of intertemporal decision making to problems involving natural resources • to recognize the role of economic incentives for environmental behaviour and environmental policy • to recognize links between environmental economics and other areas of economics and to use these insights to get a deeper understanding of economics in general • to recognize links between environmental economics and other disciplines such as systems ecology and environmental sociology • to evaluate economic reasoning vis-à-vis arguments coming from other disciplines • participate in the societal discourse on environmental problems and environmental policies on the basis of sound economic reasoning | | |
| Course activities: | | |
| Video Lectures, Online Conferences for Questions and Answers | | |
| Soft skills: | | |
| Basic Microeconomics (demand, supply, the marginal principle, basic welfare analysis) | | |
| Prerequisites: | | |
| None. | | |

| | | |
|---|------------------|---------|
| Topic: Sustainable Blue Economy | | |
| Course: Environmental Economics | | |
| University: La Rochelle Université | | |
| 6 ECTS | Language: | English |
| What will you learn: | | |
| <p>Economists name “externalities” the unintended effects of economic activities on our planet. Most of the time they consider that market failures explain these effects and suggest to fix it by influencing prices, regulating market designs or by creating various incentives for firms, consumers and governments.</p> <p>However, the last two decades have shown that what is theoretically possible is in a practical way impossible. Valuing environmental amenities, dealing with the social inequalities associated with climate changes as well as the difficulty to coordinate worldwide environmental policies became inextricable issues. This lecture proposes to understand what is at stakes here and how economics deals with these major challenges.</p> | | |
| Course activities: | | |
| Group works and cases studies | | |
| Soft skills: | | |
| Analytical thinking; ability to understand graphical analysis; curiosity; ability to work in group | | |
| Prerequisites: | | |
| Interest in social sciences | | |

| | | |
|--|------------------|---------|
| Topic: Sustainable Blue Economy | | |
| Course: Ocean governance and blue economy | | |
| University: La Rochelle Université | | |
| 6 ECTS | Language: | English |
| What will you learn: | | |
| <p>The course addresses the challenges of maritime governance in its most current dimensions and opens up new thinking in the field. You will learn about international regulations in the marine historic exploitation sectors and Marine Environmental Governance and legal framework. Blue economy and Sustainable Development: Ocean and the UN Sustainable Development Goals (Goal 14: Conserve and sustainably use the oceans, seas and marine resources)</p> <p>Part 1 International regulation of traditional marine activities</p> <ul style="list-style-type: none"> - Shipping - Fishing - Oil and gas exploitation <p>Part 2-Ocean Governance in the era of Globalization</p> <ul style="list-style-type: none"> - Key principles of sustainable development - UN Convention on the Law of the Sea (UNCLOS), 1982 - Regional instruments for ocean management resources - International protection of the « ocean system » <p>Part 3-The new perspectives and Frontiers of the Blue Economy</p> | | |
| Course activities: | | |
| <p>The course can be based on concrete cases and can give rise to group presentations. A collective role-playing game to put students in a situation around a concrete issue of environmental governance could be organized.</p> | | |
| Soft skills: | | |
| <p>Openness to social issues, ability to analyze institutional systems, interest in protecting the marine environment, research, written and oral communication.</p> | | |
| Prerequisites: | | |
| None. | | |

Appendix. Courses in 2022-23 academic year

In the Table below presents all the courses that will be offered in a virtual or blended teaching mode from the academic year 2022-23.

| Sector | Topic | Course | Semester | ECTS | University | My study plan |
|---------------------------|---|---|----------|------|------------|--------------------------|
| Aquaculture and Fisheries | 1. Sustainable Aquaculture | 1.1. Aquaculture | Spring | 6 | UCV | <input type="checkbox"/> |
| | | 1.2. Aquaculture | Autumn | 6 | AUA | <input type="checkbox"/> |
| | 2. Fisheries | 2.1. Fisheries | Spring | 6 | UCV | <input type="checkbox"/> |
| | 3. Built Facilities for Aquaculture | 3.1. Built Facilities for Aquaculture | Spring | 6 | UTCB | <input type="checkbox"/> |
| Marine Biotechnology | 4. Blue Biomass Applications | 4.1. Production of Biomass for Blue Applications | Spring | 6 | LRUniv | <input type="checkbox"/> |
| | | 4.2. Functional and Nutritional Properties of Blue Resources | Spring | 6 | LRUniv | <input type="checkbox"/> |
| | 5. Biotechnology of Marine Bioactive Molecules | 5.1. Biotechnology of Marine Bioactive Molecules | Spring | 6 | AUA | <input type="checkbox"/> |
| | | 5.2. Marine Biotechnology | Autumn | 6 | UCV | <input type="checkbox"/> |
| | | 5.3 Introduction to Sustainable Chemistry | Autumn | 6 | UROS | <input type="checkbox"/> |
| | 6. Microbial Nanobiotechnology | 6.1. Introduction to Microbial Biotechnology | Spring | 6 | UNIZD | <input type="checkbox"/> |
| | | 6.2. Enzymes and Microbes as Tools for Blue Biotechnology | Spring | 6 | LRUniv | <input type="checkbox"/> |
| | | 6.3 Modern and innovative insight on industrial microbiology and biotechnology | Autumn | 6 | LRUniv | <input type="checkbox"/> |
| Ocean energy | 7. Bioenergy and Waste to Energy | 7.1 Bioenergy and Waste to Energy | Autumn | 6 | UROS | <input type="checkbox"/> |
| | 8. Energy from Renewable Resources I (wind, waves, tidal, currents) | 8.1. Energy from Renewable Resources I (wind, waves, tidal, currents) | Spring | 6 | UTCB | <input type="checkbox"/> |
| | 9. Energy from Renewable Resources II (solar, hydrothermal, biomass, osmotic, OTEC) | 9.1. Energy from Renewable Resources II (solar, hydrothermal, biomass, osmotic, OTEC) | Spring | 6 | UTCB | <input type="checkbox"/> |

| | | | | | | |
|------------------------------|--|---|--------|---|--------|--------------------------|
| | biomass, osmotic, OTEC) | | | | | |
| Transport and Shipbuilding | 10. Sustainable Development of the Maritime Economy | 10.1. Sustainable Development of the Maritime Economy | Autumn | 6 | KU | <input type="checkbox"/> |
| | 11. Basics of Green Shipping | 11.1. Basics of Green Shipping | Autumn | 6 | KU | <input type="checkbox"/> |
| | 12. Sustainable Transport Engineering for Coastal Region | 12.1. Sea Transport Development Basics | Autumn | 6 | KU | <input type="checkbox"/> |
| | | 12.2. Sustainable Transport Engineering for Coastal Region | Spring | 6 | UTCB | <input type="checkbox"/> |
| Coastal and Maritime Tourism | 13. Sustainable Tourism Development | 13.1. Sustainable Tourism Development | Autumn | 6 | AUA | <input type="checkbox"/> |
| | | 13.2. Sustainable Tourism Development | Spring | 6 | KU | <input type="checkbox"/> |
| | 14. Entrepreneurship, Creativity and Innovation Management | 14.1. Entrepreneurship | Spring | 6 | AUA | <input type="checkbox"/> |
| | | 14.2. Entrepreneurship | Autumn | 6 | UNIZD | <input type="checkbox"/> |
| | | 14.3. Creativity and Innovation Management | Spring | 6 | UCV | <input type="checkbox"/> |
| | | 14.4 Entrepreneurship and innovation around sustainable tourism | Spring | 6 | LRUniv | <input type="checkbox"/> |
| | 15. Introduction to Underwater Archaeology | 15.1. Introduction to Underwater Archaeology | Autumn | 6 | UNIZD | <input type="checkbox"/> |
| | 16. Sustainable Blue Economy | 16.1 Introduction to Environmental and Resource Economics | Spring | 6 | UROS | <input type="checkbox"/> |
| | | 16.2 Environmental Economics | Spring | 6 | LRUniv | <input type="checkbox"/> |
| | | 16.3 Ocean governance and blue economy | Spring | 6 | LRUniv | <input type="checkbox"/> |

Reminder: for fulfilling a Minor, students must select 5 courses from at least 2 different sectors (within the same minor) offered by 3 universities (one may be his own university)