LINK TO UBx MER WEBSITE

SEMESTER 1

COURSE	ECTS	TYPE
Analyses of Environmental Data and Modelling	6	CBS1
Biological Oceography	6	CBS1
Chemical Oceanography	6	CBS1
Dynamic Oceanography	6	CBS1
Seafloor Geology	6	CBS1

CBS1: Compulsory at UBx Semester 1

Course/Unit	Analyses of Environmental Data and Modelling
MER Code	MER UBx 0703
ECTS	6
Level	Compulsory (UBx)
Semester	1
Timetable slot	To be advised
Teaching Staff	B Lubac (Coord.)
Synopsis	Basic methods for the representation, analysis and modelling of environmentally-relevant data.
Aims	To provide an introduction to the analysis of environmental data and modelling
Objectives At the end of the Unit, the student should:	1. understand the principles and methods of descriptive statistics, applied to environmental data. 2. understand the concepts of the principles and methods of variability and trend analyses, applied to environmental data. 3. understand data modelling in environmental sciences.
Key Skills Acquired At the end of the Unit, the student should be able to:	1. solve problems of descriptive statistics and its application to environmental sciences 2. solve problems of analytical statistics and its application to environmental sciences 3. interpret deterministic and statistical models 4. be familiar with the use of representation basic methods in environmental sciences.

Programme/Syllabus	1. Statistics (random variables and probability, data sampling, descriptive statistics, parametric and non-parametric hypotheses, confidence intervals, etc.) 2. Data analysis (Factor Analyses, automatic classification) 3. Modelling (deterministic modelling, statistical modelling)
Learning & Teaching	• Formal Lectures: 20 hr • Seminars 16 hr • Field work: 18 hr
Bibliography	Delivered during the course
Assessment	• Written examination (50 %) • Oral examination (50 %)
Course Evaluation	By completion of University Unit Evaluation Questionnaire by students, annual assessment by Unit Co-ordinator. A full external review by the UBx Academic Quality & Standards Committee.

Course/Unit	Biological Oceography
MER Code	MER UBx 0001
ECTS	6
Level	Compulsory (UBx)
Semester	1
Timetable slot	To be advised
Teaching Staff	X de Mountaduoin (Coord.)
Synopsis	Biological community structures in marine environment, as a function of control variables and forcing parameters.
Aims	To provide an introduction to biological oceanography and the methods and procedures employed in marine biological exploration.
Objectives At the end of the Unit, the student should:	1. understand the different options of community structures in marine environment, as a function of control variables and forcing parameters.
Key Skills Acquired At the end of the Unit, the student should be able to:	1. apply tools for the description and comparison of marine populations, diversity measurements and ecosystem functioning, as a response to environmental conditions. 2. become familiar with basic laboratory and fieldwork in biological oceanography

Programme/Syllabus	1. Introduction to tools for the description and comparison of marine populations, diversity measurements and ecosystem functioning, as a response to environmental conditions. 2. Darkness-chemotrophic systems 3. Heterogeneous systems-observation scales 4. Interaction between species and environment 5. Research stage at the Arcachon Marine Station 6. Oligothrophic systems 7. Interactions between plankton and benthic communities 8. Turbid and brackish water systems.
Learning & Teaching	• Formal Lectures: 34 • Seminar: 6 • Field work: 4 • Laboratory practicals: 10
Bibliography	Delivered during the course
Assessment	• Written examination (50 %) • Oral examination (50 %)
Course Evaluation	By completion of University Unit Evaluation Questionnaire by students, annual assessment by Unit Co-ordinator. A full external review by the UBx Academic Quality & Standards Committee.

Course/Unit	Chemical Oceanography
MER Code	MER UBx 0002
ECTS	6
Level	Compulsory (UBx)
Semester	1
Timetable slot	To be advised
Teaching Staff	P Martínez (Coord.); P Anschutz; J Schafer, N Savoye
Synopsis	Topics covered will include: the description of the chemistry of sea-water; marine biogeochemistry; chemical fluxes from the continent to the ocean; ocean-atmosphere interactions; and oceanic crust-sea-water interactions.
Aims	To provide an understanding of: the chemical composition of the sea and learn quantitative approaches to element reactivity at various interfaces and interactions with marine biosphere, (bio)geochemical transfer processes, at different scales (time and space).
Objectives At the end of the Unit, the student should:	1. understand the chemistry of seawater; 2. understand the concepts of the biogeochemistry and their principal chemical processes; and 3. understand the fluxes between the continent and the ocean.
Key Skills Acquired At the end of the Unit, the student should be able to:	1. understand through an interdisciplinary approach the chemical composition of the sea 2. become familiar with quantitative approaches to element reactivity at various interfaces, interactions with the marine biosphere, (bio)geochemical transfer processes at different scales of time and space.

Programme/Syllabus	1.- Introduction to chemical composition of the seas. 2.- Biogeochemical processes. 3.- Marine carbon cycle 4.- Radionuclides 5.- Continent-ocean interactions 6.- Estuaries 7.- Mass transfers, from the photic zones to deep water 8.- Water-rock interactions 9.- Analytical instruments and techniques in water geochemistry 10.- Research stage at the Arcachon Marine Station. 11.- Research stages at the national coastal Research Vessel 'Côte de la Manche'.
Learning & Teaching	• Formal Lectures: 30 • Seminar: 11 • Field work: 10
Bibliography	Delivered during the course
Assessment	• Written examination (60 %) • Practical examination and report (40%)
Course Evaluation	By completion of University Unit Evaluation Questionnaire by students, annual assessment by Unit Co-ordinator. A full external review by the UBx Academic Quality & Standards Committee.

Course/Unit	Dynamic Oceanography
MER Code	MER UBx 0003
ECTS	6
Level	Compulsory (UBx)
Semester	1
Timetable slot	To be advised
Teaching Staff	N Senechal (Coord.); A Sottolichio, B Lubac, T Corrège
Synopsis	Fundamental knowledge on Ocean dynamics (fluid mechanics, physical properties, global circulation)
Aims	To provide an introduction to Ocean Dynamics (fluid mechanics, physical properties, global circulation)
Objectives At the end of the Unit, the student should:	1. understand fluid dynamics; 2. understand the physical seawater properties and global circulation; and 3. understand atmospheric and meteorological physical parameters.
Key Skills Acquired At the end of the Unit, the student should be able to:	1. solve problems of fluid dynamics 2. interpret data of descriptive physical oceanography 3. interpret meteorology data

Programme/Syllabus	1.- Introduction to fluid dynamics (e.g. Navier Stokes equations, geostrophic equilibrium, Ekman transport, vorticity) 2.- Descriptive Oceanography (physical seawater properties, global circulation, regional Oceanography, ocean-atmosphere interactions) 3.- Meteorology (physical parameters, global atmospheric circulation, thermodynamics, visit to Meteo France)
Learning & Teaching	• Formal Lectures: 25 • Seminar: 30 • Field work: 6 All more or less mixed to into «integrated courses»
Bibliography	• Introductory Dynamical Oceanography. 2nd Edition. Authors: Stephen Pond George L. Pickard. eBook ISBN: 9780080570549. Paperback ISBN: 9780750624961. Imprint: Butterworth-Heinemann. Published Date: 22nd October 2013
Assessment	• Written examination (30 %) • Oral examination (20 %) • Practical examination (50%)
Course Evaluation	By completion of University Unit Evaluation Questionnaire by students, annual assessment by Unit Co-ordinator. A full external review by the UBx Academic Quality & Standards Committee.

Course/Unit	Seafloor Geology
MER Code	MER UBx 0004
ECTS	6
Level	Compulsory (UBx)
Semester	1
Timetable slot	To be advised
Teaching Staff	JL Schneider (Coord.); J Bonnin, T Corrège, V Hanquiez
Synopsis	General characteristics of marine environments, with respect to geology and oceanography, as a basis for further studies in different domains of marine sciences, (e;g. paleoclimatology, sedimentology, hydrography, etc.).
Aims	To provide an introduction to the chemistry of seawater, through qualitative and quantitative approaches and presentation of the chemical interactions between the lithosphere, biosphere, and the atmosphere and the ocean
Objectives At the end of the Unit, the student should:	1. Understand the general characteristics of marine environments, with respect to geology and oceanography, as a basis for further studies in different domains of marine sciences (e;g. paleoclimatology, sedimentology, hydrography, etc.).
Key Skills Acquired At the end of the Unit, the student should be able to:	1. interpret basic data in marine geology (Imaging, seismic, magnetic anomalies); and 2. become familiar with sampling techniques

Programme/Syllabus	1. Introduction to the main physiographic domains 2. Methodological approaches and tools in Marine Geology (imaging, seismic, magnetic anomalies, etc.). 3. Sampling techniques (e.g. coring). 4. Composition, structure and evolution of marine ground. 5. Interactions between oceans and inner planetary dynamics. 6. Marine sediments, as archives of geodynamics and paleoclimate. 7. Field trip and core sampling on-board a research vessel on the Gironde Estuary. 8. Field trips and core sampling on-board a research vessel around the Arcachon Lagoon.
Learning & Teaching	• Formal Lectures: 18 • Seminar: 14 • Field work: 12
Bibliography	Delivered during the course
Assessment	• Written examination (50 %) • Oral examination (50 %)
Course Evaluation	By completion of University Unit Evaluation Questionnaire by students, annual assessment by Unit Co-ordinator. A full external review by the UBx Academic Quality & Standards Committee.