

Graduate programme

Faculty of
**Agriculture,
Food and
Environmental
Sciences**

Piacenza - Cremona

a.y. 2022/2023



UNIVERSITÀ
CATTOLICA
del Sacro Cuore

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Agriculture, Food and Environmental Sciences

Our history, our vision

The Faculty of Agriculture, Food and Environmental Sciences has a long and prestigious tradition. Founded in 1953, it was the first Faculty on the Piacenza campus of Università Cattolica and is currently an absolute reference point, internationally recognised for its advances in the field of scientific research as well as for the quality and innovation of its teaching activities.

For students, it is a forward-looking, dynamic and open environment; most courses include practical laboratory experience, some degree programmes are taught entirely in English, and it is possible to spend study periods abroad at leading universities Partner universities.

The topics addressed in the classroom are highly topical and cover all the dimensions and stages of the agri-food system, following the logic defined as 'from farm to fork'. The development of the most sophisticated agricultural production techniques, as well as those of the most modern industrial processing, are studied, all inspired by the principles of sustainability and environmental responsibility. The unequal distribution of food between the countries of the North and the South, pollution and climate change, new healthy lifestyles, the potential of Italian food products in international markets: these are just some of the topics that will be discussed in depth by our lecturers.

"The earth, our common home, is not a property that we can seize as we please. It is a wonderful gift that we must take care of and use for the benefit of all, always with great respect and gratitude"

Pope Francis

Located in the centre of the so-called Food Valley, our Faculty can boast a close and collaborative network of relationships with the most important companies operating in the agri-food world. It is also thanks to these valuable synergies that students have access to a wide variety of professions, so much so that for many of them it is possible to experience an internship/internship during their studies and, above all, at the end of their studies 90% of graduates find a job consistent with their skills within six months of graduation.

Marco Trevisan, Dean of the Faculty of Agricultural, Food and Environmental Sciences



<https://www.unicatt.eu/faculties-agriculture-food-and-environmental-sciences>

Graduate programmes

In the 2022/2023 at Piacenza and Cremona Campus, the following graduate degree programmes will be offered at the Piacenza Campus:

- **Sustainable and Precision Agriculture**
This belongs to the LM69 class of Agricultural Sciences and Technologies and allows access to Specialising masters, Doctoral programmes and the profession of *Agronomist*.
- **Food Science and Technology**
It belongs to the class LM70 Food Science and Technology and allows access to Specialising masters, Doctoral programmes and to the profession of *Food technologist*.
- **Agricultural and Food Economics**
Taught entirely in English, it belongs to the LM69 Agricultural Sciences and Technologies and Technologies and LM70 Food Sciences and Technologies classes and allows access to Specialising masters, PhD programmes and, depending on the class chosen, to the profession of *Agronomist* or *Food Technologist*.
- **Food Processing: Innovation and Tradition**
Taught entirely in English, it belongs to the LM70 Food Science and Technology classes; it has an international profile and allows access to Specialising masters, Doctoral programmes and the profession of *Food Technologist*.
- **Livestock and Agro-Green Innovation***
Taught entirely in English, it belongs to the LM69 Agricultural Sciences and Technologies; it has an international profile and allows access to Specialising masters, Doctoral programmes and the profession of *Agronomist*.

Programme Structure

Duration: 2 years

Number of credits (ECTS): 120

Total number of examinations: 12

The programme in **Sustainable and Precision Agriculture** includes common subjects and subjects aimed at deepening the knowledge of the following topics MORE SPECIFIC, to which the following study profiles are assigned:

- **Sustainable and Precision Agriculture**
- **Sustainable and Precision Animal Husbandry**
- **Viticulture and Oenology**

The programme in **Food Science and Technology** has two profiles:

- **Food Technology**
- **Food Safety**

The graduate programme in **Sustainable and Precision Agriculture** and **Food Science and Technology** are active at the Piacenza campus.

In **Cremona**, there are graduate programmes in **Food Processing: Innovation and Tradition** and in **Agricultural and Food Economics** with two profiles

- **Agri-Food Economics and Management**
- **Food Consumer Studies**
- **Livestock and Agro-Green Innovation** with two profiles
 - *Crops for livestock systems*
 - *Animal production and products*

* A specific path and an additional semester allow the achievement of a second degree in Agricultural Engineering at Politecnico Milan. The courses to be followed are being defined and will be announced in September.

Sustainable and Precision Agriculture

Learning objectives

The graduate programme in **Sustainable and precision agriculture** is divided into three profiles. The profile Sustainable and Precision Agriculture is a training course aimed at sustainability in agriculture with a strongly interdisciplinary approach to address modern issues of precision agriculture and climate change. It explores aspects of agroecology, plant physiology and genomics in relation to climate change; modelling, sensing and automation applied to herbaceous and tree crops and crop protection; sustainability in the use of agro-chemicals and the economic viability of agricultural enterprises. In addition, the course offers teaching on organic farming and non-food chains. The profile **Sustainable and Precision Animal Husbandry** is characterised by elements of animal physiology and advanced genomics, adaptation to climate change and animal welfare, precision nutrition and the sustainability of livestock production. It also offers elements of precision animal construction and facilities, livestock management and the quality of animal products.

The third profile, Sustainable Viticulture and Enology, captures the current needs of the wine sector, which is by definition 'international'. Italy, world leader together with France, now exports more than 50% of the wine it produces. Therefore, interaction with stakeholders from all over the world has become a must. Given the international

approach of our course, the lessons are held entirely in English and, for each academic year, we will have an external lecturer who will teach the Topics in Enology. What makes the course in Sustainable Viticulture and Enology truly competitive and educational is the complementary nature of the classroom lectures and the practical activities carried out outside. Our course benefits from excellent facilities, easily accessible from the campus, such as an experimental winery where students can produce their own wine, a new sensory analysis laboratory and a small but valuable experimental vineyard.

Students will also be given the opportunity to do an experimental dissertation with direct participation in one of our currently active research projects.

Qualifications for admission

A three-year, four-year or five-year university degree or a three-year university diploma obtained or to be obtained within the last graduation session of the previous academic year is required. The study curriculum must include a minimum of ECTS in basic and characterising scientific disciplines, which will be specified in the admission notice. Candidates who are found to be lacking (within the limits specified in the admission procedures) from the above-mentioned minimum threshold of ECTS may still be

admitted after an interview to determine the appropriate curricular integration.

Candidates wishing to apply for the profile in Viticulture and Oenology must have an adequate knowledge of English. In addition to the above requirements, it is therefore necessary to have one of the following certifications:

- Academic IELTS (overall score of at least 6.0);
- TOEFL/IBT (overall score of at least 84);
- Cambridge English: First - FCE;
- Cambridge English: Advanced - CAE;
- Cambridge English: Proficiency - CPE;
- Cambridge English: Business English Certificate (BEC Vantage e BEC Higher);
- Trinity College London: Integrated Skills in English (da ISE II); I Pearson PTE Academic (overall score of at least 65);
- an undergraduate programme (or equivalent) obtained in English.

In the absence of one of the above-mentioned certificates, an interview in English is required in order to test knowledge of the language and the ability to hold conversations.

Job opportunities

The graduate in Sustainable and Precision Agriculture is responsible for leadership, planning, management, control and training in plant and animal production. The sectors of the world of work interested in the work of the graduate programme in Sustainable and Precision Agriculture are the **liberal professions**, after having passed the state examinations for access to section A of the Register of Agronomists and Forestry Doctors, **agricultural and zootechnical production, industry** in the service of agriculture and those of product processing, the **public administration** (Ministries, Regional Departments, Trade Associations, Plant Protection Services, national and international governmental and non-governmental bodies in the agri-food sector) and public bodies, by means of a competitive procedure, and

private bodies carrying out **research** in the agri-food sector. Graduates will be able to access **secondary education** if they have sufficient credits in appropriate groups of fields and will be able to participate in the admission procedures for training courses, as provided for by current legislation.

- For graduates with a profile in **Sustainable and Precision Agriculture** job opportunities more specific are in production, processing and marketing companies in the agri-food sector; in seeding, agrochemical, biotechnological, nursery and bio-refinery companies; in insurance companies operating in the agricultural field for defence against adversities, pests and pathogens; in public and private service companies, which provide technical assistance and consultancy for sustainable agriculture systems; in public and private laboratories carrying out diagnostic analyses on soil, water and agricultural products.
- For graduates with a profile in **Sustainable and precision livestock farming**: employment opportunities more specific are in production, processing (dairies and dairy industries) and marketing in the agricultural and zootechnical sector; in companies for zootechnical services and breed associations; in insurance companies operating in the zootechnical field; in public and private service companies providing technical assistance and advice for the zootechnical sector; in public and private laboratories carrying out diagnostic and production quality analyses.
- For graduates with a profile in **Viticulture and Oenology** the occupational outlets are more specific within the same supply chain, to introduce high-level technological solutions (e.g. precision viticulture techniques or application of decision support systems) or to direct the company towards solutions that

reconcile economic and environmental sustainability; in trade unions and/or trade associations with functions of technical assistance to winegrowers and/or policy making; in laboratories and service companies for analytical activities and technical support to activities related to DOC and DOCG controls.

Coordinator of the programme

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Study Plans

The study plans published here (and the credits awarded to each discipline) may be subject to change; the official reference study plans will be presented in the specific Faculty Guide.



Sustainable and Precision Agriculture Profile

First Year	ECTS
Agricultural Statistics	6
Fundamentals of Precision Agriculture - Sensor Technology (3 ECTS) - Computer Tools for Spatial Analysis (3 ECTS)	6
Plant Physiology and Environmental Resilience	6
Plant Genomics for Sustainable Agriculture	8
Agriculture and Climate Change - Agroecology (4 ECTS) - Arboreal Agrosystems (3 ECTS)	7
Modelling Applied to Crop Production - Herbaceous Crops (4 ECTS) - Tree Crops (4 ECTS) - Pathogens and Parasites (4 ECTS)	12
Second Year (not active a.y. 2020/21)	ECTS
Economic Sustainability of Agricultural Enterprises - Economic Valuation of Agricultural and Environmental Assets (5 ECTS) - Business Planning and Management (4 ECTS)	9
Sustainable Use of Agro-Chemicals in Agri-Food Chains	9
Sustainable and Precision Crop Protection - Module Entomology (6 ECTS) - Module Pathology (6 ECTS)	12
Precision Farming - Herbaceous and Horticultural Crops (5 ECTS) - Fruit Growing and Viticulture (5 ECTS)	10
Automation in Agriculture and Robotics	4
English Language (English for Scientists)	3
Electives*	10
Final Examination	18

Note:

Students who have already taken in the undergraduate programme in Agricultural Science and Technology some examinations relating to subjects or parts of teaching present in the study plan of the graduate programme, will have to modify the study plan after evaluation of the Teaching Committee.

* The student may choose any course in the graduate programme at the University, provided that it is compatible with the chosen training programme.

Among the free-choice courses, the following are recommended (taught in the second term):

- Organic Farming (5 ECTS)
- Techniques for Traceability and Authenticity of Agri-Food Products (5 ECTS)
- Non-food Chains and Bioenergy (5 ECTS)
- Special Arboriculture (5 ECTS)
- Orticoltura (5 ECTS)

Within the framework of university credits, up to a maximum of 6 ECTS at the student's choice, it is possible to recognise internship activities and other work and/or non-university training experiences consistent with the chosen university pathway.

Sustainable and Precision Animal Husbandry Profile

First Year	ECTS
Agricultural Statistics	6
Fundamentals of zootechnics - Applications of precision sensor technology in animal husbandry (3 ECTS) - Rural construction (3 ECTS) - Precision Plant and Animal Husbandry (3 ECTS)	9
Advanced Animal Physiology	8
Genomics and Genetic Improvement	8
Animal Husbandry and Climate Change - Genetics and adaptation (4 ECTS) - Animal Adaptation and Welfare (4 ECTS)	8
Precision Animal Nutrition - Nutritional Assessment of Food and Dynamic Rationing Models (6 ECTS) - Feed Technology (4 ECTS)	10
Second Year (not active a.y. 2020/21)	ECTS
Economic Sustainability of Agricultural Enterprises - Economic Valuation of Agricultural and Environmental Assets (5 ECTS) - Business Planning and Management (4 ECTS)	9
Sustainable Use of Agro-chemicals in Agri-food Chains	9
Environmental Sustainability of Livestock Production	6
Precision Animal Husbandry: Monogastric	8
Precision Animal Husbandry: Ruminants	8
English Language (English for Scientists)	3
Electives*	10
Final Examination	18

Note:

Students who have already taken in the undergraduate programme in Agricultural Science and Technology some examinations relating to subjects or parts of teaching present in the study plan of the graduate programme, will have to modify the study plan after evaluation of the Teaching Committee.

* Among the free-choice courses, the following are recommended (taught in the second term):

- Quality of Animal and parameterisation (5 ECTS)
- Livestock Management and Animal Modelling (5 ECTS)
- Foraggicoltura (5 ECTS)

Within the framework of university credits, up to a maximum of 6 ECTS at the student's choice, it is possible to recognise internship activities and other work and/or non-university training experiences consistent with the chosen university pathway.

Viticulture and Oenology Profile

First Year	ECTS
Agricultural Statistics	6
Fundamentals of Precision Agriculture - Sensor Technology (3 ECTS) - Computer Tools for Spatial Analysis (3 ECTS)	6
Plant Physiology and Environmental Resilience	6
Plant Genomics for Sustainable Agriculture	8
Agriculture and Climate Change - Agroecology (4 ECTS) - Arboreal Agrosystems (3 ECTS)	7
Second Year (not active a.y. 2020/21)	ECTS
Sustainable Use of Agro-chemicals in Agri-food Chains	9
Management and Marketing of Wine Enterprises - Topics in Wine Marketing (6 ECTS) - Business Planning and Management (4 ECTS)	10
Advances in Oenology	9
Grape Varieties and Terroir	8
Disease and Pest Management towards Sustainable Viticulture	9
English Language (English for Scientists)	3
Free Choice*	12
Final Examination	20

Notes:

(*) Among the electives, the following are recommended:

Wine economics and policy (AGR/01) 6

Management of Organic Viticulture (AGR/03) 6

(**) Reserved for Italian students; for international students the course will be replaced by: Italian civilisation and language for international students (L-FIL-LET/12)

Learning objectives

The graduate programme in Food Science and Technology aims to provide the scientific knowledge and technical skills necessary for the management of agro-industrial supply chains and processes, for the constant improvement of food products in qualitative and economic terms and the sustainability of industrial activities, incorporating the most important product and process innovations. Students will acquire advanced knowledge suitable for carrying out complex activities of coordination and direction related to the agro-food sector and ensuring the safety and quality of food. The degree course is structured in two profiles. After a first year in common, the Food Science and Technology profile explores aspects related to food packaging, quality certification, sensory analysis and management of the presence of additives and contaminants in food products. The Food Safety profile, on the other hand, delivered entirely in English, allows for an in-depth study of the aspects of risk analysis, assessment and management that are fundamental for the implementation of an appropriate food safety management system.

Qualifications for admission

The possession of an undergraduate or graduate degree, or of a three-year university degree, obtained or to be awarded within the last graduation session of the previous academic year, is required. To enrol in the graduate programme, you must meet one of the requirements below:

a) An undergraduate programme L-26 Agri-Food Science and Technology (formerly D.M. 270/04 or class 20 ex D.M. 509/99);

b) any undergraduate degree, with at least 60 ECTS among:

1. at least 12 ECTS in the study plan of the undergraduate programme, or as single courses passed, from among the scientific-disciplinary sectors listed below:
 - 6 ECTS in AGR/15;
 - 6 ECTS in AGR/16;
2. at least 36 ECTS in the study plan of the undergraduate degree, or as individual courses passed, among the following scientific-disciplinary fields below: AGR/01, AGR/02, AGR/03, AGR/04, AGR/07, AGR/09, AGR/11, AGR/12, AGR/13, AGR/17, AGR/18, AGR/19, BIO/01, BIO/02, BIO/03, BIO/04, BIO/05, BIO/09, BIO/10, BIO/11, BIO/13, BIO/18, BIO/19, CHIM/01, CHIM/02, CHIM/03, CHIM/06, CHIM/07, CHIM/10, CHIM/11, CHIM/12, FIS/01, FIS/02, FIS/03, FIS/04, FIS/05, FIS/06, FIS/07, FIS/08, INF/01, INGIND/08, ING-IND/09, ING-IND/10, INGIND/11, ING-IND/12, ING-IND/22, INGIND/25, ING-INF/05, ING-INF/06, IUS/03, IUS/14, MAT/01, MAT/02, MAT/03, MAT/04, MAT/05, MAT/06, MAT/07, MAT/08, MAT/09, MED/01, MED/03, MED/07, MED/42, MED/49, MED/50, SECS-P/01, SECS-P/07, SECS-P/08, SECS-P/10, SECS-S/01, SECS-S/02, VET/01, VET/04.

Candidates who are found to be lacking (within the limits specified in the admission procedures) the above-mentioned minimum threshold of ECTS required, may nevertheless be admitted after an interview aimed at determining the appropriate curricular integrations.

Important: candidates wishing to apply for the profile in Food Safety must have an

English level of at least B2; therefore only for candidates who have a language certification of a level equal to B1+ or who passing the admission test with level B1+ are assigned an English language curricular supplement during the interview.

Job opportunities

The graduate programmes in Food Science and Technology carries out planning, management, control, coordination and training activities with regard to the procurement of raw materials, the management and control of product **quality** and **safety**, the development of new products and new processes, and the marketing of products. Graduates interested in teaching will be able to enter subsequent levels of training for secondary teaching qualifications.

Employment opportunities in private and public structures are:

- in the food industry and in all companies involved in the production, processing, storage and distribution of food products;
- in large-scale retail companies;
- in public and private bodies conducting planning, analysis and control, certification,

as well as in those carrying out scientific investigations for the protection and enhancement of food production;

- in training and research institutions, offices and studios of the liberal professions;
- organisation of distribution systems for agri-food products and their rationalisation; marketing of agri-food products;
- business activity, consultancy and basic and applied research.

Coordinator of the programme

Marco Trevisan

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Study Plans

The study plans published here (and the credits awarded to each discipline) may be subject to change; the official reference study plans will be presented in the specific Faculty Guide.



Food Technology Profile

First Year	ECTS
Biometrics	6
Chemistry and Biochemistry of Primary Production	9
Food Microbiology	6
Nutritional Assessment of Food	6
Food Industry Processes and Plants	8
Biomolecular Techniques	6
Technology of Food Products of Animal Origin - <i>Module</i> Dairy Products (6 ECTS) - <i>Module</i> Meat Products (6 ECTS)	12
Seminars*	0-1
Electives**	0-6
Second Year	ECTS
Sensory Analysis of Food	6
Preservation and Packaging Technology	6
Quality in Agribusiness - <i>Module</i> Quality (5 ECTS) - <i>Module</i> Economics Of Quality And Safety (5 ECTS)	10
Additives and Contaminants in Food - <i>Modulo</i> Micotossine (4 ECTS) - <i>Modulo</i> Analisis (8 ECTS)	12
Seminars*	0-1
Electives**	6-12
Final Examination	20

Note:

* The ECTS can be acquired by attending seminars programmed by the Faculty or the teaching of:

- Interacting in English (1 ECTS)

** Among the free-choice courses, the following are recommended (taught in the second term):

- Risk Assessment in Food (6 ECTS)

- Processing Technology of Plant Products (6 ECTS)

- Risk Analysis of Regulated Products (12 ECTS)

Within the framework of the university credits, up to a maximum of 6 ECTS at the student's choice, it is possible to recognise internship activities and other work and/or non-university training experiences, consistent with the chosen university course.

Food Safety Profile

First Year	ECTS
Biometrics	6
Chemistry and Biochemistry of Primary Production	9
Food Microbiology II	6
Nutritional Assessment of Food	6
Food Industry Processes and Plants	8
Biomolecular Techniques	6
Technology of Food Products of Animal Origin - <i>Module</i> Dairy Products (6 ECTS) - <i>Module</i> Meat Products (6 ECTS)	12
Seminars*	0-1
Electives**	0-6
Second Year	ECTS
Advanced Food Technology - <i>Module</i> Technology (6 ECTS) - <i>Module</i> Microbiology (4 ECTS)	10
Mitigation of Risk in Food Production	6
Emerging Risks	6
Risk Analysis of Regulated Products - <i>Module</i> GMO (4 ECTS) - <i>Module</i> Pesticides (4 ECTS) - <i>Module</i> Food Additives and Enzymes (4 ECTS)	12
Seminars*	0-1
Electives**	6-12
Final examination	20

Note:

* The ECTS can be acquired by attending seminars programmed by the Faculty or the teaching of:

- Interacting in English (1 ECTS)

** Among the free-choice courses, the following are recommended (taught in the second term):

- Consumer Food Psychology and Marketing Intelligence (6 ECTS)

- Agri-food Authenticity and Fraud (6 ECTS)

Within the framework of the university credits, up to a maximum of 6 ECTS at the student's choice, it is possible to recognise internship activities and other work and/or non-university training experiences, consistent with the chosen university course.

Agricultural and Food Economics

Learning objectives

The programme in **Agricultural and Food Economics** covers the organisational, market, business and institutional aspects of the agri-food system, supplemented with references to food legislation and elements of food safety. In particular, the **Agri-food Economics and Management** profile offers the opportunity to strengthen students' competences in the area of management of enterprises and organisations in the agri-food system, while the **Food Consumer Studies** profile aims to give students the ability to better use marketing tools to interact with consumers.

In response to the increasing internationalisation of the competitive sphere of companies and consumer behaviour, the graduate programme provides a strong international focus for education:

- all teaching and other learning activities are conducted in English;
- up to a maximum of one third of the available places are filled by students from non-EU countries;
- approximately 15 students per year, selected from among the applicants, can opt to spend a semester or the entire second year of their graduate degree programmes with four European universities abroad, through double degree programmes with four European universities (in the Netherlands, Belgium, Germany and Sweden) and Erasmus or Exchange programmes with two European universities (in Germany and Spain), two US universities and two Australian universities.

Qualifications for admission

A three-year, four-year or five-year university degree or a three-year university diploma

obtained or to be obtained within the last graduation session of the previous academic year is required.

Applicants will also be required to undergo a motivational interview with an assessment committee.

The degree must be in one of the classes specified in the notice or, if it is in a different class, the curriculum must show at least 32 ECTS from a list of scientific-disciplinary fields divided into four disciplinary areas. Candidates who fall short of the above-mentioned minimum threshold of required ECTS, up to a maximum of 16 ECTS, may still be admitted with the appropriate curricular integrations, defined by the assessment board during the motivational interview.

Applicants must prove their knowledge of English by means of a diploma, equivalent to a undergraduate programme, obtained in English, or possession of one of the following certifications, obtained no earlier than 1 January 2018: TOEFL/IBT (with a score of at least 75); Academic IELTS (with a score of at least 5.5); Cambridge English: First - FCE; Cambridge English: Advanced - CAE; Cambridge English: Proficiency - CPE; Cambridge English: Business English Certificate (BEC Preliminary with merit; BCE Vantage; BEC Higher); Trinity College London: Integrated Skills in English (from level B1+); Pearson PTE Academic (with a score of at least 50). If you do not have one of these, you must take a Placement Test/Admission's test at the University Language Centre (SeLdA), by the application deadline. The dates and registration procedure are indicated in the notice.

Please note that a level of English of at least B2 is required for admission to the degree programme. Therefore, only candidates who present a language certificate of B1+ or pass

the Placement Test/Admission Test at B1+ level will be awarded a curricular supplement in English during the interview.

Job opportunities

For graduates, a wide range of professional opportunities opens up:

- qualified access to responsibility functions in different functional areas, from marketing to management control, from purchasing to the management of quality systems in companies of the agri-food system and modern distribution, whether they are food multinationals with a strict structure by functional areas or small and medium-sized enterprises where the ability to control and manage several functions jointly is the key;

- within public organisations and national and international institutions, agricultural professional associations and business service companies in the sector;
- additional outlets of entrepreneurship, consultancy and academic or applied research.

Coordinator of the programme

Paolo Sckokai

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Study Plans

The study plans published here (and the credits awarded to each discipline) may be subject to change; the official reference study plans will be presented in the specific Faculty Guide.



Agri-Food Economics and Management Profile

First Year	ECTS
Business Management and Finance - Management Basics (6 ECTS) - Financial Accounting and Business Evaluation (6 ECTS)	12
Economic Fundamentals of the Agri-food System - Microeconomics for the Agri-food System (5 ECTS) - Economics of the Agri-food System (5 ECTS)	10
Food safety management -Food protection and management (5 ECTS) -Food risk analysis and management (5 ECTS)	10
Quantitative Methods - Applied Statistics for the Agri-food System (6 ECTS) - Applied Econometrics for the Agri-food System (6 ECTS)	12
Industrial Organization - Strategic Decision Making (4 ECTS) - Industrial Organisation of the Food System (6 ECTS)	10
Agricultural and Food Marketing	7
Seminars	1
Second Year	ECTS
Economics of Agricultural and Food Markets	6
Agricultural and Food Market Institutions	6
Food Supply Chain Management	5
Soft Skills and Entrepreneurship	1
Business Planning for Start-ups	5
Business Strategy and Leadership	5
Optional Courses*	10
Thesis	20

Note:

* Without prejudice to the student's possibility of choosing any course offered in English at the University, the Faculty suggests completing the study plan by choosing from the following courses:

- Agricultural, food and environmental policies (5 ECTS)
- Food footprint: the environmental impact of the agro-food chain (5 ECTS)
- Italian civilisation and language for international students (5 ECTS) (reserved for international students)

Students who wish to do so may also choose no more than one course from among those compulsory for the profile

"Marketing and consumer behaviour".

Food Consumer Studies Profile

First Year	ECTS
Business Management and Finance - Management Basics (6 ECTS) - Financial Accounting and Business Evaluation (6 ECTS)	12
Economic Fundamentals of the Agri-Food System - Microeconomics for the Agri-food System (5 ECTS) - Economics of the Agri-food System (5 ECTS)	10
Technology for Food Safety - Principles of Food Protection (5 ECTS) - Principles of Food Hygiene (5 ECTS)	10
Quantitative Methods - Applied Statistics for the Agri-food System (6 ECTS) - Applied Econometrics for the Agri-food System (6 ECTS)	12
Industrial Organization - Strategic Decision Making (4 ECTS) - Industrial Organisation of the Food System (6 ECTS)	10
Agricultural and Food Marketing	7
Seminars	1
Second Year	ECTS
Economics of Agricultural and Food Markets	6
Agricultural and Food Market Institutions	6
Multi-Channel Retail Marketing	5
Soft Skills and Entrepreneurship	1
Qualitative Research Methods for the Agri-food System	5
Food Consumer Psychology and Market Intelligence	5
Optional Courses*	10
Thesis	20

Note:

* Without prejudice to the student's possibility of choosing any course offered in English by the University, the Faculty suggests completing the study plan by choosing from the following courses:

- Agricultural and Food Legislation (5 ECTS)
- Agricultural, Food and Environmental Policies (5 ECTS)
- Food Footprint: the Environmental Impact of the Agri-Food Chain (5 ECTS)
- Italian Civilisation and Language for International Students (5 ECTS) (*reserved for international students*)

Students who wish to do so may also choose no MORE THAN one course from the compulsory courses of the "Food Consumer Studies" profile.

Food Processing: Innovation and Tradition

Cremona of Campus

Learning objectives

The study plan for the graduate degree programme in Food Processing: Innovation and Tradition is made up of targeted courses to learn, interpret and design with most advanced technologies all the phases that characterise the main food chains.

In particular, the three training areas are as follows:

- technological area: starting with an approach to previous knowledge of physical, chemical, biochemical and microbiological processes that can occur in raw materials, food matrices and finished products, the student is then led to address specific issues of production processes, including an initial analysis of digital data management systems.
- the area of production and management: this area is characterised by an in-depth study of raw materials of plant and animal origin as well as by an economic-management component.
- the area of related disciplines: digitalisation and innovation will be deepened with topics related to the digitalisation of process controls and characteristics of processing plants.

A great deal of space will be devoted to laboratory teaching experiences and the dissertation.

All teaching activities are held in English.

About 10 students per year, selected from among the applicants, may choose for a dual degree programme with the University of Lyon ISARA degree programme in "Sustainable Food System".

Qualifications for admission

A three-year, four-year or five-year university degree or a three-year university diploma obtained or to be obtained within the last graduation session of the previous academic year is required.

Admission is open to students with a degree in the degree category code L-26 Agri-Food Science and Technology (formerly L-26) D.M. 270/04) or the corresponding degree class under the former Ministerial Decree. 509/99 and L-GASTR - Science, Culture and Politics of Gastronomy.. Access is also granted to graduates from classes L-2 Biotechnologies, L-7 Civil and Environmental Engineering, L-13 Biological Sciences, L-25 Agricultural and Forestry Sciences and Technologies, L-27 Chemical Sciences and Technologies, L-29 Pharmaceutical Sciences and Technologies, L-32 Environmental and Nature Sciences and Technologies, L-38 Animal Husbandry and Production Technologies, whose curriculum includes at least 6 ECTS in the scientific-disciplinary sector AGR15 and at least 6 ECTS in the scientific-disciplinary sector AGR16.

A fluent knowledge of the English language (level B2) is also required.

The didactic regulations of the graduate programme determine the methods for verifying possession of the required curricular requirements, including fluency in English (level B2) and the adequacy of personal preparation.

Important: candidates wishing to apply for the profile in Food Safety must have an English level of at least B2; therefore only for candidates who have a language certification of a level equal to B1+ or who passed the placement/admission test with level B1+ are assigned an English language curricular supplement during the interview.

Job opportunities

The professional figure to be outlined is that of a food industry technologist capable of managing innovation in the supply chain and interacting with the demands of a globalised world for high quality, low environmental impact food. The employment opportunities are those offered by the Italian and global food industry operating in global markets, with a focus on executive figures specialised in research and development and technical management in the areas of innovation, sustainability and adaptation to climate change.

Coordinator of the programme

Prof. Lorenzo Morelli

lorenzo.morelli@unicatt.it

Study Plans

The study plans published here (and the credits awarded to each discipline) may be subject to change; the official reference study plans will be presented in the specific Faculty Guide.



First Year	ECTS
Physical Chemistry and Biochemistry of Food - <i>Module</i> Physical Chemistry of Food (8 ECTS) - <i>Module</i> Biochemistry of Food (4 ECTS)	12
Food Microbiology	11
Food Supply Chain Management	5
Raw Materials - <i>Module</i> Grains and Vegetables (4 ECTS) - <i>Module</i> Fruit Science (4 ECTS) - <i>Module</i> Animal Sources (4 ECTS)	12
Digital Data Processing	5
Food Rechnology and Plants	10
Food Quality Assurance and International Certifications	5
Second Year (not active a.y. 20/21)	ECTS
Food Processing	10
Innovation in Food Packaging	8
Process Control and Digitalisation in Food Industry	6
Economic Impact of Agricultural and Food Regulation*	5
Soft Skills	1
Electives	10
Thesis	20

Note:

Without prejudice to the student's possibility of choosing any course offered in English by the University, the Faculty suggests completing the study plan by choosing from the following courses:

- Food Footprint: the Environmental Impact of the Agro Food Chain (5 ECTS)
- Food Consumer Psychology and Market Intelligence (5 ECTS)
- Introduction to Sustainability of the Food System (5 ECTS)
- Italian Civilisation and Language for International STUDENTS (5 ECTS) (Reserved for international students)

* borrowed from Agricultural, Food and Environmental Policies

Livestock and Agro-Green Innovation

The proposal to activate this degree course is currently being examined by ministerial authorities

Campus of Cremona

Learning Objectives

The study plan of the graduate degree programme in **Livestock and Agro-Green Innovation** has the aim to train a new generation of young agro-livestock specialists capable of facing the challenges of the sector. The programme is taught entirely in English, the course contents are oriented towards an international agro-livestock context.

The following topics are examined in depth: i) the principles, approaches and ecological problems of agro-livestock production and the good practices for improving environmental sustainability; ii) livestock management methods with modern technological solutions for monitoring environments and rations, including microbial ecology to improve the quality of agro-livestock systems; iii) genetics, genomics and biotechnology applied to characterisation, genetic improvement and conservation of animal biodiversity and fodder crops; iv) theoretical and practical knowledge on how to use databases and big data by means of bioinformatics tools; v) economic sustainability of livestock systems. Students can choose between two profiles, one in the field of food crops for animal feed and energy production, and one in the field of animal production and products of animal origin. A specific profile and attendance to an additional semester allow students to take a second graduate degree in Agricultural Engineering at Politecnico di Milan. Considerable space is given to teaching activities in the laboratory, in companies, in the IT classroom, to dissertation writing and the acquisition of soft skills.

Qualifications for admission

An undergraduate degree, a 4 or 5-year integrated degree, or a 3-year university diploma obtained or to be obtained within the last graduation session of the previous academic year. To access the graduate degree programme in Livestock and Agro-Green innovation **you must possess one of the following requirements:**

A. an undergraduate degree programme in one of the following classes as per Ministerial Decree 270/2004 (or in the corresponding classes as foreseen by M.D. 509/99) obtained or to be obtained **within the last graduation session of the university of origin for the academic year 2020/2021:**

- L-25 Agricultural and Forestry Sciences and Technologies (ex M.D. 270/04 or class 20 ex M.D. 509/99);
- L-26 Agri-food Sciences and Technologies (ex M.D. 270/04 or class 20 ex M.D. 509/99);
- L-38 Animal Production Sciences and Technologies (ex M.D. 270/04 or class 40 ex M.D. 509/99);

B. an undergraduate degree programme in one of the following classes referred to in Ministerial Decree 270/2004 (or in the corresponding classes as foreseen by M.D. 509/99) obtained or to be obtained **within the last graduation session of the university of origin for the academic year 2020/2021:**

- L-2 Biotechnology (ex M.D. 270/04 or class 1 ex M.D. 509/99);
- L-7 Civil and Environmental Engineering (ex M.D. 270/04 or class 08 ex M.D. 509/99);
- L-8 Information Engineering (ex M.D.

- 270/04 or class 09 ex M.D. 509/99);
- L-9 Industrial Engineering (ex M.D. 270/04 or class 10 ex M.D. 509/99)
- L-13 Biological Sciences (ex M.D. 270/04 or class 12 ex M.D. 509/99);
- L-18 Economics and Management Sciences (ex D. M. 270/04 or class 17 ex D. M. 509/99);
- L-21 Sciences of territorial, urban, landscape and environmental planning(ex M.D. 270/04 or class 7 ex M.D. 509/99);
- L-32 Sciences and technologies for the environment and nature (ex M.D. 270/04 or class 27 ex M.D. 509/99);

and at least 30 ECTS in the study plan of the undergraduate degree,

or as single courses passed, among the scientific-disciplinary sectors listed below:

- at least 18 ECTS in: AGR/01, AGR/02, AGR/03, AGR/07, AGR/09, AGR/10, AGR/11, AGR/12, AGR/13, AGR/16, AGR/17, AGR/18, AGR/19;
- at least 6 ECTS in: MAT/01, MAT/02, MAT/03, MAT/04, MAT/05, MAT/06; MAT/07, MAT/08, MAT/09, SECS-S/01, SECS-S/06;
- at least 6 ECTS in: BIO/07, BIO/10, BIO/13, CHIM/03, CHIM/04, CHIM/05, CHIM/06, CHIM/07, CHIM/10, FIS/01.

Candidates who lack up to 12 ECTS among those required will be assigned an integrative plan to be completed by the enrolment deadline.

The teaching regulations of the graduate programme determine the modalities of assessment of possession of the curricular requirements, including fluent knowledge of English (level B2), and the adequacy of personal preparation (for example through tests, interviews, etc.).

Please note: to be admitted to the degree programme a level of English of at least B2 is required; for this reason, only the candidates who have a language certificate of level B1+ or who have passed the Placement test/admission test with a B1+ level are assigned an integrative plan in English at the interview.

Professional outlets

The professional figure to be prepared is that of an Agronomist expert in sustainable agro-livestock systems, able to manage and promote

innovation at national and international level to increase the efficiency of agro-livestock production, to guarantee quality and safety, and to contain and diminish their environmental impact. The employment possibilities are those offered by production, processing and marketing companies

in the agro-livestock sector, including agrochemical and biotechnological seed companies operating on global markets and private service companies providing technical assistance and consultancy services for sustainable agro-livestock systems; public administration (Ministries

Regional Departments, Trade Associations, phytosanitary services); national and international governmental and non-governmental bodies

in the agro-food field; public and private laboratories carrying out diagnostic and and production quality analyses; public and research activities in the agri-food sector; self-employed, after having passed the State examinations for access to Section A of the Register of Agronomists and Forestry Technicians and Forestry Doctors..

Coordinator of the degree programme

Prof. Paolo Ajmone Marsan

(paolo.ajmone@unicatt.it)

Study plans

The study plans published here (and the credits allocated to each assigned to each subject) may be subject to change; the official reference study plans will be presented in the specific Faculty Guide.

Profilo Crops for livestock systems

First year	ECTS
Livestock Production and Climate Changes	8
Livestock Technologies	8
Statistics and Big Data Management	8
Soil, Plant and Livestock Microbiota	8
Livestock genetics and biodiversity	8
Plant Biotechnology for Sustainable Forage and Energy Production	8
Environmental Sustainability of Livestock Systems	8
Seminars and Soft Skills	4
Second year (not active in the a.y. 2021/22)	ECTS
Economic Sustainability of Livestock Systems	8
Microbiological Process for Resource Recovery	8
Cropping System for Feed Production	8
Crop Protection in Livestock Feeding Systems	8
Electives	8
Final Examination	20

Note:

Without prejudice to the student's possibility of choosing any of the courses offered in English at the University, the Faculty suggests completing the study plan by choosing from the following courses:

- Introduction to sustainability of the food system (5 ECTS)*
- Food footprint: the environmental impact of the agro food chain (5 ECTS)
- Food Consumer Psychology and Market Intelligence (5 ECTS)

* students can only choose 3 modules out of the 5 available

Profilo **Animal Production and Products**

First year	ECTS
Livestock Production and Climate Changes	8
Livestock Technologies	8
Statistics and Big Data Management	8
Soil, Plant and Livestock Microbiota	8
Livestock Genetics and Biodiversity	8
Plant Biotechnology for Sustainable Forage and Energy Production	8
Environmental Sustainability of Livestock Systems	8
Seminars and Soft Skills	4

Second year (not active in the a.y. 2021/22)	ECTS
Economic Sustainability of Livestock Systems	8
Ruminant Science and Animal Welfare	8
Precision Feeding for Adaptation	8
Dairy and Meat Technologies	8
Electives	8
Final examination	20

Nota:

Without prejudice to the student's possibility of choosing any of the courses offered in English at the University, the Faculty suggests completing the study plan by choosing from the following courses:

- Introduction to sustainability of the food system (5 ECTS) *
- Food footprint: the environmental impact of the agro food chain (5 ECTS)
- Food Consumer Psychology and Market Intelligence (5 ECTS)

* students can only choose 3 modules out of the 5 available

Theology Courses

The study plan for each course includes attendance of Theology courses in order to offer a motivated, reasoned and organic knowledge of the Catholic faith.

During the two-year period, a semester course of 30 hours in seminar and/or monographic form is planned, on a subject related to the profile attended, which will conclude with a test set by the professor/lecturer.

Training credits

It is a two-year graduate programme after an undergraduate programme.

A minimum of 120 university credits must be acquired to obtain the graduate programme degree.

Each exam is given a number of credits, the same for all students and a grade (expressed in a mark out of 30) which varies according to the level of preparation. Assessment of the final examination is given on a scale of 1 to 110.

FIT Pathway (Initial Training and Apprenticeship)

Università Cattolica sets up Specific Training Activities (SFA) for the acquisition of the 24 ECTS required by the regulations for admission to the competition for teaching in secondary schools. Students enrolled in the graduate programmes can add courses from the Faculty of Education to their study plan as supplementary courses, covering credits in the fields of Pedagogy, Special Pedagogy and Inclusive

Didactics; Psychology; Anthropology. The Faculty of Agriculture, Food and Environmental Sciences recognises a number of curricular courses to cover the ECTS required in the area of Teaching Methodologies and Technologies. All information can be found at: www.unicatt.it/cattolicaperlascuola/scuola-formazione-iniziale-e-avadata-il-decreto-re-lativo-ai-24-cfu-per-turn-teacher

Our Campus

A Campus located in the centre of the Po Valley, in the heart of the Italian agri-food system, in an area, that of Piacenza and Cremona, full of cultural and productive liveliness. The climate of interpersonal relations between the various university components makes it a unique reality in the universe of Italian universities. It is characterised by state-of-the-art teaching tools, ample space for study and laboratory activities, socialisation and ser-

vices. The pre-existence of residential facilities, a canteen and a multi-sports centre as well as ad hoc agreements with housing and accommodation providers, make the Piacenza and Cremona Campus student-friendly. As of a. a. 20/21 the Cremona office will move to the city centre, in the prestigious premises of the convent of S. Monica, which has undergone extensive and careful renovation.

Costs and benefits

The amount of registration is determined on the basis of family income.

Every year, about 3,000 students are exempted from paying university fees on the basis of merit and financial conditions, and 4,000 receive additional financial aid.

Disabled students with a certified disability equal to or higher than 66% and students with a recognised disability pursuant to Art.

3, paragraph 1 law no. 104 dated 5 February 1992 1992 are entitled to total exemption from the enrolment fee and university contributions (a single payment of € 100.00 is due upon enrolment. This amount includes the reimbursement of expenses and stamp duty). Discounted rates are also available for off-site students living in the colleges of Università Cattolica.



Advice and Guidance at Università Cattolica

All campuses organise a day, virtually or in person, dedicated to those interested in a graduate degree programme : the Open Days are an opportunity to get to know the University and the courses on offer thanks to professors/lecturers' presentations, learn more about admission procedures and discover all the services on offer.

In addition, the Orientation and Guidance staff and students enrolled at Università Cattolica are available to answer any curiosity about the courses and admission procedures, but also to allow you to discover - through individual interviews and direct university experiences - all the opportunities that the University reserves for its students in order to make the most of their studies.

For all the details on degree programmes and for enrolment procedures, visit <https://www.unicatt.it/iscrizione-iscrizione-a-laurea-magistrale> page or meet us at our desks and at the appointments scheduled throughout the year.



Orientation and tutoring desk

You can book an informative interview through this link:

www.unicatt.it/orientamento-fissiamo-un-incontro

- **Piacenza - Via Emilia Parmense, 84**

Call us: 800 954 459 if you are an Italian student - +39 02 7234 7234 if you are calling from abroad
Monday to Friday from 8 a.m. to 7 p.m., Saturday from 9 a.m. to 1 p.m.

Services for Students

Opportunities for cultural, professional and personal growth



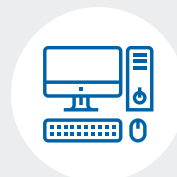
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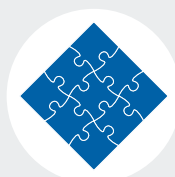
Computer rooms



Advice and Tutoring



Scholarships, canteens,
housing solutions,
concessions...



Integration of
Students with
Disabilities and SLD



Internships
and Placements



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