



DEPARTMENT OF AGRICULTURE, FOOD AND ENVIRONMENTAL SCIENCES

Ph.D. IN AGRICULTURAL, FOOD AND ENVIRONMENTAL SCIENCES

XXXII (17°) EDITION

ACCADEMIC YEAR 2015/16

ORGANIZATION, ASSESSMENT AND DIDACTIC PLAN

1. Plan of activities:

	Year 1	Year 2	Year 3
NOVEMBER	Meeting with all the new Ph.D. students and the Faculty aimed at communicating the rules and deadlines for the 3 years of doctorate.		
APRIL – JULY (1st and 2nd year), SEPTEMBER (3rd year)	<u>First seminar.</u> A bibliographic seminar introducing the topics of the doctoral thesis. Duration max 30 MIN	<u>Second seminar.</u> A bibliographic seminar introducing the methodologies used for the doctoral thesis. Duration max 30 MIN	<u>Third Seminar.</u> Present the research activities carried out in the 3 years of doctorate studies. Duration max 30 MIN
SEPTEMBER (1st and 2nd year), OCTOBER (3rd year). Written and Oral Report	<u>Annual Report.</u> Didactic research activities carried out during the 1 st year and short program of activities planned for the 2 nd year. Duration max 15 MIN.	<u>Annual Report.</u> Didactic research activities carried out during the 2 nd year and short program of activities planned for the 3 rd year. Duration max 15 MIN.	<u>Final Report.</u> Didactic research activities carried out during the 3 years for the doctorate. Duration max 15 MIN.
<u>Submission:</u> NOVEMBER, 30th	-----	-----	Submission of the Doctoral thesis (1 copy for the University).
<u>Final evaluation:</u> FEBRUARY of the year after.	-----	-----	Final discussion with and external (national – international) evaluation committee.

2. Planning. Seminars and reports will be organized for thematic areas and planned in different days depending to the availability of the Tutors. Dates for seminars and reports can be planned by the Ph.D. students, in agreement with their Tutors, and proposed to the Director of the Ph.D. program about one month before the expected time. Members of the Faculty, Tutors and Co-Tutors of the Ph.D. Students must ensure their presence at the seminars and annual reports.

3. Training activities. In the 3 years, each Ph.D. student must accumulate 180 didactic and research Credits, distributed as described in **Annex 1**. During the 3 years of the Ph.D. program will offer the following didactic activities:

- a. *Structured teaching from the Department Faculty.* In **Annex 2** are reported the courses offered by the Department for the next Academic year (2015-2016). Different courses are offered in English or with a tutorial English.
- b. *Seminars.* The Department is organizing different seminars with national and international experts. These seminars or other seminars from other departments of this University or those from other Universities/Organizations can be recognized for the didactic activity.
- c. *Didactic excursion and conferences.* Didactic excursion and conferences organized by the Department, other departments of this University or of other Universities/Organizations can be recognized for the didactic activity.

4. Internationalization. The internationalization of the Ph.D. program includes the certification of *Doctor Europaeus* that can be achieved with the following steps:

- a) Annual (at least from the 2nd year), final reports and thesis assessed by 2 international peer reviewers.
- b) Training and research activities to be carried out in an external international organization (at least 3 months).
- c) Annual, final reports and Final thesis written in English and assessed by international peer reviewers.

5. Criteria for admission to the subsequent year and the final exam:

- a. For the admission to the **second year**, the student must demonstrate that:
 - Have started the research activities with an appropriate scientific methodology and achieved preliminary results;
 - Have attended about 10 credits of didactic activities;
 - Having received a positive assessment on the 1st bibliographic seminar (Annex 3) and also by the two international referees, if requested. The **Optimum** judgment can be given to those who present a publication - abstract on a national or international journal or congress proceedings or have already completed a period of study abroad.
- b. For the admission to the **third year**, the student must demonstrate that:
 - Have developed the research activities with an appropriate scientific methodology with the achievement of the first relevant results.
 - Have completed the didactic activities (about other 5 credits);
 - Having received a positive assessment on the 2nd bibliographic seminar (Annex 3) and also by the two international referees, if requested. The **Optimum** judgment can be given to those who present a new publication on a national or international journal or has already completed a period of study abroad (at least 3 months).
- c. For the admission to **thesis discussion**, the student must demonstrate that:
 - They developed the Research activities within the PhD themes according to an appropriate scientific methodology and having reached significant results.
 - To have completed the didactic activities.
 - To have achieved a positive assessment on the 3rd bibliographic seminar (Annex 3) and also by the two international referees, if requested.
 - To have produced, in the 3 years, at least a publication on a national or international refereed journal. The **Optimum** judgment can be given only, to those who present a publication accepted/published in refereed international journals and having completed at least three months of study abroad.
 - For two years after the Ph.D. we will continue to monitor the scientific outputs on international refereed journals.

6. Final Thesis. The doctoral thesis, accompanied by a summary in English or Italian, is written in Italian or English or in another official EU language prior to approval by the Faculty. The doctoral thesis must be prepared according to the following standards: Times New Roman, size 16x24cm,

margins: top 3 cm, bottom 3cm, left 2cm, right 2cm; submitted in electronic format and A5 printed, signed by the coordinator of the Ph.D. program and by the tutor.

For the international Ph.D., the thesis, which has attached a report on the activities of the 3 years of activities and the list of publications, is evaluated by at least two Professors highly qualified belonging to foreign institutions, external to individuals who have contributed to the issue of doctorate, nominated as evaluators. The evaluators will make a judgment on the analytical writing of the thesis and propose admission to public discussion or referral for a period not exceeding three months if deemed necessary with significant additions or corrections. After this period, the thesis is in any case admitted to public discussion, accompanied by a new written opinion of such assessors, made in the light of the corrections or additions that may have occurred. The public discussion is held in front of a commission whose composition is proposed by the Faculty members following the Rules of the University. After the discussion, the thesis, with motivated collegial written judgment, is approved or rejected. The commission, by a unanimous vote, has the right to attribute the *Cum laude*.

7. Research funds. The research activities, including participation to conferences and meeting, are supported by funds from the tutor of each Ph.D. student. Starting from the second year, each student is expected, in addition to the scholarship and depending on the availability of funds in the University, a budget for research activities in Italy and abroad, of an amount not less than 10% of the scholarship. If the student is not positively evaluated for the 3 years scholarship, or abandons it, the unused amount remains available to the institution, for the same purpose.

8. Guidelines for the preparation of the written reports and oral presentations. Written report and oral presentation should be prepared in the following settings:

- Systematic description of objectives and research activities undertaken in the first/second year.
- Program of the research activities for the second/third year.
- Courses followed in the year: table with titles, type of activity (over internal/external, teacher/s, hours and calculating C.F). Certificates of participation must be included.
- Possible teaching activity.
- Period of stay abroad (conducted and/or planned in the year), with destination, time and activity.
- List of publications: publications and/or abstracts in journals or conferences acta, dissemination activity, contribution to project reports.
- List of bibliography consulted.
- Who aims for the title of European Doctorate must submit written and oral reports and thesis in English and expect to have two foreign experts as external evaluators of the thesis.
- For the oral presentation it is recommended to not exceed 15 slides, the presentation time is max 10 min.

9. Guidelines for the preparation of the written report and oral presentation for final examinations.

- Summary of the objectives, activities and results achieved in the 3 years.
- Course followed in the 3 years: table with titles, type of activity (over internal/external, teacher/s, hours and calculating C.F). Certificates of participation must be included.
- Possible teaching activity carried out in the 3 years.
- Period of stay abroad (conducted and/or planned in the 3 years), with destination, time and activity.
- Total list of publications: publications and/or abstracts in journals or conferences acta, dissemination activity, contribution to project reports.
- Total list of bibliography consulted.
- Those who aim for the title of European Doctorate must submit the final report and thesis in English and expect to have two foreign experts as external evaluators of the thesis.
- For the oral presentation it is recommended not to exceed 30 slides and a presentation time of 30 min. It should include summaries of research activities carried out and the most significant results.

ANNEX 1. Credits (CFU) distribution between didactic and research activities.

Students must achieve, during the three years, 180 credits distributed as follows:

	Research Activities	Didactic Activities*	Reports*	Total
Year	*CFU (h x 25)	CFU (h x 6)	CFU (h x 25)	
1 st	35 (875)	20 (120)	5 (125)	60
2 nd	50 (1250)	5 (30)	5 (125)	60
3 rd	50 (1250)	5 (30)	5 (125)	60
Total	135 (3375)	30 (180)^(*)	15 (375)	180

*1 credit equals 6 hours of frontal teaching (at least 10 credits must be from courses organized by the Faculty) and 25 hours for research and for the preparation of reports and annual seminars.

ANNEX 2. List and course dates scheduled for the sixteenth cycle

Courses offered by the University

PROGETTARE LA RICERCA: i progetti europei

RESEARCH DESIGN: the European projects

Prof. Nicola Paone - 16 ore

Programma del Corso

1. La ricerca europea
 - a. Programmi Quadro e Horizon 2020
 - b. Gli strumenti di finanziamento alla ricerca.
2. Il ruolo dell'industria nei Programmi Quadro. Le piattaforme tecnologiche
3. I passi nella preparazione di un progetto
 - a. analisi della Call e del Workprogramme
 - b. definizione degli obiettivi
 - c. definizione del partenariato
 - d. definizione dell'impatto
 - e. il programma di lavoro
 - f. il budget e le risorse
4. La valutazione dei progetti
5. Le azioni per la Mobilità dei ricercatori (Marie Curie actions)
6. La conduzione, il progresso e la rendicontazione scientifica del progetto (Meeting di progetto, deliverables, reports, proprietà intellettuale, ecc.)
7. La gestione amministrativa/finanziaria
 - a. La rendicontazione finanziaria
 - b. L'audit
8. Esempi di progetti.

Program

1. European research
 - a. Framework Programmes and Horizon 2020
 - b. Financial instruments in support of research
2. The role of industry in EU funded research. Technology platforms.
3. Steps in preparation of a proposal for a research project:
 - a. analysis of the Call and of the Workprogramme
 - b. definition of objectives
 - c. definition of partnership
 - d. definition of impact
 - e. the work-programme
 - f. budget and resources
4. Proposal evaluation
5. EU actions for the mobility of researchers (Marie Curie actions)
6. Conduction, progress, scientific reporting of a project (Project meetings, deliverables, reports, intellectual property, ecc.)
7. Financial/administrative management:
 - a. Financial reporting
 - b. Project audit
8. Examples of projects.

Calendario delle Lezioni

22/01/2016	29/01/2016	05/02/2016	12/02/2016	19/02/2016	26/02/2016
9.30-12.30	9.30-12.30	9.30-12.30	9.30-12.30	9.30-12.30	9.30-12.30

ECONOMIA E MANAGEMENT DEL TRASFERIMENTO TECNOLOGICO
ECONOMICS AND MANAGEMENT OF TECHNOLOGY TRANSFER
Prof. Donato Iacobucci – Università Politecnica delle Marche

Ore di lezione: 16

Obiettivi formativi: Acquisire conoscenze sulle principali modalità di trasferimento tecnologico in ambito universitario. Acquisire strumenti di analisi e gestione dei processi di valorizzazione dei risultati della ricerca con specifico riferimento all'avvio di nuove imprese. Conoscere i servizi e le strutture di supporto ai processi di trasferimento tecnologico nell'Ateneo e in ambito regionale e nazionale.

Programma:

- La costituzione di spin-off accademici e di start-up: iter di costituzione, modalità di avvio e di gestione, fattori che ne favoriscono lo sviluppo.
- I brevetti: condizioni di brevettabilità, iter di concessione dei brevetti in ambito nazionale e internazionale, valorizzazione sul mercato.
- I contratti di collaborazione tra università e impresa: forme di relazione fra università e imprese nelle attività di ricerca condivisa e su commessa.

Metodologia didattica: Il corso è svolto attraverso lezioni frontali, seminari con esperti e lavori di gruppo.

Economics and management of technology transfer

Aims: To acquire knowledge and tools about:

- mechanisms of technology transfer within universities;
- management of technology transfer processes;
- support services for technology transfer.

Program:

- Spin-offs and start-ups: the set-up process; the management of technology star-ups; determinants of success and growth.
- Patenting activity: patentability conditions; application and granting process at national and international level; economic valorisation of patents.
- University-firm collaborations: research collaborations between university and firms, intellectual property management.

Calendario / schedule

12/01/2016,	14/01/2016,	19/01/2016,	21/01/2016	26/01/2016	28/01/2016
14:30-17:30,	14:30-17:30,	14:30-17:30,	14:30-17:30	14:30-17:30	14:30-17:30

Courses offered by the D3A

In addition to the list of courses mentioned below, the seminars and conferences organized by the Department 3A can be taken in consideration as didactic activity recognized for the Ph.D. program.

Titolo del Corso: Dall'impostazione della prova sperimentale alla pubblicazione e valutazione della ricerca/ From experimental design to the writing of a scientific paper and research evaluation
Docente: Prof. Gianfranco Romanazzi

Ore complessive: 12 = 2 CFU

Programma/ Program:

Importanza della qualità della ricerca per il sistema universitario/*Quality of research for University*
Impostazione della ricerca: obiettivi, indagine bibliografica, disegno sperimentale, elaborazione dei dati/*Planning of a research activity: aims, literature search, experimental design, data elaboration*
Strutturazione di un articolo scientifico/*Structure of a scientific paper*
Preparazione di un articolo, invio alla rivista, revisione, accettazione, pubblicazione/*Writing of a manuscript, submission to the Journal, revision, acceptance, publication*
Scelta della rivista, motori di ricerca e valutazione della qualità di un articolo (ISI, Scopus, Google Scholar)/*Selection of the Journal, search engines, and evaluation of quality of a paper (ISI, Scopus, Google Scholar)*
Valutazione della qualità della ricerca a livello individuale e aggregato (ANVUR, VQR)/*Individual and aggregate evaluation of research quality (ANVUR, VQR)*

Calendario/Schedule:

mercoledì 13 gennaio 2016 dalle 10.00 alle 13.00 (3 ore)
lunedì 18 gennaio 2016 dalle 10.00 alle 13.00 (3 ore)
lunedì 25 gennaio 2016 dalle 10.00 alle 13.00 (3 ore)
lunedì 1 febbraio 2016 dalle 10.00 alle 13.00 (3 ore)

Aula: G

Titolo del Corso: Ricerca e sviluppo per alimenti innovativi. Aspetti scientifici e normativi
R&D on innovative foods: scientific and regulatory issues
Docente: Prof.ssa Francesca Clementi

Ore complessive: 12 = 2 CFU

Program

- (Semiserious) introductory remarks: how to build up a career as an University Researcher
- Product- and process- innovation in the food industry
- Beneficial microbes
- Functional foods and Probiotics
- Novel foods
- Case studies

Programma

- Seminario introduttivo (semi-serio): come costruire una carriera di Ricercatore Universitario

- Innovazione di prodotto e di processo nel settore alimentare
- Beneficial microbes
- Alimenti probiotici e funzionali
- Novel foods
- Casi studio

Calendario/ Schedule:

20 GENNAIO, 11,30-13,30
 21 GENNAIO, 11,30-13,30
 27 GENNAIO, 11,30-13,30
 28 GENNAIO, 11,30-13,30
 10 FEBBRAIO, 11,30-13,30
 11 FEBBRAIO, 11,30-13,30

Aula: L

Titolo del Corso integrato:

Rilevamento e analisi numeriche degli ecosistemi vegetali e del paesaggio

Numerical ecology: survey and numerical analysis of the plant landscape

Docente responsabile: Dott. Simone Pesaresi

Obiettivo del corso è introdurre gli studenti alle modalità di rilevamento e analisi numeriche dei dati ecologici. Tali metodologie sono finalizzate alla gestione sostenibile del territorio attraverso il monitoraggio degli ecosistemi.

Il corso si articola in due moduli: con il primo modulo gli studenti apprenderanno le metodologie di rilevamento della vegetazione con lezioni teoriche (4 ore) e esercitazioni in campo (8 ore) per la raccolta di dati quantitativi; con il secondo modulo i dati raccolti verranno elaborati con analisi numeriche utilizzando programmi di statistica dedicati ai dati ecologici.

1° MODULO: METODOLOGIE DI RILEVAMENTO DEGLI ECOSISTEMI VEGETALI

Docente: Prof.ssa Simona Casavecchia

Ore complessive: 12= 2 CFU

Programma:

Introduzione: fondamenti di geobotanica (concetto di flora, vegetazione, fitocenosi e unità di paesaggio)

Metodologie di rilevamento delle comunità vegetali: il rilevamento fitosociologico.

Analisi di campo per il rilevamento di diversi aspetti del paesaggio vegetale.

Calendario:

26 Maggio 2016 (giovedì) 15:00-17:00: lezione teorica

31 Maggio 2016 (martedì) 15:00-17:00: lezione teorica

9 Giugno 2016 (giovedì) 9:00-13:00: esercitazioni in campo (Monte Conero)

16 Giugno 2016 (giovedì) 9:00-13:00 esercitazioni in campo (Monte Conero)

Aula: L

2° MODULO: ANALISI DEI DATI ECOLOGICI IN R

Docente: Dott. Simone Pesaresi

Ore complessive: 18= 3 CFU

Programma:

R software
Importare i dati in R
Misure di associazione
Analisi di ordinamento:
Analisi indiretta di gradiente (PCA, NMDS, DCA...)
 Variabili ambientali
 Diagrammi di ordinamento
Analisi diretta di gradiente (ordinamenti vincolati)
 RDA & CCA
Classificazione e partizione dei dati (cluster analysis)

Calendario:

23 Giugno 2016 (giovedì) 9:00-13:00
30 Giugno 2016 (giovedì) 9:00-13:00
7 Luglio 2016 (giovedì) 9:00-13:00
14 Luglio 2016 (giovedì) 9:00-13:00

Aula: aula informatica

Titolo del Corso: *Comportamento del consumatore e ricerche di mercato/ Consumer behaviour and marketing research*
Docente: Prof. Raffaele Zanoli

Ore complessive: 18= 3 CFU

Program:

- Introduction to consumer behaviour: Attitudes, Intentions, DecisionMaking, Behaviour
- Analysing and measuring consumer behaviour
- Introduction to consumer and marketingresearch
- Qualitative MarketingResearch (1): focus groups, in-depthinterviews, participant and directobservation, case studies
- Qualitative Marketing Research (2): Q-Methodology
- Quali-quantitative Marketing Research: Eyetracking and neuromarketingtools
- Quantitative Marketing Research: Survey design and analysis: CAPI, CATI, CAWI

Calendario/ schedule:

13 Giugno 2016, ore 15.00-18.00
14 Giugno 2016, ore 15.00-18.00
15 Giugno 2016, ore 9.00-13.00
16 Giugno 2016, ore 9.00-13.00
17 Giugno 2015, ore 9.00-13.00

Aula: possibilmente a Ingegneria in quanto a Q. 160 abbiamo il laboratorio in cui si svolgeranno alcune attività

Titolo del Corso: Postharvest diseases of fruit and vegetables

Docente: Dott. Gianfranco Romanazzi

Ore complessive: 12= 2 CFU

Program:

Postharvest losses. Why we should control postharvest decay? Main postharvest disease agents. Control of postharvest diseases in organic and conventional agriculture. Alternatives to synthetic fungicides: biological control, induced resistance, use of decontaminating agents, physical means (UV-C, hypobaric treatments, controlled and modified atmosphere, ozone).

Calendario/Schedule:

Da Aprile 2016, lezioni in aula e visite didattiche in aziende agricole e di commercializzazione.

Aula: da definire

Titolo del Corso: 'Tecnologie molecolari avanzate applicate alla patologia vegetale per la identificazione e lo studio dei meccanismi alla base dell'interazione microrganismi-pianta'

Docente: Dott.ssa Lucia Landi

Ore complessive: 12= 2 CFU

Programma:

Il corso ha come finalità quella di fornire conoscenze teoriche e pratiche utili allo studio molecolare dell'interazione pianta/microrganismi. Nell'ambito della patologia vegetale verranno illustrati alcuni caso studio utili ad esaminare le basi molecolari della resistenza a patogeni indotta in pianta dall'applicazione di composti e/o microrganismi del suolo, alternativi ai fungicidi di sintesi. Con tale finalità verranno illustrate le potenzialità e le differenze applicative di alcune tecniche classiche e innovative nello studio degli acidi nucleici, quali la PCR qualitativa end point, quantitativa in Real Time PCR e la PCR digitale. Saranno illustrati i requisiti necessari per l'applicazione metodologica e la validazione degli esperimenti della PCR quantitativa fornendo le basi per l'interpretazione dei protocolli MIQE. Inoltre, verranno illustrati i metodi di indagine per l'analisi dell'espressione genica (RT-qPCR) mostrando i differenti metodi di calcolo applicabili (-□□CT, -□CT ecc.). Il corso è suddiviso in una parte teorica e una pratica, quest'ultima si effettuerà presso i laboratori di Patologia Vegetale.

Calendario:

Aprile 2016

Aula: aula e laboratorio di patologia vegetale

Titolo del Corso: Radicali liberi ed antiossidanti

Docente: Prof.ssa Patricia Carloni

Ore complessive: 12= 2 CFU

Programma:

I radicali liberi (4 ore); la spettroscopia EPR (4 ore); i meccanismi di azione delle principali classi di antiossidanti (2 ore); metodi per la determinazione dell'attività antiossidante negli alimenti (2 ore).

Calendario:

5 Aprile 2016, ore 9.30-13.30 (i radicali liberi);

7 Aprile 2016, ore 9.30-13.30 (la spettroscopia EPR);

12 Aprile 2016, ore 9.30-13.30 (I meccanismi di azione delle principali classi di antiossidanti; metodi per la determinazione dell'attività antiossidante negli alimenti)

Aula: Dipartimento D3A presso Ingegneria, Edificio 2 - Quota 165

Titolo del Corso: Agrobiodiversity and Genetic Resources

Coordinatori del Corso: Dott. Mario Marino (FAO), Prof. Roberto Papa

The themes and schedule of the course are in progress and they will be announced soon.

Titolo del Corso: From Crop Domestication to modern Plant Breeding

Docente: Prof. Roberto Papa

Ore complessive: 18= 3 CFU

Program:

Introduction: Genetic diversity in agriculture and the concept of biodiversity

Genetic resources: Different types of genetic resources (crops and natural populations) and genetic resources conservation (lectures and examples): germplasm, landrace, wild forms and wild relatives, center of origin, gene pools, exploration and germplasm collection, *in situ* and *ex situ* conservation, characterization, valorization and exploitation of germplasm. Brief introduction on biodiversity in sustainable agriculture, climate change, healthy and valuable food products.

Brief introduction on International, National, and local institutional and regulatory frame work with respect to conservation and management of genetic resources (examples).

Crop domestication: The domestication syndrome (traits and examples, *Phaseolus*, *Triticum*, etc...), cultivated and wild form and outline on gene flow. The consequences of domestication on the genetic diversity and on the genome: the case of common bean. Domestication and Breeding.

Prerequisite: basic knowledge on Genetics, Plant biology, and Botany.

Schedule: there will be 6 classes (2.5 hours each) from April to May, with both lectures and practical training.

Aula: to be decided

Titolo del Corso: Genomics and bioinformatics

Docente: Dott.ssa Laura Nanni

Ore complessive: 18 = 3 CFU

Program:

Introduction: Genome projects: aims and objectives

Bioinformatics data and databases Main bioinformatics databases. Plant genome projects. Homology and homology search. Practical work. Information retrieval from plant genome and generic databases. Visualizing maps and genomes.

High-throughput data generation. Sequencing and genotyping: classical gene technologies. Next generation sequencing. Genotyping by sequencing. De-novo assembly and short-read mapping. Case studies from recent bibliography.

Genome diversity and evolution. Comparison within species and marker development. Resequencing. Structural variation. SSRs, SNPs and haplotypes. Comparison across species and synteny analysis. Diversity analysis and mapping. Marker discovery and primer design. Case studies from recent bibliography.

Bioinformatics in plant breeding. Application of Genomic Tools in Plant Breeding. Case studies from recent bibliography.

Prerequisite: basic knowledge of Genetics, Plant biology, and Botany

Schedule: There will be 8 classes (3 hours each) from May to July, with both lectures and practical training.

Aula: to be defined

Titolo del Corso: **Population and Evolutionary genomics**

Docente: Dott.ssa **Elena Bitocchi**

Ore complessive: 18 = 3 CFU

Program:

This course focuses on the processes affecting the distribution of genetic variation in populations of organisms, through space and time. The processes studied are the ones that operate during evolutionary change. Topics covered will include the Hardy-Weinberg principle, gene flow, genetic drift, recombination and linkage disequilibrium, natural selection, the effect of mating systems on diversity, and the neutral theory of evolution. Examples illustrating key concepts will be drawn from various kingdoms of life.

Aims:

- Mathematical concepts, such as frequency and probability
- Working usage of terminology, such as allele, locus, haplotype, linkage disequilibrium, selection coefficient and absolute, relative and marginal fitness
- Understand the principles applied in papers dealing with population genetics, evolutionary genetics, quantitative genetics, molecular evolution, statistical genetics, or phylogeography
- Be familiar with a few of the major software packages available for analysis of population genetic data
- Know the assumptions that underlie major approaches to analysis of population genetic data and how they affect the inferences that can be made from those data
- Be able to describe how natural selection, genetic drift, mutation, and migration influence the genetic structure of populations

Schedule:

There will be 8 classes (3 hours each) from May to July, with both lectures and practical training.

Aula: to be defined

Titolo del Corso: Effects of the processing and storage conditions on selected food components / Effetti delle condizioni di processo e di conservazione su specifici componenti degli alimenti

Docente: Dott. Emanuele Boselli

Ore complessive: 6 = 1 CFU

Program

The main topics of the course are two:

- the description of the effects of different processing or storage conditions on specific nutritive components of food products
- the application of high resolution chromatographic techniques for the characterization of the quality and authenticity of food products

The course is divided in four seminars of 1 hour each. Recently published original research works on the above mentioned subjects are explained and critically discussed with the audience.

(Also offered in E-learning / Corso offerto anche in E-learning)

Calendario/Schedule:

9 Giugno/June 2016, h 14.30-16.30

1) Virgin olive oil: conventional or cold extracted? / Olio extravergine: convenzionale o estratto a freddo?

2) Gas chromatographic analysis of the unsaponifiable components for the authentication of coffee / L'analisi gascromatografica della frazione insaponificabile per l'autenticazione del caffè

16 Giugno/June 2016, h 14:30-16:30

3) Photoxidation of lipids in poultry meat during the storage under commercial retail conditions / Fotossidazione di carni avicole durante la conservazione nelle condizioni del commercio

4) Impact of low-oxygen processing techniques on the quality of white wines / Impatto delle tecniche di vinificazione al riparo dall'ossigeno sulla qualità dei vini bianchi

Aula: L

descrizione degli effetti di differenti condizioni di conservazione su specifiche componenti di alcuni prodotti alimentari/*Description of the effects of different storage conditions on specific nutritive components of food products*

Titolo del Corso: Biotechnology and Biosafety

Docente: Prof. Bruno Mezzetti

Ore complessive: 12 = 2 CFU

Themes:

- Biotechnology in plants
- Biotechnology applications in horticultural crops
- Biosafety rules and methods of study
- Case studies

The program will include the following activities:

- A series of seminars on the applications and biosafety issues and rules of plant biotechnologies, in collaboration with colleagues from EFSA (European Agency for Food Safety).
 - Seminars and case studies in the computer room of the Faculty.
 - A mini symposium on the main aspects of the Biosafety with reports given by experts from research institutions and national and international organizations.
- A detailed program of the one week activity will be prepared and distributed in June 2016.

Schedule: last week of June 2016

Titolo del Corso: L'arte di scrivere con LaTeX
Docente: Prof. Massimo Mozzon

Ore complessive: 12

Programma:

I ferri del mestiere: editor e compilatori. Struttura dei sorgenti e principali document class. Gestione della bibliografia e implementazione con le banche dati di ricerca. Esercitazioni pratiche su document class strutturate per la redazione di tesi di dottorato.

Calendario:

13/06/2016 ore 14.30 - 17.30
20/06/2016 ore 14.30 - 17.30
27/06/2016 ore 14.30 - 17.30
04/07/2016 ore 14.30 - 17.30

Aula "F"

Optional

Joint International Summer School

Advanced methods and new integrated approaches to study soil processes in mountain ecosystems

Alpine Study Center
Pieve Tesino (Trento, Italy)
26th -30th June 2016

The Application form is available at the SENSFOR website <http://www.sensfor-cost.eu/>
Please send the registration form filled in, signed, and scanned, to sbrat@abv.bg,
oddvar@nmvskre.no and marinari@unitus.it by **15 February 2016**.

- 15 SensFor COST Action grants will be available covering max 160€ per day for trainees. The first criteria of the selection will be to assure the presence of students from SENSFOR countries. The list of 15 students winning the COST grants will be available by **30th march 2016** at the SENSFOR website <http://www.sensfor-cost.eu/>
For all other participants, supported by the Italian Society of Soil Science, the reduced registration fee (70 euro) is due before **15th April 2016**.

ANNEX 3. Evaluation form for seminars held by the students

Date of seminar: _____

Name of the student: _____ **year:** _____

Title of the seminar: _____

Mark related to:

1) Relevance to the proposed topic: _____

2) Bibliografic knowledge: _____

3) Reporting capacity: _____

4) Organization of the material and respect of the timing: _____

Overall evaluations: _____

Comments: _____

Date of seminar: _____

Name of the student: _____ **year:** _____

Title of the seminar: _____

Mark related to:

1) Relevance to the proposed topic: _____

2) Bibliografic knowledge: _____

3) Reporting capacity: _____

4) Organization of the material and respect of the timing: _____

Overall evaluations: _____

Comments: _____

Date of seminar: _____

Name of the student: _____ **year:** _____

Title of the seminar: _____

Mark related to:

1) Relevance to the proposed topic: _____

2) Bibliografic knowledge: _____

3) Reporting capacity: _____

4) Organization of the material and respect of the timing: _____

Overall evaluations: _____

Comments: _____

(A = excellent; B = very good; C = good; D = inadequate)

ANNEX 3. Evaluation form for seminars held by the students

Date of seminar: _____

Name of the student: _____ **year:** _____

Title of the seminar: _____

Mark related to:

1) Relevance to the proposed topic: _____

2) Bibliografic knowledge: _____

3) Reporting capacity: _____

4) Organization of the material and respect of the timing: _____

Overall evaluations: _____

Comments: _____

Date of seminar: _____

Name of the student: _____ **year:** _____

Title of the seminar: _____

Mark related to:

1) Relevance to the proposed topic: _____

2) Bibliografic knowledge: _____

3) Reporting capacity: _____

4) Organization of the material and respect of the timing: _____

Overall evaluations: _____

Comments: _____

Date of seminar: _____

Name of the student: _____ **year:** _____

Title of the seminar: _____

Mark related to:

1) Relevance to the proposed topic: _____

2) Bibliografic knowledge: _____

3) Reporting capacity: _____

4) Organization of the material and respect of the timing: _____

Overall evaluations: _____

Comments: _____

(*Legenda: A= ottimo; B= molto buono; C= buono; D=insufficiente*)