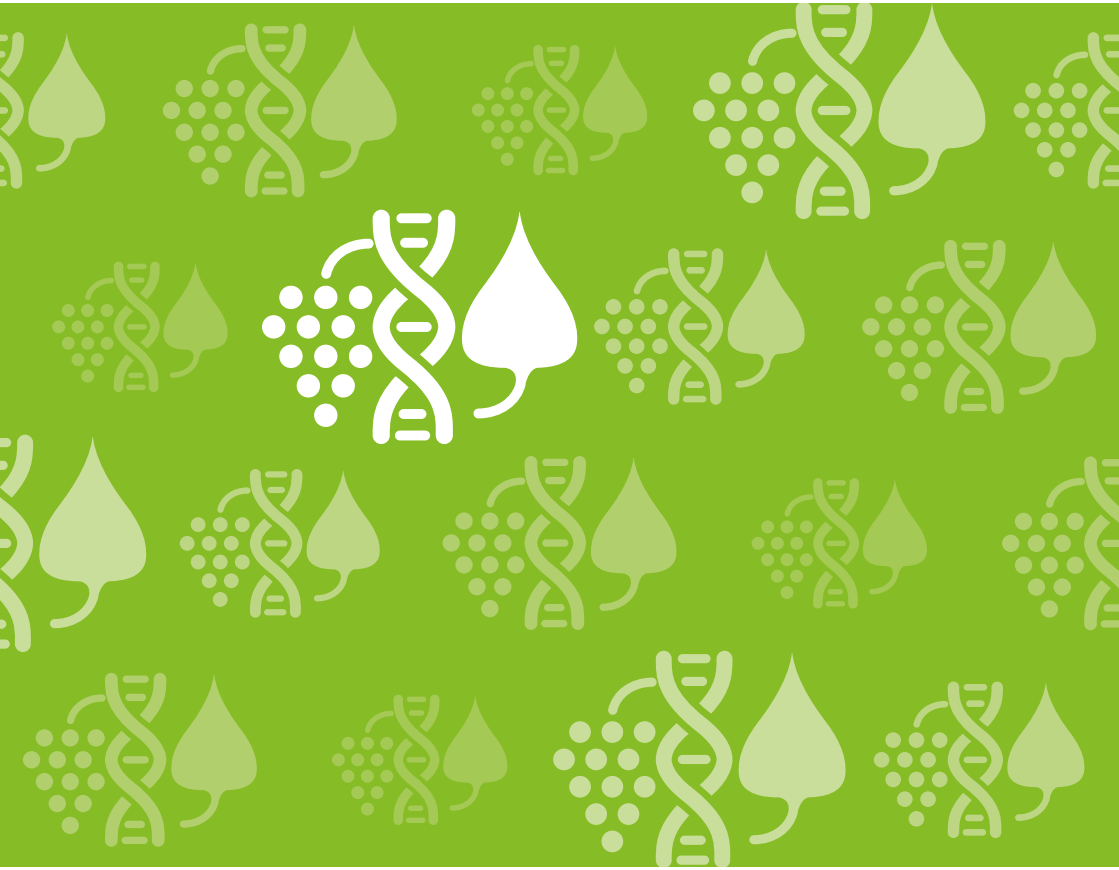
WeDIBAF

INNOVATION IN **BIOLOGICAL, AGRO-FOOD AND FORESTRY SYSTEMS**



DEPARTMENT HANDBOOK
ACADEMIC YEAR 2019 / 2020

UNIVERSITÀ DEGLI STUDI DELLA Tuscia

DIBAF
INNOVATION
IN BIOLOGICAL,
AGRO-FOOD
AND FORESTRY SYSTEMS

Department handbook
Academic year 2019 / 2020

The courses
Second cycle degree courses
Single cycle degree course
Postgraduate study

UNIVERSITÀ
DEGLI STUDI DELLA
Tuscia

INDEX

WELCOME

Professor Giuseppe Scarascia Mugnozza
Head of Department

Dear Student,
There are many reasons to enrol in the Department's courses for Innovation in Biological, Agro-Food and Forestry Systems (DIBAF) at the University of Tuscia. Besides the beauty and hospitality offered by the city of Viterbo and its surrounding area/ territory, it must be stressed that/I am proud to state that the University of Tuscia and, in particular, DIBAF rank first place among Italian academic institutes, in particular for the quality of their scientific research. DIBAF teachers belong to internationally recognized body of expertise and regularly publish in the most respected scientific journals in the world. Moreover, DIBAF will give you the opportunity to immerse yourself in a dynamic learning environment, where research, relationships with business and job placements in advanced sectors are combined with a deep bond with the surrounding countryside/landscape/territory. DIBAF is a research laboratory and multidisciplinary teaching hub for biotechnology and environmental chemistry, forest resources and the landscape, processing and safety of agro-food. Various disciplines and complementary approaches are combined and integrated into a coherent set of educational courses to meet the global challenges of environmental sustainability and bio-economy.
DIBAF offers integrated educational courses, at bachelor's and master's level, in particular, courses that lead to the professional skills of biotechnologists / Biologists, Agronomists and Forestry Specialists, Food Technologists and Oenologists. In addition, the Department has numerous partnerships with production companies, corporations, businesses, public institutions, locally, nationally and internationally. The courses offered prepare highly qualified technicians and professionals for companies, consulting firms, public bodies and independent professional activities, with a central role in the transfer of knowledge and innovations developed within the research activities, including the creation of spin-off companies by our graduates.

DIBAF
COURSES
ACADEMIC YEAR 2019/2020

DEGREE COURSE (L-2)

BIOTECHNOLOGY

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Educational goals

The educational objectives of the course originated from the need to have graduates with a high level of knowledge and experience to operate in the biotechnology sector. This need is highlighted by the increase in biotechnology products in the production processes of all countries, where, especially in the most technologically advanced, there is intense competition for supremacy in the experimental stages, in patenting and in the implementation of processes that are distinguished for their efficiency and low environmental impact. In this regard, the educational aims concerning the acquisition of knowledge, skills, abilities and behaviour which will permit entry into the world of work in the various biotechnological fields, such as agro-food, industrial, pharmaceutical, medical and veterinary, and in the field of scientific communication or to enable students to undertake studies at higher levels.

Knowledge and skills

The course aims to provide you with the following knowledge:

- structure and function of biological systems, interpreted also in their molecular and cellular aspects;
- cultural and experimental bases of multidisciplinary techniques that characterize the biotechnological operations for production through the analysis and the use of biological systems;
- legislation and bio-ethical issues;
- English language, both written and oral, in the specific field of competence and to exchange general information.

Thanks to very specific training, as a graduate in biotechnology you will be capable of operating in the biotechnology sector in general and, in particular, in those fields where molecules and biological organisms are used for productive purposes, in areas which concentrate on the use of enzymes and cells in bio-transformation, and on genetic manipulation techniques, molecular diagnostics, analytical methodologies and

the use of bio-reactors. The training course includes laboratory experiences in individual lessons, guided / educational visits to companies in the agro-industrial sector, and work experience and traineeships in public or private structures operating in the sector. Participation in the Erasmus student mobility programme is highly recommended and allows the acquisition of credits based on your specific study programme.

Career opportunities

- Management of biological systems or parts of these systems to obtain innovative products which respond to the needs for improvement in the food, health and socio-economic sectors;
- Research in biology with particular regard to genetic modification of organisms or microorganisms;
- Marketing activities of products from research and from biotechnological production and processing methods;
- Application of molecular techniques aimed at bio-monitoring and the preservation of biodiversity.

In addition, as a graduate in Biotechnology, according to Presidential Decree 328/01, you can qualify and register with the 'Ordine Nazionale dei Biologi' (National Registry of Qualified Biologists,), as a Biologist (Junior) sect. B. The course also allows you to qualify for other regulated professions such as: qualified agricultural technician, agricultural bio-technologist, and qualified agricultural consultant.

If you wish to further your studies at postgraduate level, the University offers master's degree courses in:

- **Industrial biotechnology for health and wellbeing** (LM-8), a new interdepartmental course of studies;
- **Biology for the Safety and Quality of Agricultural Production** (LM-7)
- **Food Sciences and Technology** (LM-70);
- **Cellular and Molecular Biology** (LM-6).

DIDACTIC PATHWAY

EXAM	SSD	Year	Sem.	Ore	A.T.	A.P.	S/A	CFUs
Mathematics and principles of statistics	MAT/05	I	I	56	48	8	S	**7**
Physics	FIS/07	I	II	56	48	8	S	**7**
General and inorganic chemistry	CHIM/03	I	II	64	56	8	S	**8**
Plant-based biology	BIO/05	I	I	64	56	8	S	**8**
Plant-based biology and principles of plant-based biotechnology	BIO/01	I	I	72	64	8	S	**9**
Biotechnology European law	IUS/14	I	II	48	48	-	S	**6**
English language (B1)	-	I	II	48	32	16	S	**6**
Organic chemistry	CHIM/06	II	I	56	48	8	S	**7**
Physiology	BIO/09	II	II	64	64	-	S	**8**
Organic chemistry	BIO/10	II	I e II	64	56	8	S	**8**
Molecular biology	BIO/11	II	II	64	56	8	S	**8**
Genetics and principles of genetic engineering	BIO/18	II	I	72	64	8	S	**9**
Microbiology and principles of industrial microbiology	BIO/19	II	I	72	64	8	S	**9**
Bioinformatics tools for genomics	AGR/17	II	II	48	40	8	S	**6**
Cellular and molecular animal biology and comparative immunology	BIO/05	III	II	64	56	8	S	**8**
Chemical physical biology	CHIM/02	III	I	56	48	8	S	**7**
Bioethics	AGR/05	III	II	56	56	-	S	**7**
Exam to be chosen among supplementary or related subjects in Group A11							S	**6**
Exam to be chosen among supplementary or related subjects in Group A11							S	**6**
Exam to be chosen among supplementary or related subjects in Group A12							S	**12**
Exams chosen by the student (AFS)							S/A	**12**
Training								**8**
Final thesis								**8**

List of the disciplines of the supplementary or related subjects (optional)

EXAM	SSD	Anno	Sem.	Ore	A.T.	A.P.	S/A	CFU
GROUP A11								
Biotechnology of the postharvest of fruit and vegetables	AGR/15	III	II	48	40	8	S	**6**
Biochemistry methodologies	BIO/10	III	II	48	40	8	S	**6**
Omic sciences principles	BIO/11	III	I	48	40	8	S	**6**
Pathology and biopharmaceutical principles	BIO/13	III	II	48	40	8	S	**6**
Plant-based pathology and principles of phytopathological biotechnology	AGR/12	III	II	48	40	8	S	**6**
GROUP A12								
Chemistry and biotechnologies of fermentation							A	**12**
- Chemistry and biotechnologies of fermentation	CHIM/11	III	I	48	40	8		**6**
- Microbiology of fermentation processes	BIO/19	III	I	48	40	8		**6**
Plant production biotechnologies							A	**12**
- Genetic biotechnologies	AGR/07	III	I	48	40	8		**6**
- Biotechnologies for the improvement of agrarian plants	AGR/07	III	I	48	40	8		**6**

Hours of individual study per credit

DIDACTIC ACTIVITY	Hours of assisted didactic activity per credit	Hours of individual study per credit	Total number of hours per credit
Theoretical lesson	8	17	25
Practical activity	8	17	25
Training and orientation workshop	2	23	25
Thesis	5	20	25

A.T. = Theoretical activity A.P. = Practical activity S/A = Biannual/Annual

DEGREE COURSE (L-21)

PLANNING AND DESIGN OF LANDSCAPE AND ENVIRONMENT

Inter-University Bachelor's Degree
University of Tuscia
Sapienza Università di Roma

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Educational goals
The degree course in Planning and Design of Landscape and Environment is a result of the synergy between the University of Tuscia (former Faculty of Agriculture) and the Faculty of Architecture of the University La Sapienza of Rome. The union was forged to meet the growing national and European demand for high-profile technicians able to operate, in an innovative and cross-disciplinary way, on environmental issues of enormous proportions, in terms of landscape, urban and socio-economic impact. The course objective is to equip graduates with strong technical and cultural skills in the analysis, design, management and development of rural, semi-urban and urban areas, in addition to operational capabilities in infrastructure, environmental and landscape planning, with particular reference to agro-forest landscapes, in the light of ongoing environmental changes or of those changes expected for the future.

Knowledge and skills
The knowledge and theoretical, critical-interpretative, methodological and practical skills acquired from the degree course stem from a highly interdisciplinary approach and integration of diverse theoretical studies and practical applications, which will enable immediate entry to the world of work or access to further education. For this purpose, the courses are geared to the acquisition of knowledge in the field of earth sciences, biological, agricultural and forestry systems, environmental sciences, urban planning and landscaping sciences. In addition, graduates will be equipped with the methodological tools for the planning of landscape, urban and environmental rectification projects. In particular, the course structure guarantees the acquisition of fundamental knowledge in the field of environmental and landscape planning and design, by studying the following:

- characteristics, properties and functions of agricultural systems that characterize the territory and the agricultural landscape;
- concepts and techniques for the description, analysis and management of forest ecosystems, forest planning, the design of parks and protected

areas, and the rectification of degraded natural environments;
- terrestrial ecosystems through lake or soil sciences, botany, environmental chemistry, and landscape ecology;
- notions of the history of architecture, land planning, and tools for cartographical and topographical analysis and description;
- landscape architecture and design of open spaces;
- urban planning and planning techniques which put into perspective the relation between territory, environment and landscape;
- economics and law, in terms of management and protection of the land and environmental resources.

In a few words, the theoretical and applied activities are aimed at equipping a graduate to operate in areas ranging from the activities of representation and interpretation of the rural and urban landscape, the assessment of environmental change and environmental impact from human activities, from planning protected areas and design of parks, to the management of agro-forestry systems and open spaces, and to the protection, preservation and enhancement of the territory. This degree course has the Faculty of Architecture of 'La Sapienza' University of Rome as its main didactic centre.

Career opportunities

As a graduate of course L-21, you can register as a 'Junior Planner' with the 'Ordine degli Architetti Pianificatori Paesaggisti e Conservatori – Sezione B' (The Order of Architects for Landscape and Preservation – section B), and as a 'Junior Agronomist and Forestry Expert' with the 'Ordine dei Dottori Agronomi e Dottori Forestali' (The Order of Qualified Agronomists and Forestry Experts – section B). The degree will also enable students to access the Master's degree courses: LM-3 (Landscape Architecture), LM-48 (Regional Urban and Environmental Planning), LM-69 (Agricultural Sciences and Technologies) and LM-73 (Forestry and Environment Science and Technology) or similar Master's degree courses. Employment opportunities and areas of application are those required for 'Green Jobs'.

DIDACTIC PATHWAY

EXAM	SSD	Year	Sem.	Hour	A.T.	A.P.	S/A	CFUs
Mathematical and statistical analysis	MAT/06	I	I	48	40	8	S	**6**
Drawing and representation	ICAR/17	I	I	48	40	8	S	**6**
Environmental botanics	BIO/03	I	I	48	40	8	S	**6**
Environmental matrices and landscape transformation							A	**9**
- Environmental matrices	AGR/13	I	I	48	40	8		**6**
- Landscape geography	M-GGR/01	I	I	24	20	4		**3**
Landscape analysis and planning workshop							A	**12**
- Landscape planning fundamentals	ICAR/15	I	II	48	40	8		**6**
- Plant-based biology	ICAR/14	I	II	48	40	8		**6**
Landscape planning workshop 1							A	**12**
- Urban planning and landscape planning	ICAR/21	I	II	48	40	8		**6**
- Rural areas	AGR/10	I	II	48	40	8		**6**
Agrarian systems							A	**10**
- Grass systems	AGR/02	I	II	40	35	5		**5**
- Tree systems	AGR/03	I	II	40	35	5		**5**
English	L-LIN/12	I	II	40	40	8	S	**5**
Pedology	AGR/14	II	I	48	40	8	S	**6**
Cartography and geomatics	AGR/10	II	I	48	40	8	S	**6**
Environmental engineering	AGR/8	II	I	48	40	8	S	**6**
Forest ecosystems							A	**7**
- Forest ecology and forestry	AGR/05	II	I	32	24	8		**4**
- Dendrology	AGR/05	II	I	24	20	4		**3**
Landscape planning workshop 2							A	**11**
- Environmental planning	ICAR/20	II	II	48	40	8		**6**
- Forest and protected areas planning	AGR/05	II	II	40	35	5		**5**
Landscape planning workshop							A	**9**
- Open spaces, parks and gardens planning	ICAR/15	II	II	48	40	8		**6**
- Urban forestry	AGR/05	II	II	16	12	4		**2**
- Urban gardens	AGR/03	II	II	8	6	2		**1**

EXAM	SSD	Year	Sem.	Hour	A.T.	A.P.	S/A	CFUs
Soil defense							A	**9**
- Environmental engineering	AGR/08	II	II	48	40	8		**6**
- Applied geology	GEO/05	II	II	24	20	4		**3**
Landscape and gardens history	ICA/18	II	II	48	40	8	S	**6**
Final landscape workshop								
- Urban planning	ICAR/14	III	I, II	32	24	8		**4**
- Landscape planning	ICAR/15	III	I, II	48	40	8		**6**
- Ecosystemic services and project	AGR/03	III	II	24	20	4		**3**
Fundamentals of landscape restoration	ICAR/19	III	I	48	40	8	S	**6**
Environmental law	IUS/10	III	I	48	48		S	**6**
Economy, forestry and environmental surveying	AGR/01	III	I	48	40	8	S	**6**
Module Choice								**12**
Training								**3**
Final test								**6**

Hours of activity for each CFU

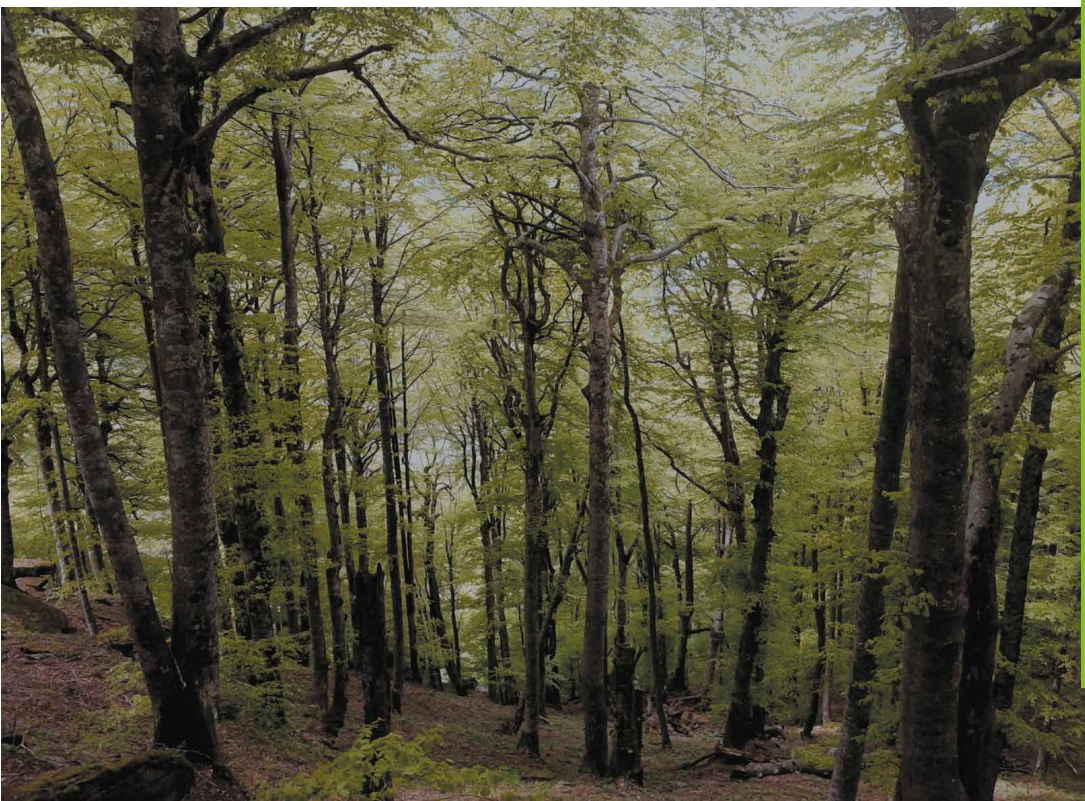
DIDACTIC ACTIVITY	Hours of assisted didactic activity per credit	Hours of individual study per credit	Total number of hours per credit
Theoretical lesson	8	17	25
Practical activity	8	17	25
Training and orientation workshop	2	23	25
Thesis	5	20	25

A.T. = Theoretical activity A.P. = Practical activity S/A = Biannual/Annual

DEGREE COURSE (L-25)

FORESTRY AND NATURAL SCIENCES

DAFNE - DIBAF cross-department course
DAFNE administration office



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Educational goals

The degree course in Forestry and Natural Sciences (SFN) deals with forestry and nature management and conservation in all their complexity and entirety. It aims at bridging the gap between natural science knowledge and practical, project-based knowledge.

In order to face the challenges of the contemporary world, the three-year degree course allows graduates to understand and interpret the natural environment's main aspects and issues as well as local and global environments, and to connect them with the sustainable management of forestry and of the other local natural system. The course is aimed at gaining an open perspective on international priorities in the realm of forestry and the protection of the global environment.

The main themes are the analysis of forestry, the monitoring of different ecosystems, the sustainable management and conservation of forestry, the prevention of neglect and the restoration of coastal, hill and mountain areas, the evaluation and development of forestry products and of the services that the woods offer society. The course has three paths, each offering a deeper knowledge and understanding of different, more specific areas:

- Protected areas management

  It includes disciplines that deal with the conservation of the natural heritage as well as of plant and animal biodiversity. It also includes fundamental concepts on the methods and principles related to the conservation of biodiversity with a focus on forestry species, breeding techniques that are appropriate to protected areas, the management of cattle and methods related to the monitoring and management of the main animal species.

- Forests and climate change

  Students study climate change and the interactions with forests. Students will acquire knowledge on the role soil plays in mitigating climate change, on forest monitoring and inventorying methods and on the methods aimed at reducing the environmental impact of forest use. The course has been developed with the cooperation of professional associations and regional authorities. It gives students an in-depth knowledge

of forestry and environmental management and is characterised by a practical approach allowing young graduates an easier start in the job market.

Students have the opportunity to carry out practical applied activities in labs and on the field: the course includes residential training periods in Alpine and Apennine environments. Students can spend some time abroad thanks to mobility programme (Erasmus, workshops and internships in Italian and international companies). In order to obtain their degrees, students have to total 180 university credits (CFU) and pass a final test. The test requires students to write and discuss a dissertation resulting from a personal detailed analysis of a specific aspect that is in line with their degree course, under the supervision of a professor.

Career opportunities

Graduates in Forestry resources and international cooperation are able to aptly manage renewable natural resources (forestry in particular) and to deal with biodiversity conservation, the protection of agro-forestry landscape and the management of protected natural areas. Following a successful state examination, graduates can enter the Agronomists and Forestry national register (section B).

EXAM / DISCIPLINES	Teacher	SSD	Year	Sem.	CFU
Mathematics and elements of physics	trasferimento	MAT/05	I	I	**8**
Organic chemistry and elements of general chemistry	Bernini	CHIM/06	I	I	**8**
English language *	*	L-LIN/12	I	I	**5**
Botanics:					
- General botanics	Di Filippo	BIO/03	I	I	**6**
- Plant diversity	Scoppola	BIO/03	I	II	**6**
General and systematic zoology	Zapparoli	BIO/05	I	II	**6**
Forest genetics	Pagnotta	AGR/07	I	II	**6**
Cartography and geographical IT systems	Ripa	AGR/10	I	II	**6**
IT and statistical abilities	Pagnotta		I	II	**3**
Forest chemistry	Astolfi	AGR/13	II	I	**6**

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EXAM / DISCIPLINES	Teacher	SSD	Year	Sem.	CFU
Forest ecology and dendrometry					
- Forest ecology	Papale	AGR/05	II	I	**6**
- Dendrometry and forestry	Portoghesi	AGR/05	II	II	**6**
Dendrology	Piovesan	AGR/05	II	II	**6**
Forest engineering					
- Forest mechanisation and job safety	Monarca	AGR/09	II	I	**6**
- Forestry constructions and environment inspection	Marucci	AGR/10	II	I	**6**
Forestry	Bartolomeo Schirone	AGR/05	II	II	**6**
Geopedology					
- Geology	Madonna	GEO/02	II	I	**6**
- Pedology	Marinari	AGR/14	II	II	**6**
Forestry	Schirone	AGR/05	II	II	**6**
Hydraulic-forest organisation	Grimaldi	AGR/08	II	II	**6**
Environmental and forestry defence					
- Forestry pathology	Vannini	AGR/12	III	II	**6**
- Forestry entomology	Speranza	AGR/11	III	II	**6**
Forest technology	Lo Monaco	AGR/06	III	I	**6**
Economy, surveying and forest law					
- Economy and forest surveying	Severini	AGR/01	III	II	**7**
- Forestry and environmental science	*	IUS/03	III	I	**4**
Training activities chosen by the student			I - III		**12**
Training			II - III		**4**
Final test			III		**3**

PROTECTED AREAS MANAGEMENT

Conservation of forest biodiversity	Simeone	AGR/05	III	I	**6**
Culture systems in protected areas	Ruggeri	AGR/02	III	II	**6**
Livestock systems in protected areas	Ronchi	AGR/18	III	I	**6**

FORESTS AND CLIMATE CHANGE

Forest monitoring and inventorying	Barbati	AGR/05	III	I	**6**
Soil defense and climate change mitigation	Chiti	AGR/14	III	II	**6**
Low environmental impact usage	Picchio	AGR/06	III	I	**6**

DEGREE COURSE (L-26)

FOOD TECHNOLOGY AND OENOLOGY

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Educational goals

The aim of the undergraduate programme in Food Technology and Oenology is to provide a strong interdisciplinary background in the food, wine and wine-making sectors, as well as training professionals and technicians who have appropriate skills to work independently at all stages of the supply chain, from production to consumption of the food and wine products, including the ability to ensure the health and hygiene safety and quality of products, as well as their storage and distribution.

With a view to facilitate the acquisition of specific professional competences whilst allowing graduates to quickly enter the job market, lessons in class are combined with laboratory activities, educational tours, meetings with experts, a practical internship in a company and a final report which sees students apply their newly-acquired knowledge in order to interpret and evaluate a productive or research environment in the food, wine or gastronomic sector.

The course has three professional paths:

- Food industries (technological);
- Food industries (gastronomic);
- Viticulture and oenology (oenological).

Knowledge and skills

The degree course in Food Technology and Oenology will equip you with knowledge of the issues and the methods of investigation of the Science and Technology of Food, and which can be summarized in the following learning outcomes:

- understanding the relationships between biological, chemical, technological and quality issues of food and wine products;
- knowledge of fermentation processes and the main food industry operations and their influence on product quality - "production process, product quality";
- knowledge of analytical techniques, including non-instrumental techniques, for the characterization of authenticity, quality and safety of food, raw materials, semi-finished products and wine products;
- knowledge of the principles of human nutrition and

the nutritional characteristics of food;
- knowledge of the techniques and strategies for the protection of plants and foodstuffs from parasites and pathogens;
- concepts of the main economic theories of supply, demand, production and trade;
- basic knowledge of European food law and wine legislation;
- understanding of the fundamental characteristics of the food and distribution industry, and problems of agro-food markets at national and international level.

The degree course study plan is made up of compulsory courses as well as optional courses, laboratory activities, training in companies, activities aimed at entering the job market and final thesis, for a total of 180 CFUs. Attendance for laboratories and educational visits, meetings, conferences and training activities is compulsory.

Career opportunities

As a graduate in Food Technology and Oenology, you will be able to operate in companies operating in enogastronomy, in the production, processing, storage and distribution of food and wine products. You will also be equipped to work in public and private institutions that carry out the analysis, certification and monitoring for the protection and enhancement of food and wine production.

The possible job opportunities of graduates in Food Technology and Oenology are, in particular:

- Food industries and companies operating in the production, processing, storage and distribution of food;
- Companies working in enogastronomy and in food promotion and enhancement.
- Industries and companies that operate in the wine and wine making industry;
- Manufacturing industries and delivery of meals in catering and restaurant sector chains;
- Industry sectors working in food,
- adjuvants, ingredients and other materials;
- Public and private bodies that carry out analysis, control and certification of food products;

- Public and private institutions that pay particular attention to innovation regarding the protection and evaluation of food production;
- Traditional and modern distribution companies for the quality control and conservation aspects of production;
- Marketing, promotion and exportation of national food products;
- Research Institutes (centres, universities, etc.)
- Freelance oenologist.

The course prepares students for the profession of biochemical technician and similar roles; the curriculum " Viticulture and Oenology" enables graduates the right to register as an oenologist; the gastronomic profile allows graduates to qualify as an 'Meal production expert'. The gastronomic profile also offers a joint programme with the Etoile Culinary Campus Srl of Tuscania, which is an accredited training organisation of the Lazio region (www.scuoladicucinaetoile.com). The gastronomic profile has a limited number of students. Students who are interested are required to pass an entrance exam.

FOOD INDUSTRIES (TECHNOLOGICAL)

EXAM	SSD	Year	Sem.	Hour	A.T.	A.P.	S/A	CFUs
Mathematics	MAT/05	I	I	48	48	0	S/A	**6**
Chemistry				88	80	8	A	**11**
- mod. General chemistry	CHIM/03	I	I	40	36	4		**5**
- mod. Organic chemistry 1	CHIM/06	I	II	24	22	2		**3**
- mod. Organic chemistry 2	AGR/13	I	II	24	22	2		**3**
Physics	FIS/07	I	I	48	48	0	S	**6**
Biology and general microbiology				96			A	**12**
- mod. General biology	BIO/05	I	I	48	40	8		**6**
- mod. General and aenological microbiology	AGR/16	I	I	48	40	8		**6**
Food technologies of unit operations	AGR/15	I	II	64	64	0	S	**8**

[...]

EXAM	SSD	Year	Sem.	Hour	A.T.	A.P.	S/A	CFUs
Genetics of vines and plants related to the food industry	AGR/07	I	II	48	48	0	S	**6**
European food law	IUS/03	I	II	48	48	0	S	**6**
Further language knowledge (English B1/English B2)		I	II	40	40	0	S	**5**
Food biochemistry	BIO/10	II	I	48	48	0	S	**6**
Food microbiology	AGR/16	II	I	48				**6**
Food technologies				96			A	**12**
- module 1	AGR/15	II	I	48	48	0		**6**
- module 2	AGR/15	II	I	48	48	0		**6**
Quality of tree and trees and vegetable production				96			A	**12**
- mod. Tree production	AGR/03	II	I	48	48	0		**6**
- mod. Vegetable production	AGR/04	II	I	48	48	0		**6**
Defence of food	AGR/12	II	II	48	48	0		**6**
Principles of agro-food and wine economy	AGR/01	II	II	64	64	0		**8**
Zootechnology and animal production	AGR/17	II	II	48	48	0		**6**
Molecular transformations and fermented food	CHIM/11	III	I	80	72	8		**10**
Food conservation, conditioning and distribution	AGR/15	III	I	48	48	0		**6**
Food science	MED/49	III	II	48	48	0		**6**
Machinery for the food and wine industry	AGR/09	III	II	48	48	0		**6**
Chosen by the student		III						**12**
Useful knowledge to enter the job market								**9**
		I		25				**1**
		II		100				**4**
		III		100				**4**
Training in companies Technological profile		III		225				**9**
For the final thesis		III		150				**6**

FOOD INDUSTRIES (GASTRONOMIC)

EXAM	SSD	Year	Sem.	Hour	A.T.	A.P.	S/A	CFUs
Mathematics	MAT/05	I	I	48	48	0	S/A	**6**
Chemistry				88			A	**11**
- mod. General and inorganic chemistry	CHIM/03	I	I	40	40	0		**5**
- mod. Chemistry of organic compounds related to the food industry	CHIM/06 AGR/13	I	II	48	48	0		**6**
Physics	FIS/07	I	I	48	48	0	S	**6**
Biology and general microbiology				96			A	**12**
- mod. General biology	BIO/05	I	I	48	40	8		**6**
- mod. General and aenological microbiology	AGR/16	I	I	48	40	8		**6**
Food technologies of unit operations	AGR/15	I	II	64	64	0	S	**8**
Genetics of vines and plants related to the food industry	AGR/07	I	II	48	48	0	S	**6**
European food law	IUS/03	I	II	48	48	0	S	**6**
Further language knowledge (English B1/English B2		I	II	40	40	0	S	**5**
Food biochemistry	BIO/10	II	I	48	48	0	S	**6**
Food microbiology	AGR/16	II	I	48				**6**
Food technologies				96			A	**12**
- module 1	AGR/15	II	I	48	48	0		**6**
- module 2	AGR/15	II	I	48	48	0		**6**
Quality of tree and trees and vegetable production				96			A	**12**
- mod. Tree production	AGR/03	II	I	48	48	0		**6**
- mod. Vegetable production	AGR/04	II	I	48	48	0		**6**
Defence of food	AGR/12	II	II	48	48	0		**6**
Principles of agro-food and wine economy	AGR/01	II	II	64	64	0		**8**
Food history, culture and languages	L-FIL-LET/14	III	I	48	48	0		**6**
Molecular transformations and fermented food	CHIM/11	III	I	80	72	8		**10**
Food conservation, conditioning and distribution	AGR/15	III	I	48	48	0		**6**
Food science	MED/49	III	II	48	48	0		**6**
Gastronomic technologies and logistics of catering	AGR/09	III	II	48	40	8		**6**

[...]

EXAM	SSD	Year	Sem.	Hour	A.T.	A.P.	S/A	CFUs
Chosen by the student		III						**12**
Useful knowledge to enter the job market								**9**
		I		25				**1**
		II		100				**4**
		III		100				**4**
Training in companies Technological profile		III		225				**9**
For the final thesis		III		150				**6**

VITICULTURE AND OENOLOGY (OENOLOGICAL)

EXAM	SSD	Year	Sem.	Hour	A.T.	A.P.	S/A	CFUs
Mathematics	MAT/05	I	I	48	48	0	S/A	**6**
Chemistry				88			A	**11**
- mod. General and inorganic chemistry	CHIM/03	I	I	40	40	0		**5**
- mod. Chemistry of organic compounds related to the food industry	CHIM/06 AGR/13	I	II	48	48	0		**6**
Physics	FIS/07	I	I	48	48	0	S	**6**
Biology and general microbiology				96			A	**12**
- mod. General biology	BIO/05	I	I	48	40	8		**6**
- mod. General and aenological microbiology	AGR/16	I	I	48	40	8		**6**
Principles of food technologies of unit operations	AGR/15	I	II	48	48	0	S	**6**
Genetics of vines and plants related to the food industry	AGR/07	I	II	48	48	0	S	**6**
European food law	IUS/03	I	II	48	48	0	S	**6**
Further language knowledge							S	
(English B1/English B2)		I	II	40	40	0		**5**
Food biochemistry	BIO/10	II	I	48	48	0	S	**6**
Food microbiology	AGR/16	II	I	48	48	0	S	**6**
Oenology 1	AGR/15	II	I	64	64	0	S	**8**
Viticulture 1	AGR/03	II	I	64	64	0	S	**8**
Defence of vines				96			A	**12**
- Entomology	AGR/11	II	II	48	48	0		**6**
- Pathology	AGR/12	II	II	48	48	0		**6**
Principles of agro-food and wine economy	AGR/01	II	II	64	64	0		**8**

[...]

EXAM	SSD	Year	Sem.	Hour	A.T.	A.P.	S/A	CFUs
Exam chosen by the student (second year)		II	II					**12**
Principles of chemistry and fermentation biotechnologies	CHIM/11	III	I	48	48	0	S	**6**
Oenology 2	AGR/15	III	I	64	64	0	S	**8**
Machinery for the food and wine industry	AGR/09	III	II	48	48	0	S	**6**
Exam chosen by the student (third year)		III						**6**
Chosen by the student		III						**12**
Useful knowledge to enter the job market								**9**
		I		25				**1**
		II		100				**4**
		III		100				**4**
Training in companies Oenological profile								**9**
		II						**4**
		III						**5**
For the final thesis		III		150				**6**

SIMILAR AND INTEGRATED EXAMS (TECHNOLOGICAL AND GASTRONOMIC PROFILE)

EXAM	SSD	Year	Sem.	Hour	A.T.	A.P.	S/A	CFUs
Viticulture 2 and agricultural chemistry				96			A	**12**
- mod. Viticulture 2	AGR/03	II	II	48	48	0		**6**
- Agricultural chemistry	AGR/13	II	II	48	48	0		**6**
Viticulture 2 and terroir				96			A	**12**
- mod. Viticulture 2	AGR/03	II	II	48	48	0		**6**
- mod. The soil in the terroir	AGR/14	II	II	48	48	0		**6**
Wine analysis and special wines	AGR/15	III	I	48	48	0	S	**6**
Machinery for the wine industry	AGR/15	III	II	48	48	0	S	**6**
Applied oenology	AGR/15	III	I	48	48	0	S	**6**

SECOND-LEVEL DEGREE COURSE (LM-70)

FOOD SCIENCE AND TECHNOLOGY

Food Technologies Curriculum
Viterbo Campus

Quality and Enhancement curriculum
Rome campus

Unitus course coordinator
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Educational goals

The second level degree course stems from the synergy between the DIBAF department of the University of Tuscia and the departments of Biology and Biotechnologies "Charles Darwin", Environmental biology, chemistry and management of 'La Sapienza' University of Rome. The inter-university course is to train professionals equipped with the scientific bases and the knowledge and skills necessary to perform tasks such as, planning, management, control, coordination and training in the sectors of production, research and development, storage, distribution and administration of food and drink. The course has two paths: Food sciences and technology (Viterbo) and Quality and promotion (Rome), with common activities in the fields of food technologies, food microbiology and food law that will be carried out during class for the University of Tuscia students and in synchronous e-learning for the students of 'La Sapienza' University of Rome. Graduates in Food Sciences and Technology (food sciences and technology) are able to guarantee the safety, quality and healthiness of food products and processed food. They will also use innovative methodologies, Students will also gain the ability to monitor and describe the environmental impact of the processes of food transformation and packaging, in order to manage the procedures for environmental certification and promote the adoption of the best technological practices and/or innovative packaging procedures to mitigate the effects of climate change.

The Quality and Enhancement curriculum, which is available in the Rome campus, aims at training graduates who can actively plan and carry out agro-food research using advanced techniques and financial management competences that are useful to identify and support enhancement product processes.

The academic programme includes 12 exams that allow you to acquire the scientific and methodological knowledge necessary for those of you who want to work in the vast agro-food sector. Thanks to the freedom available to

students who are planning their course of study, to the credits for similar and integrated activities and to

the credits students choose freely, food technology graduates have the opportunity of completing their studies based on their individual interests and on strengthening their cultural and professional weaknesses.
The course's administrative management for academic year 2018-2019 is taking place at the Sapienza Università di Roma.

Knowledge and skills
Graduates of the second level degree course in Food Sciences and Technology, food technologies curriculum (LM-70) (Viterbo):

- possess a solid base of theoretical knowledge and practices relative to chemical and microbiological quality control and food safety;
- possess knowledge and competences in innovative technologies for the conservation and transformation of food and in sensory analysis;
- can manage and optimise food industry processes in terms of environmental sustainability and compatibility and can create and carry out research projects and industrial development;
- possess the appropriate professional knowledge and abilities to carry out complex activities of coordination related to the agricultural sector.

The Quality and Enhancement curriculum (Rome campus) aims at training second level degree graduates (LM-70) possessing:

- a good molecular and cellular knowledge of the biological systems related to the food industry;
- the knowledge they need in order to understand complex documents related to company management, economy and agro-food legislation;
- knowledge related to territory development, biodiversity and plant enhancement;
- knowledge related to the anthropological, epistemological and ethical aspects of food.

Career opportunities
Graduates will be able to work in food companies and in businesses related to the production, transformation, conservation and distribution of

food, in the companies involved in large supermarket chains, in state-run and private organisations that plan, analyse, control, certify and carry out scientific research for the protection and promotion of food production, in training organisations and as self-employed professionals, with particular reference to process and product innovation in the food industry, optimisation of conservation and transformation processes, in production processes related to packaging and additives for the food industry, in the development of research and industrial development projects, in the creation of innovative techniques aimed at the evaluation of the quality of finished products and its related health and safety aspects, in the design of new distribution strategies, in the evaluation of the environmental impact and in the creation of strategies aimed at reducing the main impact categories. Food Sciences and Technology graduates will be able to contribute to the innovation of food businesses and to the development of new 4th range products in order to establish new products with stringent specifics, easily recognisable by consumers and therefore able to compete in our global market.

Graduates of the Quality and promotion curriculum are skilled in mastering food-related technological platforms and in writing or taking part in business development and area development projects.

This course prepares students to become food biotechnologists. Graduates of the second level degree course in Food Sciences and Technologies will be able to access the state exam to obtain the qualification to practice the profession of food technologist.

FOOD TECHNOLOGIES (VITERBO)

EXAM	SSD	Year	Sem.	Hour	A.T.	A.P.	S/A	CFUs
Inspection of plant-based products	AGR/12	I	I	52	44	8	S	**6**
Economy and marketing of agro-food products							A	**12**
- Economy of the food sector	AGR/01	I	I	52	44	8		**6**
- Agro-food products marketing	AGR/01		I	52	44	8		**6**
Exam of the optional group A13		I	I					**6**
Exam of the optional group A14		I	I					**6**
Food bioprocesses and advanced microbic methodologies	CHIM/11	I	II	52	44	8	S	**6**
Exam of the optional group AGR/15		I	II					**12**
Exam of the optional group A14		I	II					**12**
Evaluation of the environmental impact of the food industry	AGR/15	II	I	52	44	8	S	**6**
Microbiological techniques for food quality and safety							A	**12**
- Microbiological check for food safety	AGR/16	II	I	48	40	8		**6**
- Starter and predictive microbiology selection	AGR/16		II	48	40	8		**6**
Agro-food system law	IUS/03	II	II	48	40	8	S	**6**
Chosen by the student		II	I / II					**6**
Training		II						**6**
English language		II						**2**
Final test								**16**

List of optional exams

EXAM	SSD	Year	Sem.	Hour	A.T.	A.P.	S/A	CFUs
GROUP A14 (one exam with compulsory options)								
Food biotechnologies and microbiology*	CHIM/11	I	I	52	44	8	S	**6**
Innovation and entrepeneurship in agro-food biotechnology	AGR/05	I	I	52	44	8	S	**6**
Genetic and molecular techniques for the improvement of the quality of animal production	AGR/17	I	I	52	44	8	S	**6**

*Compulsory for the students who have not taken the 'Food microbiology' exam during their three-year degree course

GROUP A13-1 (three exams, free choice)								
Innovation in the conditioning, conservation and transportation for fruit and vegetables	AGR/15	I	I	52	44	8	S	**6**
Processes in the technology of cereals and beer	AGR/15	I	I	52	44	8	S	**6**

[...]

EXAM	SSD	Year	Sem.	Hour	A.T.	A.P.	S/A	CFUs
GROUP A13-2 (one exams, free choice)								
Unit operations **Sensory analysis and consumer science*** - Unit operations for the food industry - Sensory analysis and consumer science	 AGR/15 AGR/15	 I	 II II	 52 52	 44 44	 8 8	A	**12** **6** **6**
Innovation in the agro-food industry **Sensory analysis and consumer science** - Enzyme technologies for the food industry - Sensory analysis and consumer science	 AGR/15 AGR/15	 I	 II II	 52 52	 44 44	 8 8	A	**12** **6** **6**
GROUP AGR/15 (one exams, free choice)								
Food industry unit operations*	AGR/15	I	II	48	48		S	**6**
Enzymatic technologies for the food industry	AGR/15	I	II	48	48		S	**6**

*Compulsory for the students who have not taken the 'Unit operations for the food industry' exam during their three-year degree course

QUALITY AND ENHANCEMENT CURRICULUM (ROME)

EXAM	SSD	Year	Sem.	Hour	A.T.	A.P.	S/A	CFUs
Microbic food biotechnologies	CHIM/11	I	I	52	44	8	S	**6**
Agro-food economy	AGR/01	I	I	48	40	8	S	**6**
Human food and nutrition	BIO/!0	I	I	48	40	8	S	**6**
Exam of the optional group **Safety / characterisation**		I	I					**6**
Innovation in the agro-food industry **Sensory analysis and consumer science** - Enzyme technologies for the food industry - Sensory analysis and consumer science	 AGR/15 AGR/15	I	 II II	 52 52	 44 44	 8 8	A	**12** **6** **6**
Production improvement and control - Molecular techniques in production and food quality control - Metabolic biotechnologies and plant improvement	 BIO/11 BIO/04	I	 II II	 48 52	 40 44	 8 8	A	**12** **6** **6**
Food technologies processes	AGR/15	I	II	48	40	8	S	**6**
Microbiological techniques for food quality and safety - Microbiological check for food safety - Starter and predictive microbiology selection	 AGR/16 AGR/16	II	 I I	 48 48	 40 40	 8 8	A	**12** **6** **6**

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EXAM	SSD	Year	Sem.	Hour	A.T.	A.P.	S/A	CFUs
Exams of the optional path		II	I					**6**
Agro-food system law	IUS/03	II	II	48	40	8	S	**6**
Chosen by the student								**12**
Training								**12**
English language								**2**
Final test								**10**

List of optional exams

EXAM	SSD	Year	Sem.	Hour	A.T.	A.P.	S/A	CFUs
ENHANCEMENT PATH (one exam)								
Food science and cultural processes	M-FIL/02	II	I	52			S	**6**
Biodiversity and plant enhancement	BIO/01	II	I	52			S	**6**
History and geography of human food consumption	BIO/08	II	I	52			S	**6**
Landscape ecology and enhancement of agro-food products	BIO/03	II	I	52			S	**6**
Economy and company management	SECS-P/08	II	I	48			S	**6**
QUALITY PATH (one exam)								
Food science and cultural processes	M-FIL/02	II	I	52	48	8	S	**6**
Food anthropozoonosis	VET/06	II	I	52	48	8	S	**6**
Environmental causes of food contamination	BIO/06	II	I	52	48	8	S	**6**
Processes and plants	ING-IND/25	II	I	48	48	8	S	**6**

SECOND-LEVEL DEGREE COURSE (LM-73)

FORESTRY AND ENVIRONMENTAL SCIENCES

(MSc in English)

Course Director
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ERASMUS coordinator
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Educational goals

The second level degree course of Forestry and Environmental Sciences stems from the need of having a second level degree graduate whose knowledge and experience allow him or her to operate at a management or coordination level in the sustainable management of forestry resources and in the development of rural and mountain areas, with a focus on the peculiarities of the Mediterranean environment, the planning and management of environmentally friendly infrastructures in urban areas aimed at mitigating environmental issues, and in innovative operational areas where an in-depth knowledge of forestry is required. The marked multidisciplinary approach of the course of study promotes integration into the job market but also provides excellent training for further research at a PhD level.

Skills and knowledge

The course offers three curricula in English that were developed in cooperation with other foreign universities and with the issuing of multiple degrees. These aim of offering a common basis that is oriented to different environments and professional experiences.

- The curriculum: Forests and Environment, in Italian, is the main study pathway to complete forest-environmental studies, alongside highly professional training to consolidate theoretical and practical skills. All the courses take place in Viterbo.
- The Mediterranean Forestry and Natural Resources Management (MEDfOR) curriculum, awarding multiple degrees, aims at welcoming students from the whole world. This is possible thanks to the financial support of the European Erasmus + programme; the course is aimed at students from the whole world who would like to deepen their competences in the sustainable management of Mediterranean forests; the first year courses take place in Lisbon (PT) or Lleida (SP). For further information on admission and for other information, please visit www.medfor.ue
- The curriculum: Management and Design of Urban Green Infrastructures (UGI), is taught in English and

confers a double degree title (in agreement with the Peoples' Friendship University of Russia, Moscow), and is aimed at providing the skills necessary to operate in the field of green infrastructures in urban areas, also aimed at mitigation of the environmental crisis. The first-year courses take place in Moscow, while the second-year courses take place in Viterbo.

The work needed for the final dissertation can be carried out at DIBAF or at the other partner universities (Universities of the MEDfOR group and PFUR Moscow). The course also includes internships in external / foreign institutions through the ERASMUS+ programme.

Career opportunities

The SFA master's degree course will prepare you to find employment in a supervisory capacity or as a director, at national and international public institutions, such as central and local state-run administrative bodies (Ministries, Regional, Provincial Offices and Municipalities, public organisations, the Parks Department, the FAO, environmental protection agencies, the United Nations agencies with expertise in forestry and responsible for development, engineering and environmental design, and at businesses and institutions that deal with forest and environmental research and innovation. To work in a freelance capacity, as a graduate in the SFA course, you can register with the 'Albo Professionale dei Dottori Agronomi e Forestali – sezione A' (The National Registry of Qualified Agronomists and Forestry Experts – section A), in the Agronomist and Forestry sector, following the successful outcome of the State Exam.

One year after conferral of the SFA-LM / LS degree, graduate employment rate is 75%, while after five years it reaches 88%. The skills acquired by graduates during their studies are fully utilized by 60% of the graduates, five years after graduation. All graduates expressed a positive opinion on the course they had taken.

FORESTS AND ENVIRONMENT

SUBJECTS TITLES (EXAMS) AND MODULES	SSD	Year	Sem.	TSH	C.A.	P.A.	C.T.	CFU
Forest ecophysiology	AGR/05	1	1	48	40	8	S	**6**
Forest genetics and Biotechnology							M	**12**
- Forest biotechnology	AGR/05	1	1	48	40	8		**6**
- Forest genetics	AGR/07	1	1	48	44	4		**6**
Monitoring soil quality	AGR/13	1	1	48	44	4	S	**6**
Principles of remote sensing and modeling in forestry	AGR/05	1	1	48	40	8	S	**6**
Research support for sustainable forest management	AGR/05	1	1	48	40	8	S	**6**
Advanced forest pathology	AGR/12	1	2	48	40	8	S	**6**
Silviculture II and Wood products							M	**13**
- Silviculture of Mediterranean and temperate forests	AGR/05	1	2	56	44	12		**7**
- Wood-based biocomposites	AGR/06	1	2	48	40	8		**6**
Forest management planning	AGR/05	2	1	56	48	8	S	**7**
Forest economics and policy	AGR/01	2	1	48	44	4	S	**6**
Applied hydrology	AGR/08	2	2	48	40	8	S	**6**
Vertebrates of forest ecosystems	BIO/05	2	2	48	40	8	S	**6**
Free selection of disciplines (AFS)								**12**
Traineeship in research laboratories, professional enterprises, public administrations and other organisations				100		100		**4**
Technical English language				100	100			**4**
Thesis – written in English or Italian								**20**

Sem. Semester **TSH** Total supervised hours **C.A.** Class activities (hours) **P.A.** Practical activities (hours)
C.T. Course type: S = singol module; M = multiple modules **CFU** Credits (CFU)

CURRICULUM **MEDFOR**

1st year in partner Universities* - 2nd year in Viterbo
*MEDfOR consortium (*www.medfor.ue*) - multiple degrees

SUBJECTS TITLES (EXAMS) AND MODULES	SSD	Year	Sem.	TSH	C.A.	P.A.	C.T.	CFU
Different options in the first year Universities (Univ Padova IT; Univ Lisbon P; Univ Lleida SP)								**48**
One common e-learning course								**3**
One common winter course at the University of Valladolid (Spain)								**9**
The student must select five courses out of these six, for a total of 30 CFU								
Forest biotechnology*	AGR/05	2	1	48	40	8	S	**6**
Forest ecophysiology*	AGR/05	2	1	48	40	8	S	**6**
Principles of remote sensing and modeling in forestry*	AGR/05	2	1	48	40	8	S	**6**
Research support for sustainable forest management*	AGR/05	2	1	48	40	8	S	**6**
Forest tree cropping*	AGR/05	2	1	48	36	12	S	**6**
Monitoring soil quality*	AGR/13	2	1	48	44	4	S	**6**
Traineeship in research laboratories, professional enterprises, public administrations and other organisations				100		100		**4**
Thesis – written in English or Italian				130	130			**26**

* The student must select five courses out of these six, for a total of 30 CFU

CURRICULUM

MANAGEMENT AND DESIGN OF URBAN GREEN INFRASTRUCTURES

1st year in Moscow (PFUR) - 2nd year in Viterbo (UNITUS) Double degree

SUBJECTS TITLES (EXAMS) AND MODULES	SSD	Year	Sem.	TSH	C.A.	P.A.	C.T.	CFU
Economy	SECS-P/06	1	1	48	40	8	S	**6**
Urban ecology	BIO/07	1	1	64	56	8	S	**8**
Phytopathology and Plant Protection	AGR/12	1	1	48	40	8	S	**6**
Introduction to geodesy, cartography and GIS	ICAR/06	1	2	48	40	8	S	**6**
Landscape design, architecture and city-planning	ICAR/14	1	2	64	56	8	S	**8**
Data analysis and statistics	SECS-S/02	1	2	48	40	8	S	**6**
Principles of remote sensing and modelling in forestry	AGR/05	2	1	48	40	8	S	**6**
Soil pollution and monitoring	AGR/13	2	1	48	44	4	S	**6**
Phytotechnologies for remediation and improvement of urban environment							M	
- Phytotechnologies to protect water and soil in urban areas	AGR/05	2	1	48	44	4		**6**
- Trees and plants to improve air quality of urban areas	AGR/05	2	1	48	44	4		**6**
Urban forestry	AGR/05	2	2	48	44	4	S	**6**
Urban hydrology	AGR/08	2	2	48	44	4	S	**6**
Free selection of disciplines (AFS)								**12**
Traineeship in research laboratories, professional enterprises, public administrations and other organisations				100		100		**4**
Thesis - written in English				140	140			**28**

Sem. Semester **TSH** Total supervised hours **C.A.** Class activities (hours) **P.A.** Practical activities (hours)
C.T. Course type: S = singol module; M = multiple modules **CFU** Credits (CFU)

ADDITIONAL EXTRACURRICULAR SUBJECTS,

which can be selected to complete the career (as AFS), or by incoming students under mobility programmes or for single courses enrolment Academic Year 2019/20

SUBJECTS TITLES (EXAMS) AND MODULES	SSD	Year	Sem.	TSH	C.A.	P.A.	C.T.	CFU
CURRICULUM FOREST AND ENVIRONMENT(AFS)								
Methodological and technical tools for carbon observation system – ICOS	AGR/05	2019/20	2	48	24	24	S	**6**
Monitoring Ecosystem Services	AGR/05	2019/20	2	48	24	24	S	**6**
Propagation of plants and pathogens control							M	**6**
- Micropropagation of plants	AGR/05	2019/20	2	32	16	16		**4**
- Pathogens control in plant propagation	AGR/12	2019/20	2	16	8	8		**2**
Phytotechnologies to protect water and soil in urban areas	AGR/05	2019/20	2	48	44	4	S	**6**
Trees and plants to improve air quality of urban areas	AGR/05	2019/20	2	48	32	16	S	**6**
CURRICULUM MANAGEMENT AND DESIGN OF URBAN GREEN INFRASTRUCTURES (AFS)								
Methodological and technical tools for carbon observation system – ICOS	AGR/05	2019/20	2	48	24	24	S	**6**
Monitoring Ecosystem Services	AGR/05	2019/20	2	48	24	24	S	**6**
Propagation of plants and pathogens control							M	**6**
- Micropropagation of plants	AGR/05	2019/20	2	32	16	16		**4**
- Pathogens control in plant propagation	AGR/12	2019/20	2	16	8	8		**2**
ONLY ERASMUS OR SINGLE COURSE								
Forest genetics	AGR/07	2019/20	1	48	40	4	S	**6**
Silviculture of Mediterranean and temperate forests	AGR/05	2019/20	2	48	40	4	S	**6**
Wood-based biocomposites	AGR/06	2019/20	2	48	40	4	S	**6**

ATTIVITÀ DIDATTICA	ore di attività didattica assistita per credito	ore di studio individuali per credito	ore complessive per credito
Lezione teorica	8	17	25
Attività pratica	8	17	25
Tirocinio formativo e di orientamento	2	23	25
Tesi	5	20	25

SECOND-LEVEL DEGREE COURSE (LM-8)

INDUSTRIAL BIOTECHNOLOGY FOR HEALTH AND WELLBEING

Course Director
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Academic Office
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Location
DIFAB Riello,
Largo dell'Università snc

Educational goals

The second level degree course stems from the synergy of the DIBAF and DEB departments and from the need to complete the course offer in the biotechnology area and, in particular, in industrial biotechnology. The course aims at giving students a sound scientific basis allowing them to plan, produce and recover animal, plants, microbial and synthetic bioactive molecules for the cosmetic, cosmeceutical, nutraceutical and pharmaceutical sectors. Students learn the advanced scientific methods needed to study and develop extraction and characterisation processes of natural substances, the planning of new specific bioactive molecules, the identification of their pharmacogenetic and toxicological effect and the creation of biomolecular, bio-catalytic and microbiological systems which are of fundamental importance in order to use biotechnologies in applied research, industrial production and services related to human health and wellbeing.

The course has two study areas:

- Biotechnological processes and products;
- Structural and functional characterisation of bioactive molecules.

The course includes 8 compulsory courses, 3 courses to be chosen among the 7 available ones (similar and supplementary sectors) and 12 CFUs from training activities chosen by the student (AFS, attività formative a scelta) who can therefore choose specific areas of individual interest. Moreover, there is a B2 English course and practical laboratory activities.

Skills and knowledge

Second cycle degree graduates in Industrial biotechnology for health and wellbeing acquire the following competences:

- theoretical-practical competences in the molecular and genetic sectors;
- competences in omics sciences;
- theoretical-practical competences in the sector of microbial and fermentation biotechnologies;
- theoretical-practical competences related to techniques and instruments to carry out the

structural and functional analysis of macromolecules and biologic molecules;
- Chemistry, biochemistry and molecular competences in order to obtain materials of biotechnological interest;
- general biotechnology competences aimed at the scientific and technological development and innovation;
- general sustainability and bio-economy competences.

Career opportunities

This strongly job-oriented course with a theoretical-practical approach allows graduates to quickly enter the job market. The course prepares students to work in highly-specialised intellectual scientific jobs such as biologist and similar (biochemist, biotechnologist, microbiologist, researcher and biological sciences technicians).

Therefore, graduates in Industrial biotechnology for health and wellbeing can work in:

- State-run and private research institutes and universities;
- Research and development laboratories, production and quality control departments within biotechnology companies and other companies interested in biotechnological innovation;
- Biotechnological companies in the biomedical, cosmetic, nutraceutical, pharmaceutical and environmental sectors;
- Laboratories, testing centres and imaging centres;
- Organisations dealing with the organisation of patent legislation of bioindustry processes and products;
- Jobs related to national state exams in the healthcare industry, based on the requisites stated in article 2 of decree of equivalence with the second level degree course in Biology (LM-6) (D.I. 15/01/2013, published in the Gazzetta Ufficiale of 22 June 2013, n. 145);
- Self-employed professional (national register for biologists, following a successful state exams for the job of senior biologist, section A - DPR n. 328/01);
- Scientific knowledge and specialised printing sector.

INDUSTRIAL BIOTECHNOLOGY FOR HEALTH AND WELLBEING

EXAM	SSD	Anno	Sem.	Hour	A.T.	A.P.	S/A	CFUs
Microbic biotechnologies	BIO/19	I	I	48	40	8	S	**6**
Spectroscopic and computational methods for the study of biomolecules							A	**9**
- Spectroscopic methods	CHIM/02	I	I	48	40	8		**6**
- Computational methods	CHIM/07		I	24	16	8		**3**
Biochemical characterisation of pharmacologically active molecules	BIO/10	I	I	48	40	8	S	**6**
Biostatistics and experimental data analysis	SECS-S /02	I	I	48	32	16	S	**6**
Industrial catalysis and biocatalysis							A	**6**
- Principles of catalysis	CHIM03	I	I	24	24			**3**
- Industrial biocatalysis	AGR/13		I	24	20	4		**3**
Applied omics sciences	BIO/11	I	II	48	32	16	S	**6**
Chemistry of bioactive substances	CHIM/06	I	II	48	48		S	**6**
Genetic toxicology	BIO/18	I	II	48	40	8	S	**6**
English language (B2)		I	II	32	24	8	S	**4**
Training								**3**
Exam chosen among similar and supplementary exams								**6**
Exam chosen among similar and supplementary exams								**6**
Exam chosen among similar and supplementary exams								**6**
Exams chosen by the student (AFS)								**12**
Final test (dissertation)								**32**

SIMILAR AND INTEGRATED EXAMS

Sustainable biorefineries and biotechnologies	BIO/19	II	I	48	40	8	S	**6**
Functional food	MED/42	II	I	48	40	8	S	**6**
Pharmacogenetics	BIO/18	II	I	48	40	8	S	**6**
Animal molecules biotechnologies	BIO/05	II	II	48	40	8	S	**6**
Plant molecules biotechnologies	BIO/01	II	II	48	40	8	S	**6**
Industrial applications of microscopic techniques	BIO/05	II	II	48	24	24	S	**6**
Applied neurophysiology	BIO/09	II	II	48		48	S	**6**

A.T. = Theoretical activity A.P. = Practical activity S/A = Biannual/Annual

SECOND-LEVEL DEGREE COURSE (LM-03)

LANDSCAPE ARCHITECTURE

Shared second level degree course
University of Tuscia - Sapienza University of Rome

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DIAP Department of Architecture and Project
Location
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Educational goals
The second level degree course in Landscape Architecture is the second part of the shared degree course held by Sapienza University of Rome and the University of Tuscia for the training of landscape and project experts using cultural, technical and methodological tools at any level and in different situations, in special places as well as ordinary places. Graduates are competent in the analysis, the planning and the management of parks, gardens and open spaces, both public and private. Graduates are experts in the conservation, restoration and upgrade of parks, gardens and historical landscapes, the drafting of landscapes, the upgrade of landscape in run-down or abandoned areas, the prevention of environmental risk, the creation of infrastructure networks within the landscape, the analysis and evaluation of environmental impact studies, rural and forestry landscape, agricultural production and rural tourism.

Knowledge and skills
Just like a cinema director, a landscape expert uses a wide range of abilities acquired through an interdisciplinary approach. He or she combines the knowledge about project planning with biological, agro-forestry and Earth Sciences competences aimed at improving the living and landscape environment, with knowledge related to humanities, as well as social and geographical sciences in order to combine society and landscape. This degree course has the Faculty of Architecture of 'La Sapienza' University of Rome as its didactic centre.

Career opportunities
Graduates can carry out these activities as freelancers, consultants, coordinators, within projects promoted at a state-run and private level, or as civil servants within projects related to landscape promotion. Graduates can register as professionals within the 'Ordine professionale degli Architetti, Pianificatori, Paesaggisti e conservatori - OAPPC) (The Order of Architects for Landsape and Preservation), Section A, sector C (landscaping) following the successful sitting at the State Exam. This degree also allows graduates to access Section A of the 'Ordine dei Dottori Agronomi e Dottori Forestali' (Order of Qualified Agronomists and Forestry Experts) (ibidem, art. 12, c. 2).

ESAME	SSD	Anno	Sem.	Ore	A.T.	A.P.	S/A	CFU
Landscape aesthetics	M-FIL/04	I	I	48	48	0	S	**6**
Critique of contemporary landscape	ICAR/15	I	I	48	32	16	S	**6**
Phytogeography and applied geobotanics	BIO/03	I	I	48	48	-	S	**6**
Urban forestry and landscape	AGR/05	I	I	48	48	-	S	**6**
Landscape representation	ICAR/17	I	I	48	24	24	S	**6**
Geotechnics of large areas	ICAR/07	I	II	48	48		S	**6**
Landscape architecture workshop 1								
- Garden and landscape architecture	ICAR/15	I	II	48	12	36	A	**6**
- Financial evaluation of projects	ICAR/22	I	II	24	12	12	A	**3**
- Landscape and water management	AGR/08	I		24	12	12	A	**3**
Landscape restoration workshop								
- Landscape conservation and promotion	ICAR/19	I	II	72	36	36	A	**9**
- Plant protection and defense	AGR/12	I	II	24	18	6	A	**3**
Landscape infrastructure and plan workshop								
- Landscape planning	ICAR/21	II	I	48	12	36	A	**6**
- Landscape planning	ICAR/15	II	I	24	8	16	A	**3**
- Landscape ecology	BIO/03	II	I	24	16	8	A	**3**
Landscape architecture workshop 2								
- Landscape architecture	ICAR/15	II	I	48	12	36	A	**6**
- Urban planning	ICAR/14	II	I	32	8	24	A	**4**
- Urban agriculture and landscape	AGR/03	II	I	24	8	16	A	**3**

OPTIONAL EXAMS AVAILABLE IN THE DEGREE COURSE

Cities and contemporary art landscape	L-ART/03	I	II	48	48	-	S	**6**
Environmental planning	ICAR/12	II	I	48	24	24	S	**6**
Animal biodiversity and environmental network	BIO/05	II	II	48	48	-	S	**6**
Module Choice								**12**
Training								**3**
Final test								**12**

Hours of activity for each CFU

DIDACTIC ACTIVITY	Hours of assisted didactic activity per credit	Hours of individual study per credit	Total number of hours per credit
Theoretical lesson	8	17	25
Practical activity	8	17	25
Training and orientation workshop	2	23	25
Thesis	5	20	25

FIVE-YEAR SINGLE CYCLE DEGREE COURSE (LMR-02)

HERITAGE CONSERVATION AND RESTORATION

Qualifying degree for the profession of Cultural Heritage Restorer
(Legislation D.Lgs. 42/2004)

Course Director
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Heritage studies
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Educational goals

The single-cycle Master's Degree course in Heritage Conservation and Restoration LMR-02 qualifies graduates for the profession of Cultural Heritage Restorer. The structure of the course comprises theoretical and methodological studies, and technical activities, including diagnostics, conservation and restoration. All the activities are carried out in the lab and in the workshop, on original artefacts in authentic contexts. Enrolment to the course is accessed by means of tests, while the course programme concludes with a final exam. The study plan offers a historical, scientific and technical foundation, a correct methodological approach, a high ability to recognise, criticise and diagnostics, a sound practical basis as well as intervention and management abilities.
Graduates will be required to possess a good level of responsibility, the commitment to acquire a cultural conscience, appropriate communicative competences and a desire to keep up to date. The course aims at teaching students a strong commitment to research and experimentation thanks to an excellent ethical and professional perspective focussed on the respect and care for the environment and cultural heritage, with a view to it being passed onto future generations.

The LMR-02 course represents a significant enrichment of the cultural offer and of the specialisations related to cultural heritage. The modules are organized along historic and scientific lines, with teaching in the laboratories divided into two areas: 'Artefacts in stone and derivatives; decorated architectonic surfaces (wall paintings, mosaics and stucco work), and 'Painted artefacts on wood and textiles' (wooden sculptures; wooden furnishings and structures; artefacts in manufactured synthetic materials, assembled and/or painted).
This blend of diverse skills and expertise enables wide-range studies that benefit from a solid tradition of historical, theoretical and methodological teaching and opens itself to new training strategies for the conservation and enhancement of the extensive historic-artistic Italian heritage.

Career opportunities

The degree course qualifies graduates to practice the profession of cultural heritage Restorer.

Graduates will work as cultural heritage restorers with decisional powers related to their technical competences, working directly and indirectly to increase knowledge and avoid the deterioration of cultural heritage, thus guaranteeing its transmission to the future.

Job opportunities

- Institutions belonging to the Ministry of Tourism and Cultural Heritage (museums, libraries and more);
- state-run and private restoration laboratories;
- private organisations working in diagnostics, conservation and restoration;
- universities and state-run and private research organisations.

DISCIPLINE	CFUs
Scientific training	**24-32**
Historical and historical-artistic training	**40-48**
Conservation and restoration methodologies	**24-32**
Conservation and restoration sciences and technologies	**32-48**
Cultural heritage	**16-32**
Law and finance training	**12**
Supplementary and related training activities	**16**
Chosen by the student	**8**
Language competence	**4**
Final test	**10**

The study plan includes 300 CFUs, 90 of which are obtained through participation in workshops.
The study plan must be agreed with the president of the degree course or the tutor professors.

STUDY PLAN PFP1

EXAM	SSD	CFUs
FIRST YEAR		
Scientific training		
Elements of general physics	FIS/07	**8**
Historical and historical-artistic training		
*** Classic archaeology**	L-ANT/07	**8**
*** Medieval art history**	L-ART/01	**8**
Conservation and restoration sciences and technologies		
*** Materials science and technology**	ING-IND/22	**8**
Microbiology and biodeterioration of cultural heritage materials	BIO/19-AGR/12	**8**
Geology	GEO/07	**8**
Wood science and technology	AGR/06	**8**
Elements of chemistry and chemistry workshop	CHIM/01 - AGR/13	**8**
Workshop activities PFP1		
Stone artefacts		**18**
SECOND YEAR		
Scientific training		
*** Chemistry of restoration**	CHIM/12	**8**
Historical and historical-artistic training		
Medieval archaeology	L-ANT/08	**8**
Modern art history	L-ART/02	**8**
Methodology for historical-artistic research and restoration	L-ART/01	**8**
Conservation and restoration methodologies		
*** Executive procedures and artistic techniques documentation**	L-ART/04	**8**
Supplementary and related training activities		
IT applied to cultural heritage	INF/01	**8**
Language competence		
English language	L-LIN/12	**4**
Workshop activities PFP1		
Mural paintings		**18**
THIRD YEAR		
Scientific training		
Botanics applied to cultural heritage	BIO/03	**8**
Conservation and restoration sciences and technologies		
Diagnostics and spectroscopy for cultural heritage	CHIM/01	**8**
Zoology applied to cultural heritage	BIO/05	**8**

* Compulsory exams

EXAM	SSD	CFUs
Historical and historical-artistic training		
History of restoration	L-ART/08	**8**
Cultural heritage		
Prehistoric archaeology	L-ANT/01	**8**
Etruscology	L-ANT/06	**8**
Contemporary art history	L-ART/03	**8**
Photography history and technique	L-ART/03	**8**
Workshop activities PFP1		
Stucco work		**18**

FOURTH YEAR

Conservation and restoration methodologies		
Archaeologic research methodology	L-ANT/10	**8**
Methodology for architectonic research	ICAR/19	**8**
Upkeep tools and methods	ICAR/19	**8**
Cultural heritage		
General archival science	M-STO/08	**8**
Law, finance and management training		
*** Cultural heritage law**	IUS/10	**6**
Supplementary and related training activities		
Sound as cultural heritage	AGR/13	**8**
History of art criticism	L-ART/04	**8**
Italian literature	L-FIL-LET/10	**8**
Workshop activities PFP1		
Mosaic		**18**

FIFTH YEAR

Conservation and restoration methodologies		
Museology	L-ART/04	**8**
Law, finance and management training		
Business Administration	SECS-P/07	**6**
Media theory and techniques	SPS/08	**6**
Supplementary and related training activities		
Archaeology and history of Roman art	L-ANT/07	**8**
Workshop activities PFP1		
Dissertation workshop		**18**

STUDY PLAN PFP2

EXAM	SSD	CFUs
FIRST YEAR		
Scientific training		
Elements of general physics	FIS/07	**8**
Historical and historical-artistic training		
*** Classic archaeology**	L-ANT/07	**8**
*** Medieval art history**	L-ART/01	**8**
Conservation and restoration sciences and technologies		
*** Wood science and technology**	AGR/06	**8**
*** Materials science and technology**	ING-IND/22	**8**
Microbiology and biodeterioration of cultural heritage materials	BIO/19-AGR/12	**8**
Elements of chemistry and chemistry workshop	CHIM/01 - AGR/13	**8**
Workshop activities PFP2		
Artefacts painted on wood. Artefacts sculpted on wood 1		**18**
SECOND YEAR		
Scientific training		
*** Chemistry of restoration**	CHIM/12	**8**
Historical and historical-artistic training		
Medieval archaeology	L-ANT/08	**8**
Modern art history	L-ART/02	**8**
Methodology for historical-artistic research and restoration	L-ART/01	**8**
Conservation and restoration methodologies		
*** Executive procedures and artistic techniques documentation**	L-ART/04	**8**
Supplementary and related training activities		
IT applied to cultural heritage	INF/01	**8**
Language competence		
English language	L-LIN/12	**4**
Workshop activities PFP2		
Artefacts painted on wood. Artefacts sculpted on wood 2		**18**
THIRD YEAR		
Scientific training		
Botanics applied to cultural heritage	BIO/03	**8**
Conservation and restoration sciences and technologies		
Diagnostics and spectroscopy for cultural heritage	CHIM/01	**8**
Zoology applied to cultural heritage	BIO/05	**8**

* Compulsory exams

EXAM	SSD	CFUs
Historical and historical-artistic training		
History of restoration	L-ART/08	**8**
Cultural heritage		
Prehistoric archaeology	L-ANT/01	**8**
Etruscology	L-ANT/06	**8**
Contemporary art history	L-ART/03	**8**
Photography history and technique	L-ART/03	**8**
Workshop activities PFP2		
Artefacts on textile		**18**

FOURTH YEAR

Conservation and restoration methodologies		
Upkeep tools and methods	ICAR/19	**8**
Archaeologic research methodology	L-ANT/10	**8**
Methodology for architectonic research	ICAR/19	**8**
Cultural heritage		
General archival science	M-STO/08	**8**
Law, finance and management training		
*** Cultural heritage law**	IUS/10	**6**
Supplementary and related training activities		
Sound as cultural heritage	AGR/13	**8**
History of art criticism	L-ART/04	**8**
Italian literature	L-FIL-LET/10	**8**
Workshop activities PFP2		
Artefacts made with synthetic materials processed and assembled and/or painted		**18**

FIFTH YEAR

Conservation and restoration methodologies		
Museology	L-ART/04	**8**
Law, finance and management training		
Business Administration	SECS-P/07	**6**
Media theory and techniques	SPS/08	**6**
Cultural heritage		
Contemporary art history in Europe and the Mediterranean	L-ART/03	**8**
Supplementary and related training activities		
Archaeology and history of Roman art	L-ANT/07	**8**
Workshop activities PFP2		
Dissertation workshop		**18**

POSTGRADUATE STUDIES
PhD AND MASTER'S DEGREES

Science, Technology and Biotechnology for Sustainability

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Biological Systems / Bio-based Industries Curriculum Coordinator
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The PhD programme aims to provide the skills necessary to carry out highly qualified research activities at national and international universities, businesses and institutions, in the sectors of: 1. Agro-food production; 2. Environmental technologies and forest ecology; 3. Biological systems and bioindustry. The Food curriculum includes theoretical and applied studies and research on the aspects of transformation, conservation and food assessment, and criteria for the management of product quality and sustainability of the processes/processing. Teaching is carried out in collaboration with the National Network of Ph.Ds in Food Science Technology and Biotechnology. The curriculum: Forest Ecology and Environmental Technologies deals with the structure and function of forest ecosystems, including the soil system, the ecological and productive recovery of ecosystems, forest biodiversity and climate change. The curriculum: Biological Systems / Bio-industries includes research on basic biology, applied to animal, plant and microbial systems; biotechnology for the enhancement of waste, effluents and rubbish, bio-reclamation and human health; and sustainable agricultural management and plant health of Mediterranean cultivation systems. The training objectives are: knowledge of English; preparation and statistical analysis of research; assessment of sustainability in complex systems. More details can be found at: *http://www.unitus.it/it/dipartimento/dibaf/scienze-tecnologie-e-biotecnologie-per-la-sostenibilita/articolo/obiettivi-formativi7*

In the academic year 2017/18 a renewal of this PhD programme (XXXIII cycle) in cooperation with the University of Molise was proposed.

First level Master's Degree in Enogastronomy - Management, Enhancement and Promotion

Interdisciplinary Master's
DIBAF - DEIM - DAFNE - DISUCOM - DEB
Administrative Offices
DIBAF
Coordinator
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The aim of the master's degree course is:

- to train highly specialised professionals, with multidisciplinary skills, able to know, understand, evaluate and interpret with expertise the quality of enogastronomic products and activities, and to promote an efficient enhancement and promotion strategy. Today, highly skilled professionals in this field are difficult to find in the current marketplace.
- The course aims to enable students to acquire the technical communicative tools with a view to creating an awareness of the quality of foods, which is essential to successfully evaluate, enhance and/or manage a product.

The master's course will suit students who are interested in working or if they already operate within the agro-food, restaurant or services industries. It could also interest students who wish to follow a freelance career within these environments or to take up a professional activity in the field of communication and in journalism specialising in tourism or enogastronomy.
The master's course is organized in three macro areas, divided into various modules, for a total of 60 CFU:

- *Macro area 1*
  Communication and advertising:
  for a total of 7 CFUs
- *Macro area 2*
  Business, management and quality:
  for a total of 7 CFUs
- *Macro area 3*
  Agro-food:
  for a total of 10 CFUs
- Practical activities and workshops:
  for a total of 10 CFUs
- Visits to businesses, planning and analysis of case studies, communication and marketing:
  for a total of 16 CFUs
- The final dissertation
  10 CFUs

The programme offers students the possibility to study single modules, which could be useful to those who wish to improve specific business skills. This could be interesting for professional or cultural reasons, or if students do not possess the required entry qualifications for the course (three-year degree or equivalent), or if they do not wish to attend the entire course. Furthermore, it could give students the opportunity to strengthen technical or marketing skills or to better manage their own business.
It is possible to enrol on single or multiple modular courses, without having to complete the whole master's study programme. You can enrol on the master's degree course if you have a three-year degree in any subject in the field of humanities or science.
You will be granted the postgraduate degree of Master in Enogastronomy - Management, Enhancement and Promotion if you attend the lessons, pass the module exams and the final exam.

http://www.unitus.it/public/platforms/1/cke_contents/186/Bando%20Master%20DIBAF%20Management,%20valorizzazione.pdf

First level Master's Degree in **Guides and interpreters of the landscape and cultural heritage**

Coordinator
Professor Giuseppe Scarascia Mugnozza
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The Master's degree is aimed at graduates of scientific, biological-agricultural, environmental, architecture and landscape, historical-literary, cultural heritage, communication and sociology disciplines. The Master's degree aims to support and promote new professionals who are able to interpret, guide and educate in the sector of environmental and cultural resources conservation and enhancement in protected areas. The specific aim is that of training professionals who are able to create connections between the values of a specific territory or site and the natural and cultural processes that determined it and made it as we know it today. Their task is to identify the forces that forged the treasures of our society (parks, protected areas, monuments, museums), find their essence and interpret them in order to give people who wish to visit them an enriching experience. Environmental

interpretation methods are gaining momentum throughout the world because they provide tangible answers to those who manage, administer, coordinate or work in protected areas, natural parks, didactic farms, museums, monuments, as well as to visitors and enthusiasts who wish to know, enhance and protect the natural and cultural heritage.

The environmental interpreter's specific professsional competences goes hand in hand with such gifts as strong motivation, creativity, and enthusiasm, allowing him or her to continuously renew his job and continuously adapt it to his or her target's needs and the evolutions of the job environment.

Moreover, the specialisation level an interpret possesses can be extended to the planning and execution of written interpretation (panels, leaflets, texts, etc.), graphic and audio-visual support, dedicated structures, the spatial planning of infrastructures, centres and other interpretation tools.

The 12-month Master's degree course includes frontal lessons, exercises, training/internships, project work and a good level of commitment on the part of students for individual study. The degree course has a total of 60 CFUs.

The total number of hours is 1,500, and modules are divided in four large areas as per the attached schedule, for a total of 60 CFUs. The following is a summary of the courses on offer:

Macro Area n. 1 - Protected areas, conservation and promotion instruments, conventions, rules: 8 CFUs equalling 252 hours, 96 of which are frontal lessons. Course presentation, objectives, evaluation tools and creation of the 'class group'; introduction to the work methodology; knowledge and evaluation of the interpretation application scenarios; frontal lessons and laboratories on protected areas, Rete Natura 2000, nature conservation tools and national and regional legislation for sustainable development; knowledge and evaluation of types of regional protected areas.

Macro Area n. 2 - Resource and land heritage knowledge and evaluation 12 CFUs equalling 344 hours, 152 of which are frontal lessons. Basic knowledge and excellencies of the national natural and

cultural resource heritage; landscape architecture and museology elements; experiences and good practices in the management of the natural and cultural heritage; territorial marketing elements, promotion of tourism. Resource knowledge and evaluation (Keynotes)

Macro Area n. 3 - Knowledge and application of methods and techniques of heritage interpretation: 24 CFUs equalling 604 hours, 384 of which are laboratory activities and practical application. Knowledge and application of the principles of heritage interpretation, evolution of the national and international experiences, techniques, media involved in heritage interpretation; the interpretation as a system and a management tool for protected areas and/or sites or heritage elements; communication principles and techniques, group management dynamics; practical application interpretation services; guided tours and basic services for orientation, security and emergency management; storytelling elements; creativity and multisciplinarity as a work tool; project work.

Macro area 4 - Training: 12 CFUs - 300-hour training in a protected area, a museum, a UNESCO site or an organisation responsible for managing sites or important and representative heritage sites.

Final test: 4 CFUs. The writing of guidelines for an integrated system that is complete with media, programmes, interpretation activities; the carrying out of a practical test and the writing of a presentation of an interpretation medium.

Attendance is compulsory. A maximum of 20% of absences of the total number of hours is accepted. Provided they can offer written proof, sudents who total a higher amount of absences because of health reasons or other serious matters can have their absences evaluated by the Master's directorate in order to obtain the first level master's degree.

Students with any of the following degrees can access the Master's degree course: Heritage Studies (L-01), Figurative arts, music, entertainment and fashion (L-03), Philosophy (L-05), Geography (L-06), Humanities / Literature Studies (L-10), Languages and Modern Cultures (L-11), Biological Sciences (L-

13), Tourism Sciences (L-15), Sciences of Architecture (L-17), Educational and Training Sciences (L-19), Communication Sciences (L-20), Sciences of Regional, Urban and Environmental Planning (L-21), Psychological Sciences and Techniques (L-24), Agricultural and Forestry Sciences and Technologies (L-25), Agro-Food Sciences and Technologies (L-26), IT Sciences and Technologies (L-31), Natural and Environmental Sciences and Technologies (L-32), Geological Sciences (L-34), Sociology (L-40), History (L-42).
The Master's degree course will take place between October 2018 and September 2019. More information on the Master's degree course will be available on the DIBAF website.

First level Master's Degree as **Community storyteller**

Interdisciplinary Master's Degree
DIBAF - DISTU - DISUCOM
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Knowing how communities see themselves, what they think about their past and how they plan to use this inheritance to build their future.
Landscape, art and archaeological heritage promotion and enhancement, the enhancement and promotion of the cultural values of the territory and of traditional agro-food production are fundamentally important for cultural and financial development given today's high levels of competition, which is characterised by excessive fragmentation and dispersion of "ancient knowledge". In order to respond to these needs and have a positive effect on non-urban land economic growth, this Master's degree course aims at training students to acquire a new specialised competence such as the 'community storyteller', who can respond to the local territory's needs as well as the needs of the main actors working in tourism (animation, promotion, reception, restaurants, territorial marketing and so on) and culture (promotion, museums, archaeological heritage, training, natural and urban landscape, construct upgrade, technologies related to use, creativity and more).
The Master's degree course aims at training highly specialised professionals with multidisciplinary

competences who are able to know, understand and interpret in the most accurate and aware way the value, the history, and the founding elements of the cultural structures of territories and promote an effective promotion strategy by working on the territories' narrative heritage. This is done by identifying, collecting, documenting, transforming and delivering such heritage in order to discover what communities think of themselves and of their past and how they plan to use this heritage to build their future through virtuous identity socialisation and the enhancement of the tourism-cultural heritage. The Master's degree course aims at integrating through an individual approach the different types of knowledge needed in order to manage a series of complex and diverse aspects related to the communication of culture and the tradition of local areas in tourism, management, crafts, in local or state-run groups, in cultural, socio-health, school and prison institutions.

All the Master's degree course modules are made up of frontal lessons, laboratory activities and on the field, and they provide a global, qualified and comprehensive training on subjects related to rural areas, the agro-food heritage, the value of our landscape which is now one of the main actors of economic development and whose transformations are the result of ongoing cultural change. The competences acquired during this course are difficult to find in the study offer currently available, and they are useful to anyone who wishes to face the huge cultural heritage of the rural world with the right preparation by using effective enhancement tools that also help public restitution. Public restitution can take different forms: audiovisual documentaries, books, performances, reading, exhibitions, walks/storytelling. During the Master's degree course, students will learn the scientific basis of in-field research such as the use of technology, interview making, sbobinatura???, transcription and archiving, and they will also learn how to edit texts and write scripts. The Master's degree course provides courses on directing, staging and acting, the basics of museum setup and production design, and it teaches students how to use the right hardware and software technology

to document, transform, archive and carry out the public restitution of the community's stories.

The systematic knowledge of the subjects of the Master's degree course and the opportunity to enhance them at best in order to develop the local territory can be a competitive advantage for anyone operating in the tourism and culture sectors. The Master's degree course will suit students who are interested in working or who already work in the agro-food, culture, restaurant and reception sectors but also those who wish to have a supporting role in the previously mentioned sectors or to those who want to have a job in communication and in cultural promotion within the tourism and enogastronomy sectors. Who can become a professional storyteller:

- Young local researchers who are still training;
- local socio-cultural operators (directors or people who work in libraries, museums, archives; teachers of any school age;
- turist guides and environmental guides;
- cultural associations and cooperatives working in local areas and aimed at its enhancement; Pro Loco);
- Administrators and/or employees within local administrations.

USEFUL INFORMATION

Alpine Studies Centre
CSALP The University of Tuscia

The Department for Innovation in Organic, Agro-Food and Forestry Systems founded and manages the Alpine Studies Centre (CSALP), an interdepartmental unit of the University of Tuscia, located in, in Pieve Tesino (Trento), for teaching and research purposes. The centre is intended primarily as a summer study and research facility for students of forestry and environmental, agro-food and biotechnology courses. The Centre is also used for teaching and research activities promoted by teachers and students of the University of Tuscia, but is also open to all scientific and educational institutions on request, depending on availability and in accordance with the regulations governing its use. The Centre normally operates two facilities with meeting rooms, classrooms, laboratories and accommodation for about 60 people.
In particular, the Centre is used regularly for:

- Practical work for students of the University of Tuscia;
- Practical work for students of other universities;
- Practical and applied traineeships for undergraduate and doctoral students;
- In the field experimental work in preparation for theses and dissertations;
- Training and specialization courses, summer school;
- Scientific and technological research projects;
- Cultural and scientific dissemination (seminars, workshops and other conference activities);
- Technical and scientific cooperation and practical applied activities for the management and development of the Arboretum of Tesino.

The Alpine Studies Centre is connected to the Arboretum of Tesino which was the result of the cooperation between the Environment Department of the autonomous province of Trento, the University of Tuscia and the towns of Pieve Tesino e Cinte Tesino. The arboretum is 800 metres above sea level and it boasts a large grass area with trees, a swamp area and mixed conifers and broadleaf woods, an area with alders and the 'garden of Europe'.
The natural environment that surrounds the Alpine Studies Centre of the University of Tuscia is part of the Tesino area and covers more than 20,000 ha between

the Lagorai and Valsugana Mountain chains. The peaks of the Lagorai close it to the north, separating it from the Val Fiemme, while the Val Vanoi to the east separates it from the mountains of the Pale di San Martino and Primiero. Again towards the east, the narrow hydrographic incisions of the Senaiga torrent and the Val Porra mark the boundary with the town of Feltre for long stretches. Westwards the geographic limits of Val Campelle can be seen and, further south, the channel of the Chieppena torrent. To the south of the Lagorai mountain ridges, and the Val Vanoi, is the imposing massif of Cima d'Asta, which at 2,850 m is the highest point of Tesino. Tesino is located in an intermediate position between the Asiago Plateau and the Venetian Pre-Alps, and the Inner Alps. Along the valleys created by the river tributaries of the Brenta, in a predominantly north-south orientation, the currents of moist air from the Adriatic can rise and ensure abundant rainfall all year round, in addition to a certain mitigation of thermal extremes. The different altitudes, aspect and gradient of peaks, slopes and valleys create a marked diversification of microclimate that is reflected in the characteristics of the local forest vegetation. Woods and pastures are the dominant components of the Tesino landscape. The forest area measures 13,759 hectares and represents more than 50% of the land. It is important to underline that, as owners, the municipalities manage the majority of this natural heritage themselves, along with the Alpine huts and high altitude pastures, which have been the greatest guarantee of survival for local people in the past.

Initiatives to assist DIBAF students

The DIBAF Department encourages merit and commitment of its first year bachelor's and master's degree students by organising annual awards for the most meritorious students. The competition will be published online, together with all the details, and will expire on the 28th of February, 2018.

Students will be evaluated on the basis of a scale of merit, derived by adding the total marks of the vote and the number of credits achieved by the reference date. In case of a tie, the prize will be awarded to the younger student.

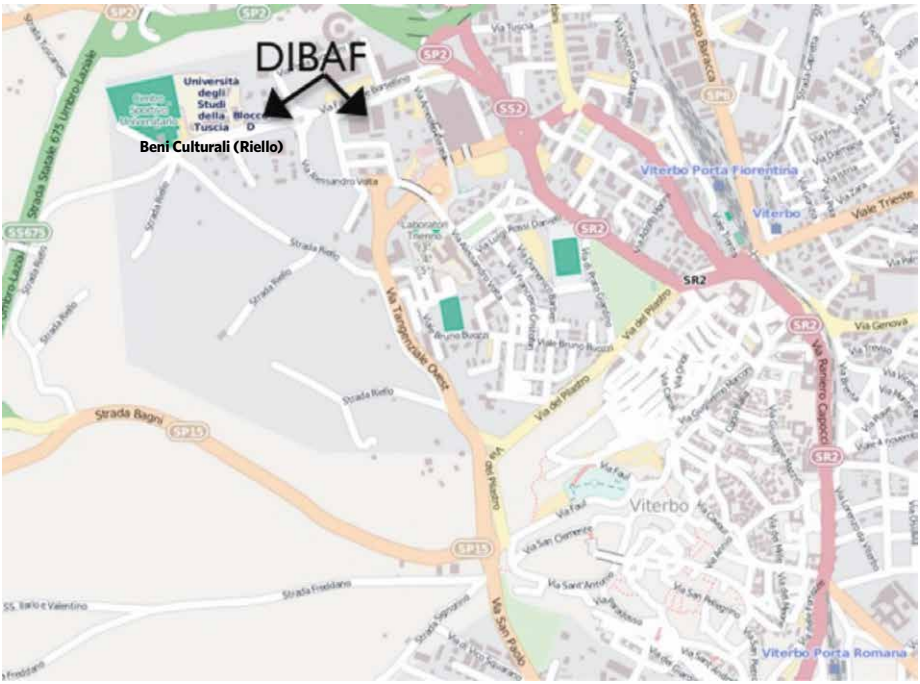
As always, with the aim of promoting the diligence and academic achievement of our students, DIBAF has established annual grants for the activities of mentoring and guidance by our senior students (regular students enrolled in master's degree programs) and doctoral students. The activities are structured as follows:

- to welcome first-year students and give information and guidance;
- to take an active role in various orientation initiatives for high school and middle-school students;
- to act as a go-between with the Department Academic Office.

How to reach us

By car

- From North to South: Highway A1 Milano-Napoli Exit at Orte, take the highway Umbro-Laziale (SS675) towards Viterbo, exit Viterbo Nord. DIBAF is 30 km from the exit for Orte.
- From Rome: SS Cassia (SS2) or Cassia bis (SR 2a).



- From Siena: SS Cassia (SS2).
- From Perugia: Highway E45 to Orte then highway Umbro-Laziale (SS675) towards Viterbo, exit Viterbo Nord.
- From Terni: highway Umbro-Laziale (SS675) towards Viterbo, exit Viterbo Nord.

By train

Viterbo has two train stations: Viterbo Porta Romana (FS), Viterbo Porta Fiorentina (FS). The nearest station to reach DIBAF is Porta Fiorentina.

The lines that reach Viterbo are:

- Rome Ostiense-Viterbo
- Orte-Viterbo Montefiascone.

Orte railway station is connected to Viterbo through the 'Cotral' bus service or 'Alitransport' shuttle service.

www.trenitalia.com

By bus

The buses of 'Cotral' regional bus lines connect to other towns of the province of Viterbo (*www.cotralspa.it*).

The closest stop to DIBAF is Viterbo Riello / Piazza Giordano Bruno.

Viterbo is on the 'Francigena' urban service (*www.francigena.vt.it*).

The students' halls of residence are on a University shuttle service.

ACADEMIC CALENDAR

First semester

Lessons start
30th September 2019
Lessons suspended for assessments
18-22 November 2019
Lessons end
17th January 2020
Christmas break
from 23 December 2019
to 06 January 2020

Second semester

Lessons start
2nd March 2020
Lessons suspended for assessments
20-24 April 2020
Lessons end
12th June 2020
Easter holidays
from 9 to 14 April 2020

Exam Sessions

Between the end of one semester and the beginning of the next, the ordinary exam sessions take place (see below). Moreover, extra sessions are scheduled during the week in which lessons are suspended. The final timetable with dates and places of each exam is available on the student's portal (https://studenti.unitus.it/WorkFlow2011/Logon/Logon.aspx?ReturnUrl=%2f). Booking exams is compulsory for those who wish to take the exam and it has to be carried out on the same portal (https://portalestudenti.unitus.it). On the day of the exam, the student must bring his/her ID, his/her university registration card and his booklet to the exam.

Winter session (three sessions)
20 January 2020 - 28th February 2020
Summer session (three sessions)
15 June 2020 - 31st July 2020
Autumn session (two sessions)
24Th August 2020 - 25th September 2020

Graduation Sessions

21st-22nd May, 2020
16th-17th July, 2020
24th-25th September, 2020
22nd-23rd October, 2020
10th -11th December, 2020
18th - 19th February, 2021

National holidays

1st January, 6th January, 22nd April (Easter Monday), 25th April, 1st May, 2nd June, 15th August, 1st November, 8th December

The academic calendar for the Single-Cycle Degree Course in Heritage Conservation and Restoration can be found in the Heritage Handbook.

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For the Single-Cycle Degree Course in Heritage Conservation and Restoration library, please see the Heritage Handbook.

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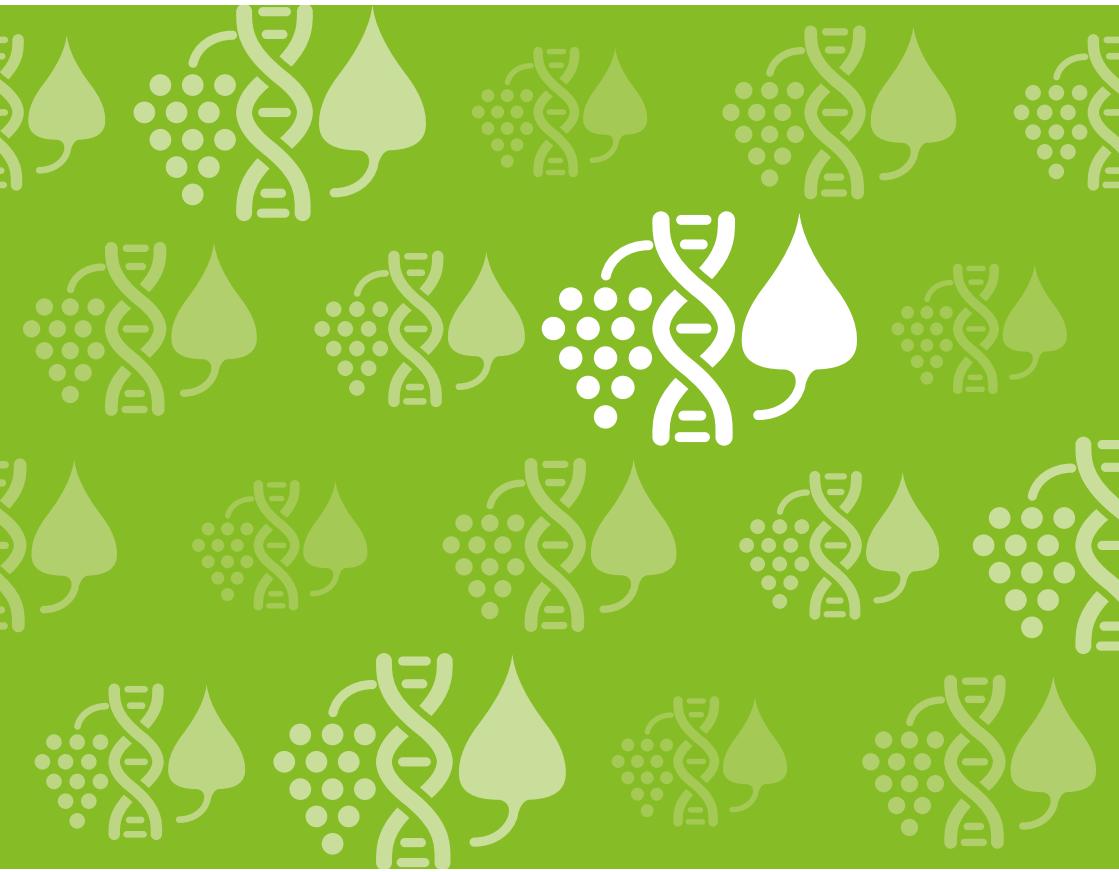

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