Montpellier SupAgro Training offer in English for international incoming students

Academic year 2021/2022

Autumn semester, Spring semester or Full Year

VINIFERA MASTER

Complete 30 ECTS attending the courses of the Vinifera euromaster about vine&wine.

- Calendar of the modules offered page 2
- Syllabus of the modules at : https://www.vinifera-euromaster.eu/wp-content/uploads/2019/10/MODULE-HANDBOOK-M1-2017-modif-Ecology.pdf

Spring semester

PARCOURS

Choose one Teaching Unit per period. This will be equivalent to full time study.

	Period 1 25 January -19 February 7 ECTS	Period 2 1 – 26 March 7 ECTS	Period 3 29 March – 23 April 7 ECTS
Agroecology	Discover Agroecology : Core Concepts *(see page 3)*	Agroecology in Depth Knowledge (see page 4)	The Agroecological Transition : Implementation (see page 5)
Plant Science	Designing New Crops for the Future (see page 6)	Training in AGROPOLIS Research Community : special topics in advanced Plant Sciences (see page 7)	Evolutionary applications in agriculture : Evolutionary Concepts for the Management of Agro-Ecosystems (see page 8)
Data Manager for Environmental Projects	Collecting Environmental Data (see page 10)	Environmental Data Processing and Analysis (see page 11)	Mobile and Web Management of Environmental Data (see page 12)
Sustainable Development concepts in Territories and Business		Sustainability and Society (see page 13)	

JUNIOR RESEARCH LAB or INTERNSHIP

In period 4 (May - June, 8 weeks) join the Junior Research Lab – JRL (8 ECTS) (see page 14) or do an internship (7 ECTS) in one of our Research Units (https://en.montpellier-supagro.fr/research/scientific-policy/research-units).

COMBINE

When possible, you can combine modules from the PARCOURS, modules of Vinifera, JRL and/or internship.

VINIFERA EUROMASTER

SPRING / AUTUMN or FULL YEAR ***7 September 2020 – 4 June 2021***

DATES		UNITS/HOLIDAYS
	arrival 4/09	
07/09/20	11/09/20	Company and Terroir auditing
14/09/20	18/09/20	Company and Terroir auditing
21/09/20	25/09/20	Vine Biology
28/09/20	02/10/20	Vine Biology
05/10/20	09/10/20	Vine biology
12/10/20	16/10/20	Wine economics
19/10/20	23/10/20	Wine economics
26/10/20	30/10/20	Wine economics
02/11/20	06/11/20	Wine economics
09/11/20	13/11/20	Enology
16/11/20	20/11/20	Enology
23/11/20	27/11/20	Enology
30/11/20	04/12/20	Enology
07/12/20	11/12/20	exam preparation
14/12/20	18/12/20	Exam week economics + enology + Vine Biology
21/12/20	25/12/20	Holidays Christmas
28/12/20	01/01/21	Holidays Christmas
04/01/21	08/01/21	Wine processing (Wine Making)
11/01/21	15/01/21	Wine processing (Wine Making)
18/01/21	22/01/21	Wine processing
25/01/21	29/01/21	Wine processing (Postvinification)
01/02/21	05/02/21	Project management
08/02/21	12/02/21	Project management
15/02/21	19/02/21	Holidays
22/02/21	26/02/21	Wine analysis
01/03/21	05/01/00	Wine analysis
08/03/21	12/03/21	Sensory analysis
15/03/21	19/03/21	Vine ecology and physiology
22/03/21	26/03/21	Vine ecology and physiology
29/03/21	02/04/21	Vine ecology and physiology
05/04/21	09/04/21	Vine ecology and physiology
12/04/21	16/04/21	Exams, Eco-Physio, Win. Proc. + proj management + retakes
19/04/21	23/04/21	Holidays
26/04/21	30/04/21	Viticulture
03/05/21	07/05/21	Viticulture
10/05/21	14/05/21	Study trip
17/05/21	21/05/21	Viticulture
24/05/21	28/05/21	Viticulture
31/05/21	04/06/21	Exam viti + retakes

Syllabus of the modules:

https://www.vinifera-euromaster.eu/wp-content/uploads/2019/10/MODULE-HANDBOOK-M1-2017-modif-Ecology.pdf

Discover Agroecology: core concepts

SPRING 2021 ***25 January -19 February 2021***

Reference of the course: AGROECOLOGY UE1 - 300

Persons in charge

Aurélie Javelle, Magali Jouven, **Stéphane de Tourdonnet**. Assistant: Mylène Letellier

Department of Soil, Water, Crops and Livestock Systems

Department of Biology and Ecology

Department of Economics, Management and Social Sciences

Organization and credits

The course is a full time 4-week-long course. Successful completion of this course brings 7 ECTS credits

Teaching language

English (B1 level)

Objectives

The general objective of the course is to apprehend agroecology through an interdisciplinary approach combining agronomy, ecology, social and economical sciences. The aim of this specific course is to present the players and the different dimensions of agroecology (scientific disciplines / social and political movements / sets of practices), and analyze the reference framework on which they are based.

The objective of the course will not be to give a single definition of the polysemous concept of agroecology but to help students to understand the multiple facets of this concept.

Course content

The teaching is organized around two main themes:

(i) an historical and scientific approach to understand how agroecology has emerged, has shifted the lines within various disciplines and at their interfaces, and has generated controversy

(ii) an analysis of the diversity of actors and of experiences of the agroecology, rooted in the real world.

A large place will be given to reflexive analysis, comparative analysis and discussion to allow students to understand the diversity of the agroecology approaches, identify conceptual and ethical positioning and analyze the modalities for the practical implementation of agroecology.

The course will combine lectures-seminars, tutorials, analyses of real-world case studies, interviews and on-site visits. Students are required to: (1) attend all classes, tutorials and discussion, (2) develop self-learning, (3) work on interviews and (4) take a final examination.

Books and other reading materials

No books have been ordered for this course. All required readings are available as downloads from the Montpellier SupAgro teaching platform. There is no formal reading packet for this course.

Requirements

The course is open to Junior or Senior Students in agronomy. No specific prerequisites.

Grades

The final mark will be a weighted average between an individual exam and a group project.

Partnership

Research Units: Innovation, Cefe, Eco&Sols, System, Selmet, Agap, HortSys et Aida

Associations: Terre & humanisme, semeurs de jardins Civam etc.

Agroecology in depth knowledge

SPRING 2021 ***1-26 March 2021***

Reference of the course: Agroecology UE2 - 400

Persons in charge

Elena Kazakou, Aurélie Metay, Muriel Tavaud and **Stéphane de Tourdonnet ;** Assistant: Martine Paradis.

Department of Soil, Water, Crops and Livestock Systems

Department of Biology and Ecology

Department of Economics, Management and Social Sciences

Organization and credits

The course is a full time 4-week-long course. Successful completion of this course brings 7 ECTS credits

Teaching language

English (B1 level)

Objectives

The general objective of the course is to present the processes underpinning agroecology to mobilize ecological functionality in agro-ecosystems. Students are expected to analyze, evaluate and integrate these processes through a systemic approach conducted at different levels: plot, ecosystem, production system, socio-ecosystem. Teaching is focused on a functional analysis of the agro-ecosystem to highlight the key processes of agroecology as well as the concepts and methods to study and evaluate the provided ecosystem services.

Course content

The teaching will address the following topics: Ecological, Biological, Technical and Social Processes in agroecology, biodiversity and diversity of practices in agro-ecosystems, construction of agroecology knowledge and learning. Students will develop an integrated analysis on case studies and a field camp.

The course will make extensive use of a digital learning resources developed by the teaching team (MOOC agroecology). During the Mooc session, the students will be placed in the position of tutor of the participants forums, community manager, animator of the live events of the Mooc. A dedicated training will enable them to work the necessary skills.

The course will combine lectures-seminars, tutorials, and on-site visits. Students are required to: (1) attend all classes, tutorials, e-learning activities and discussion, (2) develop self-learning, (3) work on a project during the field camp, and (4) take a final examination.

Books and other reading materials

No books have been ordered for this course. All required readings are available as downloads from the Montpellier SupAgro teaching platform. There is no formal reading packet for this course.

Requirements

The course is open to Junior or Senior Students in agronomy. Prerequisites: sequence 1 of the Mooc Agroecology.

Grades

The final mark will be a weighted average between an individual exam and a group project.

Partnership

Research Units: Innovation, Cefe, Eco&Sols, System, Selmet, Agap, HortSys et Aida

Associations: Terre & humanisme, semeurs de jardins Civam etc.

The Agroecological Transition: implementation

SPRING 2021 ***29 March – 23 April 2021***

Reference of the course: Agroecology UE3 - 400

Persons in charge

Ronan Le Velly, Claire Marsden, Sophie Thoyer and **Stéphane de Tourdonnet ;** Assistant: Isabelle Bastié.

Department of Soil, Water, Crops and Livestock Systems

Department of Biology and Ecology

Department of Economics, Management and Social Sciences

Organization and credits

The course is a full time 4-week-long course. Successful completion of this course brings 7 ECTS credits

Teaching language

English (B1 level)

Objectives

The general objective of the course is to analyze the evolution of practices and systems, as well as the innovation and transition processes toward agroecology. The course will present the levers (Public and Research Policies, devices to co-design technical systems, support systems and socio-technical networks ...) to guide these evolutions, aiming at addressing issues such as adaptation to the climate change, reduction of inputs, development of sustainable agriculture and food systems, through the implementation of the principles of agroecology.

Teaching is focused on the presentation of concepts, approaches and instruments of the agroecological transition to strengthen students' ability to drive change and to assess the corresponding impacts at the economic, social, agricultural and ecological levels.

Course content

The teaching will address the following topics: Innovation and agro-ecological transition, Greening of public policy, Technical, organizational and economic levers of agroecology, Evaluation methods and (co) design of agro-ecological systems, Ecological Engineering.

Small groups of students will have to work on projects in relationship with outside partners (community, association, cooperative etc.) to conceive and ex-ante evaluate the agroecological transition of a small territory.

The course will combine lectures-seminars, tutorials, and project-based learning through the analysis of a real-world case study. Students are required to: (1) attend all classes, tutorials and discussion, (2) develop self-learning, (3) work on a project, and (4) take a final examination.

Books and other reading materials

No books have been ordered for this course. All required readings are available as downloads from the Montpellier SupAgro teaching platform. There is no formal reading packet for this course.

Requirements

The course is open to Junior or Senior Students in agronomy. Prerequisites: sequences 1 to 4 of the Mooc Agroecology.

Grades

The final mark will be a weighted average between an individual exam and a group project.

Partnership

Research Units: Innovation, Cefe, Eco&Sols, System, Selmet, Agap, HortSys et Aida

Communauté d'agglomérations de Montpellier, Ville de Montpellier (zoo)

Designing new crops for the future

SPRING 2021 ***25 January -19 February 2021***

Reference of the course: Plant Science UE1 - 300

Persons in charge

Dr. Dominique THIS , office phone: (+33) 467 615 829

Department of Biology and Ecology

Organization and credits

The course is a full time 4-week-long course. Successful completion of this course brings 7 ECTS credits

Teaching language

English (B1 level)

General theme of the course

Changes affecting agriculture at the world level (environmental and societal changes) bring questions about paradigm shift in crop breeding and health. This course aims at guessing and designing the upcoming crop varieties and plant protection strategies to be developed in future production chains.

This course will bring scientific bases and methods to reflect on evolutions of plant breeding and plant protection at the global level. It will aim at learning how to design new plant ideotypes and plant protection systems in line with natural resources preservation, and integrate them into either innovative or traditional farming systems. Finally, this course aims at making students acquire additional operational skills and discover careers in plant breeding and crop protection sectors.

Course content

The course will combine lectures-seminars, laboratory, field and/or Company on-site visits and project-based learning.

1. **First week theme:** To analyze and predict the impacts of climate and societal changes on cropping systems
   Keywords: Climate change, societal expectations, crop pests, food security, diversification of agricultural production
2. **Second week theme:** To define suitable crop ideotypes well adapted to environmental constraints and new-coming agricultural systems
   Keywords: ideotype, biocontrol, tolerance to biotic and abiotic constraints, genotype/environment interaction
3. **Third week theme:** Available methods to be developed to go towards the engineering of the desired crop ideotypes
   Keywords: genetic innovation, interaction between plants, pests and their natural enemies, link between genotype and phenotype, multi trait combination, control of genetic recombination
4. **Fourth week theme:** Technical, societal and legal challenges
   Keywords: perception towards innovation, public acceptability, production processes, GMOs, participatory plant breeding, legal issues

Students are required to: (1) attend all classes, discussion and on-site visit sections, (2) informally and formally participate in class and all exercises, (3) prepare an essay on a synthesis case study, and (4) take a final oral examination.

Books and other reading materials

No books have been ordered for this course. All required readings are available as downloads from the Montpellier SupAgro teaching platform. There is no formal reading packet for this course.

Requirements

The course is open to Junior or Senior Students in Biology.

Grades

Grades are based on (i) evaluation of individual participation to classes and to the different exercises; (ii) evaluation of a written report (10 pages max) and (iii) final oral examination (15 minutes)

Civility in the classroom

It is a requirement of this class that you not engage in non-class e-activities during lecture and section. If you should engage in non-class e-activities will be asked to leave the classroom for the remainder of the day. In the unlikely event that this becomes an ongoing problem, your final grade will be affected.

Final note

We reserve the right to make modifications [additions, deletions, etc.] to the syllabus, assignments, requirements and expectations for this course; any such modifications will be clearly communicated and communicated in a timely way.

Training in Agropolis research community: special topics in advanced Plant Sciences

SPRING 2021 ***1-26 March 2021***

Reference of the course: Plant Science UE2 - 400

Persons in charge

Jean-Jacques Kelner, Anna Medici, Véronique Marie-Jeanne.and Dr. Dominique THIS

Department of Biology and Ecology

Organization and credits

The course is a full time 4-week-long course. Successful completion of this course brings 7 ECTS credits

Teaching language

English (B1 level)

General theme of the course

The attractiveness of the Montpellier Research Campus in the field of plant science is mainly due to the excellence of the scientific research and higher education network of Agropolis (www.agropolis.fr). However, this community is not well known by students. Also, some of the research units do not know the potential of the students coming to Montpellier SupAgro as future trainees or staff. This course aims at filling this gap by introducing the students to the richness of the Montpellier scientific network in plant sciences, ecology and crop protection. Students will participate to a scientific project conducted within an Agropolis research unit and supervised by our research partners. They thus will learn the different steps of the scientific approach: to carry out a state-of-the-art, to formulate scientific hypotheses, to implement an experimental process and to discuss the results. This will contribute to develop scientific rigor, scientific communication, ability to work in a team, and more generally the adaptation to a professional environment.

Course content

The course will be based on project-based learning as well as practical exercises. The students will work in small groups. Students will also attend scientific seminars and develop self-learning.

1. **First week:** Presentation of the scientific environment and analysis of the state-of-the-art relative to the research project (bibliography)
2. **Second week:** Establishment of the methodology and start of the experiments
3. **Third week:** Development of the experiments and collection of results
4. **Fourth week:** Analysis of the results and presentation of the work

The week-to-week progress of the work will depend on the subject the student will work on.

Students are required to: (1) attend all classes, discussion and practical exercises, (2) report on their work on a weekly basis, and (3) make a final oral presentation of their work. The course requires a full time investment in the projects

Books and other reading materials

No books have been ordered for this course. All required readings are available as downloads from the Montpellier SupAgro teaching platform. There is no formal reading packet for this course.

Requirements

The course is open to Junior or Senior Students in biology

Grades

Grades are based on (i) evaluation of individual participation to classes and to the different exercises; (ii) evaluation of a written report (10 pages max) and (iii) final oral examination (15 minutes)

Final note

We reserve the right to make modifications [additions, deletions, etc.] to the syllabus, assignments, requirements and expectations for this course; any such modifications will be clearly communicated and communicated in a timely way.

Evolutionary applications in agriculture: evolutionary concepts for the Management of Agro-Ecosystems

SPRING 2021 ***29 March – 23 April 2021***

Reference of the course: Plant Science UE3 - 400

Persons in charge

Pr. Vincent RANWEZ and Dr. Jean-François MARTIN

Department of Biology and Ecology

Organization and credits

The course is a full time 4-week-long course. There is one week of vacation in the middle of the course. Successful completion of this course brings 7 ECTS credits.

Teaching language

English (B1 level)

General theme of the course

Modern agro-ecosystem management must resolve the potentially conflicting objectives of short-term, intensive production and long-term sustainability whilst simultaneously reducing negative environmental impacts. This course aims at providing students with the key theoretical background elements needed to comprehend and assess the agro-ecosystem within an evolutionary framework.

Relevant evolutionary concepts will be used to shed light on processes such as: domestication and its impact on cultivated plants; adaptive potential to biotic or abiotic stresses; identification of candidate genes for adaptation; community dynamics influencing host/pathogen, plant/microbiome or arthropod-related interactions; the spread of invasive species. To achieve this goal, students will be introduced to the essential theoretical background from population genetics, molecular evolution and phylogeny, as well as community dynamics and interactions.

Key concepts to be mobilized are molecular diversity, evolutionary and selection footprint, co-evolution, barcoding, microbiome.

Course content

The course will combine lectures-seminars, tutorials, analyses of real-world case studies and project based learning. Students are required to: (1) attend all classes, tutorials and discussion, (2) develop self-learning, (3) work on a project, and (4) take a final examination.

Tutorials will aim at mastering F-statistics, sequence alignments, advance queries on EnsEMBL and NCBI databases, molecular phylogeny, taxonomic identification as well as understanding the fundaments of tests used to detect selection/adaptation or to characterize microbiomes.

Students are expected to develop their ability to read scientific article and question methodological choices, to apprehend agronomic question in a broader evolutionary framework, to propose biological interpretation based on molecular data analysis and to suggest further analysis to validate those hypotheses, to work with others: being able to emit/accept constructive criticism, being open-minded and inquisitive, being respectful of other point of view, being diligent and punctual.

Details on class participation, the proposed projects, and the final oral presentation will be discussed in class or in discussion section.

1. **First week:** Genetic resources in agriculture and conservation biology (molecular diversity): Characterizing genetic/genomic diversity via high-throughput molecular methods, Understanding evolutionary processes shaping allelic distribution, Quantifying molecular diversity, Conducting taxon identification and phylogenetics analyses for diagnostics and classification
2. **Second week:** Molecular breeding, dynamics of adaptation, candidate gene identification (footprints of selection): Establishing a null hypothesis to detect selection for adaptation to biotic and abiotic conditions, Detecting selection at the genome level for adaptation to biotic and abiotic conditions
3. **Third week:** Domestication history, epidemiology, emergence of resistances and geographical expansion (spreading): Understanding how molecular diversity is shaped by organism reproductive traits, Deciphering the history of populations at different time and space scales, Retracing phylogeography and geographical expansion to understand the past and predict the future
4. **Fourth week:** Community evolutionary dynamics (interactions): Understanding co-evolution and how it can be tested, Knowing the importance of soil microbiome and how metagenomics allows to characterize it, Understanding that the plant level is not the sole relevant level

Books and other reading materials

No books have been ordered for this course. All required readings are available as downloads from the Montpellier SupAgro teaching platform. There is no formal reading packet for this course.

Requirements

The course is open to Junior or Senior Students in biology

Grades

The final mark will be a weighted average between an individual exam and a group project.

Final note

We reserve the right to make modifications [additions, deletions, etc.] to the syllabus, assignments, requirements and expectations for this course; any such modifications will be clearly communicated and communicated in a timely way.

Collecting Environmental data

SPRING 2021 ***25 January -19 February 2021***

Reference of the course: Data Manager for environmental projects UE1 - 300

Persons in charge

Hazaël JONES (hazael.jones@supagro.fr) and Arnaud DUCANCHEZ (arnaud.ducanchez@supagro.fr)

Organization and credits

The course is a full time 4-week-long course. Successful completion of this course brings 7 ECTS credits.

Teaching language

English (B1 level)

Objectives

Measurement is one of the major components of environmental monitoring, whether for water quality, atmospheric conditions. It forms the basis on which hazard management strategies or policies related to the protection and management of the natural environment can be implemented. The objective of this teaching unit is to provide with students the physical and organizational principles for collecting information to describe the natural environment. This module will introduce the first steps of geo-referenced data project management with the application of sensors and their connection to a communication network. The sampling, data validation and representation of information issues will also be considered

Course content

The course will combine lectures-seminars, tutorials, interviews and on-site visits and project-based learning.

The goal for the students is to be able to perform an effective environmental data collection in order to carry out an agri-environmental project. To achieve this goal, the following program will be done:

- First week: Sensors and Arduino, Data Format: this week is about how to concretely manage sensors with basic knowledge of sensors and their characteristics for agro-environmental applications. Development of measuring system based on Arduino open-source platform within the framework of agro-environmental project is done. An introduction about data for agronomy and agriculture is also given.
- Second Week: Wireless Sensor Network (WSN) and Arduino, Computer networks, Metadata: this week will give theoretical knowledge about how computer networks work and how wireless sensor network are managed with Arduino. An introduction about what are metadata and why they are useful for environmental data projects is given.
- Third Week: Statistics and Sampling, In-field data acquisition: this week will give the basics on how to perform a good sampling for data acquisition; it will then be concretely achieved in the field on a concrete application.
- Fourth Week: Data processing, Geomatics and Geographic Information System (GIS) basics, Global navigation satellite system (GNSS). This week will be about the first steps of data processing once the data have been gathered. As many data are of spatial nature, geomatics, GIS and GNSS notions will be investigated.

Keywords: Sensors and Metrology, Wireless Sensors Networks (WSN), Arduino platform, Networks, Metadata and Data formats

Books and other reading materials

No books have been ordered for this course. All required readings are available as downloads from the Montpellier SupAgro teaching platform. There is no formal reading packet for this course.

Requirements

Very basic skills in programming (any language) may be useful.

Grades

Grades are based on evaluation of individual participation to classes and a group project.

Partnership

Research Units: UMR MISTEA (SupAgro INRA) and UMR ITAP (SupAgro IRSTEA)

Environmental Data Processing and Analysis

SPRING 2021 ***1-26 March 2021***

Reference of the course: Data Manager for environmental projects UE2 400

Persons in charge

Bénédicte FONTEZ (benedicte.fontez@supagro.fr) and Nicolas DEVAUX (nicolas.devaux@supagro.fr)

Organization and credits

The course is a full time 4-week-long course. Successful completion of this course brings 7 ECTS credits.

Teaching language

English (B1 level)

Objectives:

To propose a set of methods and tools to study complex data (georeferencing, temporal data and so on) in order to identify consistent sub-sets and to represent these results in the form of maps and charts.

Course content

The course will combine lectures-seminars, tutorials, interviews and on-site visits and project-based learning.

Detailed contents:

- Distributed spatial data extraction and management
- Spatial autocorrelation - variogram - variance estimation
- Introduction to linear model
- Regression over spatially autocorrelated variables
- Variogram – Kriging
- Introduction to semantic networks, ontologies
- Introduction to big data management
- Geomatics

Books and other reading materials

No books have been ordered for this course. All required readings are available as downloads from the Montpellier SupAgro teaching platform. There is no formal reading packet for this course.

Requirements

Basic knowledge in:

- Statistics (sampling, estimation, principle of statistical tests)
- Databases (tables and simple SQL queries)

Grades

Grades are based on evaluation of individual participation to classes and a group project.

Partnership

Research Units: UMR MISTEA (SupAgro INRA) and UMR ITAP (SupAgro IRSTEA)

Mobile and web management of environmental data

SPRING 2021 ***29 March – 23 April 2021***

Reference of the course: Data Manager for environmental projects UE3 -400

Persons in charge

Bruno TISSEYRE (bruno.tisseyre@supagro.fr) and Philippe VISMARA (philippe.vismara@supagro.fr)

Organization and credits

The course is a full time 4-week-long course. Successful completion of this course brings 7 ECTS credits.

Teaching language

English (B1 level)

Objectives:

To provide decision support at different level (local, national, regional and international) environmental data and land use information must be available for many different activities and stakeholders. Sharing and dissemination of environmental data is therefore a challenging issue which largely relies on web and mobile technologies. The first goal of this teaching unit is to provide with the student an overview as well as a description of the main technologies available to tackle the issue of dissemination of environmental data. The second goal is to involve the student in a project management aiming at applying these technologies to real environmental project with collecting platforms (crowd-sourcing, sensor networks, and so on) and dissemination of information. Spatial data like maps and remote sensing image will be the core of the project.

Course content

The course will combine lectures-seminars, tutorials, and project-based learning.

- First fortnight theme: Designing a mobile web application for on-site collecting data
  Keywords: Interactive web pages with JavaScript, Web services
- Second fortnight theme: Project in precision agriculture

Students are required to: (1) attend all classes, tutorials and discussion, (2) develop self-learning, (3) work on a project and contribute to the restitution seminar.

Books and other reading materials

No books have been ordered for this course. All required readings are available as downloads from the Montpellier SupAgro teaching platform. There is no formal reading packet for this course.

Requirements

Very basic skills in:

- Web design (basic knowledge of HTML tags and CSS)
- Programming (any language)

Grades

Grades are based on evaluation of individual participation to classes and a group project.

Partnership

Research Units: UMR MISTEA (SupAgro INRA) and UMR ITAP (SupAgro IRSTEA)

Sustainability and Society

Spring 2021 *1 – 26 March 2021*

Reference of the course: Sustainable Development Concepts in Territories and Businesses UE2

Persons in charge

Anne-Sarah CHIAMBRETTO (anne-sarah.chiambretto@supagro.fr) and Clara ROUSSEY (clara.roussey@supagro.fr)

Organization and credits

The course is a full time 4-weeks-long course. Successful completion of this course brings 7 credits.

Objectives and course content

This teaching unit provides tools for a systemic understanding of sustainable practices, from a social science perspective. Mixing interventions in marketing, management, economics, engineering sciences and finance, it links value chains to life cycle analyses, and proposes an interdisciplinary approach to sustainable behaviors.

From a management perspective, the course focuses on sustainable issues and practices at work throughout the value chains, from producers to consumers.

It aims at understanding the Corporate Social Responsibility (CSR) appearance and development mainly characterized by the proliferation of voluntary standards and multi-stakeholders' initiatives at national and international scales and the introduction of new practices concerning social and environmental management. Based on case studies using strategical, political and critical approaches, students will analyze CSR practices to grasp their impacts, limits and transformative potential.

In terms of sustainable consumption, the course aims at understanding the relationships between food consumption practices, market devices (rules and standards, advertising and packaging, supply chains and retail places…) and sustainable development goals (waste reduction, environmental protection, development of small producers…). At the end of the unit, students should be able to grasp the complexity of sustainable consumption practices (attitude-behavior gaps, contradictions…), to understand the way these practices are shaped and enabled by the market devices, and to analyze the various impacts in terms of sustainability of the different ways of agencing sustainable consumption.

The students will also be involved in an interdisciplinary exercise linking economics and life cycle analysis using the example of biofuel development. First, the exercise will focus on how economic modelling can help us to understand the complex interactions between land and labor markets, international agricultural prices and demand for agricultural commodities. Second, they will implement a life cycle analysis of biofuels in order to understand the impact of their development on the environment. This exercise both allows to acquire new skills and knowledge but also to grasp the challenges linked to the development of interdisciplinary studies.

Key concepts

The key concepts are related to sustainable consumption and production, from concerns to behavior and production processes. The course mainly relies on life cycle analysis, CSR and basic notions of finance.

Tools and methods

The tools used require the students to participate actively in the construction of the course. Part of the course is based on field studies. The objective is to understand, based on a precise case study, the interrelations between production, distribution and consumption; understand what are the sustainability issues at stake on this precise case; study how consumers deal with these sustainability issues and how they act (consumer survey). Moreover, the student will also be introduced to the methodology of life cycle assessment methods.

Fields

Economics (15h); Engineering sciences (10h); Management (25h).

Requirements and teaching language

Teaching is in English. Basic notions in management, economics and public policies.

Grades

Continuous exam (50%); Final exam (50%).

Junior Research Lab

SPRING 2021 ***3 May – 25 June 2021***

Reference of the course: Junior Research Lab (JRL)

Persons in charge

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Organization and credits

The course is a full time 8-week-long course. It is organized into three main types of activities:

(i) learning sessions to acquire in-depth knowledge and practical skills for data management and analysis, in particular in R, literature management, data management, good replication practices, scientific writing and oral presentations;

(ii) weekly seminars led by expert scientists organized by the students themselves;

(iii) autonomous scientific small-group projects for at least 50% of the time. This is not an internship. The students are not located in the research units, but in the heart of the Gaillarde campus in a room dedicated to the JRL.

Successful completion of this course brings 14 ECTS credits (1/2 semester).

Teaching language

English (minimum TOEIC-B2 level – 785 pts)

General theme of the course

The Junior Research Lab (JRL) is an eight-week teaching unit dedicated to learning through research. Students can choose their research theme, benefit from the support of senior researchers and are encouraged to develop co-training. It is a bridge between academic input and research activity, an opportunity for students to exchange with students from other disciplines, other countries and to prepare a long-term personal research project. It puts students in the position of managing a research project from the construction of working hypotheses, the acquisition of data, their analysis and the sharing of their research in written and oral form. The scientific and transversal objective of this module is therefore to enable students to develop their ability to:

0. Improve autonomously their academic knowledge through the reading of scientific literature and the development of their critical thinking skills
1. Conduct a research activity,
2. Manage a scientific project using the AGILE methodology,
3. Plan the phases of acquisition, analysis and sharing of the products of their research,
4. Use analytical tools,
5. Organize their approach with a view to reproducibility and quality of results.
6. Work in a small (4/5) multicultural group, both face-to-face and at a distance,
7. Write a scientific article that is a product of their research,
8. Present a scientific project orally in English in 180'.

Scientific disciplines: The scientific topics of the research project are addressed through the field of expertise of l'Institut Agronomique, i.e, mainly in biology, ecology, sol sciences, agronomy, rural economics. Every year, a team of academics is volunteering for mentoring the students during their project. Available discipline varies accordingly.

Books and other reading materials

No books have to be ordered for this course. All required readings are available as downloads from the teaching platform. There is no formal reading packet for this course.

Requirements

The level of the course is pivotal between advanced undergraduate and the start of graduate courses. Good basis in biology, mathematics, physics, chemistry as well as the B2 English capacity are required and will be evaluated.

Although it is not mandatory, having a laptop is useful so the student can work with as much flexibility as possible as the projects requires using multiple workspaces in the campus.

Grades

The evaluation of Grades is based on (i) the project-group scientific article (50%), (ii) the individual peer-review of another article (20%), (iii) the individual 180 seconds flash presentation (20%) and (iv) the ongoing scientific network exercise.

Final note

We hold the right to make modifications [additions, deletions, etc.] to the syllabus, assignments, requirements and expectations for this course; any such modifications will be clearly communicated and communicated in a timely way.

Research skills and disciplinary content

Research skills & Disciplinary content	Nb of hours
Agile Project management	12h
Literature survey and management (Zotero)	3h
Data analysis and visualization (R Tidyverse)	18h
Basic programming (R and bash script)	9h
Research Data Management	6h
Reproducible research through code versioning and sharing	6h
Scientific writing	6h
Oral presentation skills	3h

All disciplinary content is addressed within the research projects where it is relevant