

# Food Sustainability & Climate Change

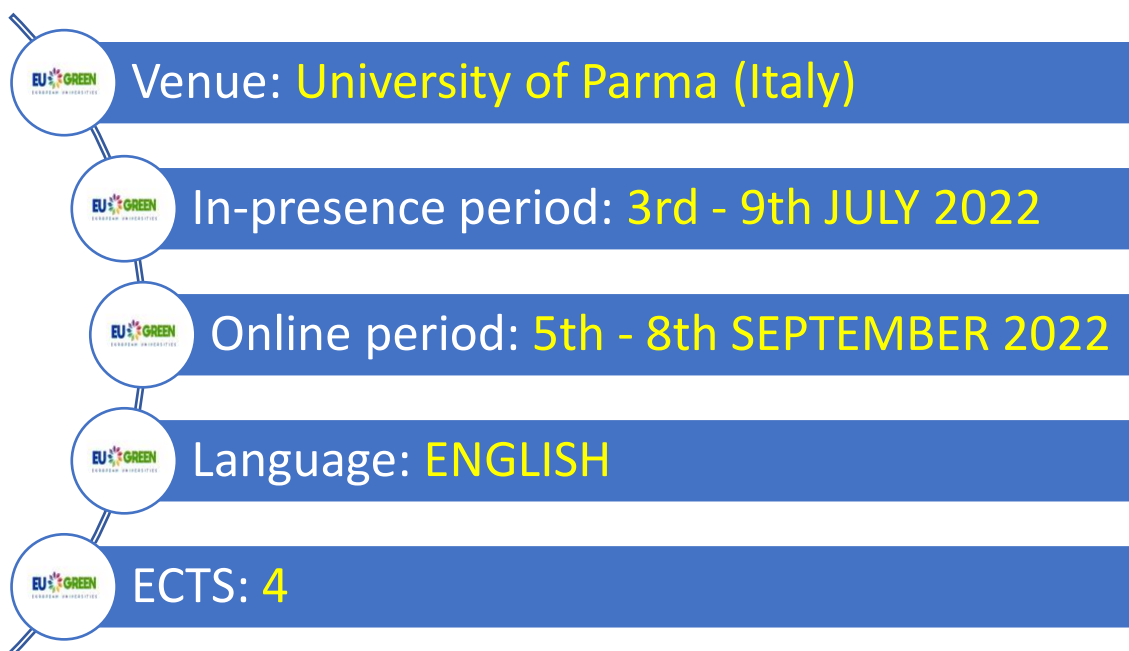
## ERASMUS+ Blended Intensive Programme

Contract n.: 2021-1-IT02-KA131-HED-000011267

### Description of the programme with course details



WROCLAW UNIVERSITY  
OF ENVIRONMENTAL  
AND LIFE SCIENCES



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## INDEX

<b>Food Sustainability &amp; Climate Change</b> .....	<b>1</b>
ERASMUS+ Blended Intensive Programme.....	1
Description of the programme with course details.....	1
<b>Description of the programme</b> .....	<b>3</b>
Motivation at the basis of the BIP .....	3
Programme learning objectives .....	3
<b>Course content, detailing physical and virtual components</b> .....	<b>4</b>
Ecological module (8 hrs.) .....	5
Lecture 1 – Too much of a good thing (2 hrs.) .....	5
Lecture 2 – Nitrogen use efficiency (2 hrs.) .....	5
Lecture 3 – Nature-based solutions (2 hrs.).....	5
Lecture 4 – Phosphorus: necessary, but dangerous (2 hrs.).....	5
Field trip – The irrigation loop and the nitrate anomaly in the Oglio River (6-8 hrs.).....	6
Module bibliography and reference materials/theoretical framework .....	6
Foods module (8 hrs.) .....	7
Lecture 1 – Fermentation as a strategy for food waste valorization (2 hrs.) .....	7
Lecture 2 – Edible insects (1 hr) .....	7
Lecture 3 – Recovery and valorization of the food agro industrial by-products (1 hr) .....	7
Lecture 4 – A way to produce sustainable and traditional food products linked to the environment: Iberian dry-cured ham, paprika (“Pimentón de La Vera”), cheese (“Torta”), Virgin Olive Oil (2 hrs.).....	7
Lecture 5 – Green extraction methods for the recovery of bioactive compounds from agri-food by-products (2 hrs.)..	8
Group activities .....	8
Module bibliography and reference materials/theoretical framework .....	8
Management module (4 hours) .....	9
Lecture 1 – Alternative food networks for a sustainable transition (2 hrs.).....	9
Lecture 2 – Insects as a sustainable alternative source of animal protein (2 hrs.) .....	9
Module bibliography and reference materials/theoretical framework .....	9
Law module (4 hours) .....	10
Lecture 1 – EU Law and Sustainability: From Climate to Food (2 hrs.).....	10
Lecture 2 – Working Group: Towards a Legal Definition of Sustainability (2 hrs.).....	10
Module bibliography and reference materials/theoretical framework .....	10
On-line module .....	10
<b>Contacts</b> .....	<b>10</b>

**The University of Parma (Italy), jointly with the University of Angers (France), the University of Extremadura (Spain), and the Wrocław University of Environmental and Life Sciences (Poland)** offer their students the opportunity to participate in a Blended Intensive Programme (BIPs). The Blended Intensive Programme is officially approved by the EU in the framework of the ERASMUS+ 2021/2027 and is developed in the framework of the EU GREEN Network. BIPs are one of the new and innovative formats of student mobility introduced by the new Erasmus+ 2021-2027 Programme. These programmes, jointly developed by multiple higher education institutions, feature advanced and innovative pedagogical approaches that combine short-term face-to-face (physical) mobilities with portions of virtual learning. BIPs are inherently transnational and transdisciplinary, as curricula are developed and taught together by partner institutions in different countries. The combination of in-person and virtual learning spaces allows students and professors to experience and exchange highly collaborative, challenge-based, and research-steeped methods of teaching and learning. Through the required virtual part of the programme, students and professors alike have the opportunity to develop and hone their digital knowledge and skills, reflecting the European Commission’s priority to harness the potential of digital technologies for teaching and learning and to develop digital skills for all.

## Description of the programme

The world population has reached the mind-boggling number of 8 billion people. Food production is running into an increasing demand for quantity and quality, but agro-livestock activity and the processing industry have a heavy impact on the environment and on Earth's health. With this BIP we aim at making students conscious of the problems that must be tackled from different perspectives: environment, food production, management, and law. The course will be divided in four sections: the ecological, the food, the management, and the law modules. The **ecological module** supports students in understanding how to produce an inventory of pressures at the watershed scale, organized in a database and connected to a GIS, how to calculate soil system budgets and water pollution risk through real case studies and field trips and how to contrast such risk with nature-based solutions. The **food module** addresses the topics of sustainable food production integrating solutions for wastes recovery, efficiency and sustainability of food production, food safety and food security, while also considering the environmental impact. Key issues of the **management module** will be the concept of transition in terms of potential contribution of innovative policies, localised production and distribution approaches, novel technologies and foods, and alternative consumption scenarios. The **law module** aims at familiarising participants with the holistic approach the European Union (EU) is undertaking towards food sustainability and climate change.

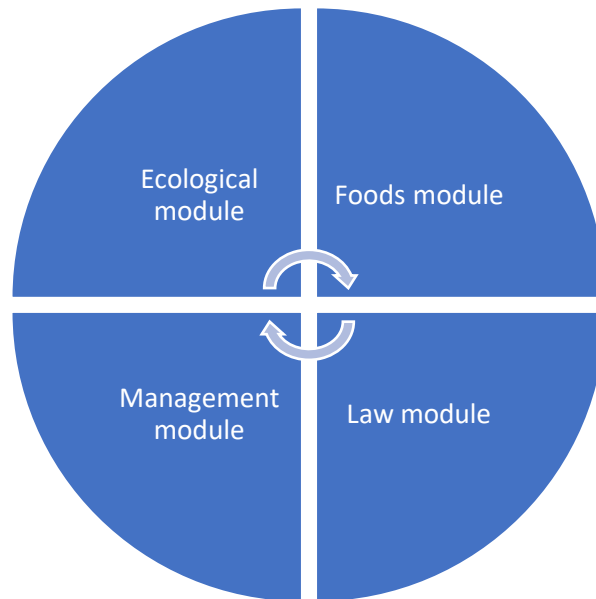
### Motivation at the basis of the BIP

The BIP is born with the idea of sharing competences and skills present in the four Universities that participate in this initiative and share them with students coming from four different regions in Europe so that they will take home and possibly adapt to their reality what they will learn in Parma.

### Programme learning objectives

Attending this BIP course the students, as well as the teaching staff, will have the chance to exchange experiences and knowledge. In all four modules students will be driven by teachers through a *knowledge to action* path, where they will learn how to deal with the complexity of the above issues and with the conflicts that they often produce, improving education, awareness-raising and human, professional and institutional efforts. In addition, they will actively participate in work groups in a field sample collection, in the data analysis, and, after the week in Parma, they will also have to collaborate through on-line meetings.

## Course content, detailing physical and virtual components



The course will consist of 24 hours in physical presence at the University of Parma, of a one-day field trip in which they will collect data, and a follow-up, on-line, in which the students divided in groups will have work on data elaboration. The course contents are the following:

Here below, you may find the description of the different modules and their course unit articulation.

Please remember that successful participation includes the attendance of all module, both face-to-face and virtual.

## Ecological module (8 hrs.)

The ecological module analyses how the conversion entire natural watersheds into agroecosystems in most Europe has generated a significant amount of waste, liquid and solid, produced by agro-livestock activity and the processing industry. The resulting reduction in biodiversity, functionality and provision of ecosystem services threatens the functional balance of soils, the efficiency of depurative processes, the retention and transformation of nutrients and favours the invasive potential of some species. The dispersion of chemicals and excess nutrients in surface and groundwater has impaired their chemical and biological quality. Water pollution threatens the possibility of use for productive and drinking purposes, the achievement of community conservation objectives and agriculture is in danger of becoming a cause of degradation of the resources on which it depends. Such risk is exacerbated in the present period of climate change, where the timing of precipitation is going to be more and more different and unpredictable as compared to historical records. The ecological module will support students in understanding how to produce an inventory of pressures at the watershed scale, organized in a database and connected to a GIS, how to calculate soil system budgets and water pollution risk through real case studies and field trips and how to contrast such risk with nature-based solutions. Students will be finally driven by teachers through a *knowledge to action* path, where they will learn how to deal with the complexity of the above issues and with the conflicts that they often produce, improving education, awareness-raising and human, professional and institutional efforts.

### Lecture 1 – Too much of a good thing (2 hrs.)

**Prof. Antonella Bachiorri/Marco Bartoli**

Freshwater and coastal water cultural eutrophication: causes and effects. Loss of biodiversity and ecosystem functioning in aquatic ecosystems, organic enrichment, anoxia and the collapse of ecosystem services provision. Temporal trends of nutrient loads transported by European Rivers to coastal areas and urgent need of upstream actions.

### Lecture 2 – Nitrogen use efficiency (2 hrs.)

**Prof. Daniele Nizzoli**

Watersheds as correct spatial scales to analyze human pressures on aquatic ecosystems. How to integrate statistical data collected within administrative boundaries into a watershed perspective. Soil system budgets as simple tools to aggregate pressures, evaluate the sustainability of agriculture and animal farming and prioritize appropriate actions.

### Lecture 3 – Nature-based solutions (2 hrs.)

**Prof. Marco Bartoli**

Biogeochemical services by riparian buffer strips and aquatic vegetation and other practices to contrast diffuse pollution from agriculture and animal farming. How to quantify via laboratory experiments and upscale to real situation the capacity of interacting microbes, aquatic plants and macrofauna to retain/dissipate pollutants. The secondary irrigation network of canal as an opportunity to increase biodiversity and the provision of biogeochemical services.

### Lecture 4 – Phosphorus: necessary, but dangerous (2 hrs.)

**Prof. Cezary Kabala**

Apart from nitrogen, phosphorus is the second macronutrient, crucial for plant productivity and efficient use of other nutrients from soils and fertilizers. Among nutrients, phosphorus is commonly applied in a “natural” form of animal manure that meets the general rules of the sustainable use of potential wastes. However, excessive application of manure creates serious threat for water quality by its huge eutrophication on a watershed scale. Balanced manure application, without negative environmental effects, seems one of challenges for European and national legal systems and environmental policies.

## Field trip – The irrigation loop and the nitrate anomaly in the Oglio River (6-8 hrs.)

**Prof. Antonella Bachiorri/Marco Bartoli**

All major sublacual rivers of the Po watershed alpine sector (Mincio, Chiese, Oglio, Adda and Ticino) display nitrate anomalies, that are sudden increases of nitrate concentrations, sometimes by a factor of 10 or more, over relatively short reaches. Students will visit the area of Soncino, that hosts more than 40 springs, representing simultaneously hot spots of diversity and pollution and that lays in the so-called spring belt. Here, the complex interaction among human regulation of river discharge, local hydrology, pedology and agricultural practices leads to diffuse pollution of the groundwater. Students will be driven through the mechanisms of nitrate transfer from cultivated soil to groundwater and from groundwater to surface water. Possible solutions to mitigate the impacts of unsustainable practices will be discussed in the field.

### Module bibliography and reference materials/theoretical framework

- Bouraoui, F., & Grizzetti, B. (2011). Long term change of nutrient concentrations of rivers discharging in European seas. *Science of the Total Environment*, 409(23), 4899-4916.
- Erisman, J. W., Sutton, M. A., Galloway, J., Klimont, Z., & Winiwarter, W. (2008). How a century of ammonia synthesis changed the world. *Nature geoscience*, 1(10), 636-639.
- European Nitrogen Assessment (European Nitrogen Assessment (ENA) | Nitrogen in Europe (nine-esf.org))
- Grizzetti, B., Pistocchi, A., Liqueste, C., Udias, A., Bouraoui, F., & Van De Bund, W. (2017). Human pressures and ecological status of European rivers. *Scientific reports*, 7(1), 1-11.
- Grizzetti, B., Liqueste, C., Pistocchi, A., Vigiak, O., Zulian, G., Bouraoui, F., ... & Cardoso, A. C. (2019). Relationship between ecological condition and ecosystem services in European rivers, lakes and coastal waters. *Science of the Total Environment*, 671, 452-465.
- Oenema, O., Kros, H., & de Vries, W. (2003). Approaches and uncertainties in nutrient budgets: implications for nutrient management and environmental policies. *European Journal of Agronomy*, 20(1-2), 3-16.
- Pinardi, M., Soana, E., Laini, A., Bresciani, M., & Bartoli, M. (2018). Soil system budgets of N, Si and P in an agricultural irrigated watershed: Surplus, differential export and underlying mechanisms. *Biogeochemistry*, 140(2), 175-197.
- Sutton, M. A., Oenema, O., Erisman, J. W., Leip, A., van Grinsven, H., & Winiwarter, W. (2011). Too much of a good thing. *Nature*, 472(7342), 159-161.
- Viaroli, P., Soana, E., Pecora, S., Laini, A., Naldi, M., Fano, E. A., & Nizzoli, D. (2018). Space and time variations of watershed N and P budgets and their relationships with reactive N and P loadings in a heavily impacted river basin (Po river, Northern Italy). *Science of the Total Environment*, 639, 1574-1587.
- Daneshgar S, Callegari A, Capodaglio AG, Vaccari D. 2018. The Potential Phosphorus Crisis: Resource Conservation and Possible Escape Technologies: A Review. *Resources*, 7(2),37. <https://doi.org/10.3390/resources7020037>.

## **Foods module (8 hrs.)**

All around our planet, food production is running into an increasing demand for quantity and quality, which is partly connected to the increase in population, and - not last - to the continuous change in people's lifestyle. The food module addresses the topics of sustainable food production integrating solutions for wastes recovery, efficiency and sustainability of food production, food safety and food security, while also considering the environmental impact. Key issues of the module will be the understanding of different food production systems (Animal and plant-based foods), the new approaches to possibly reduce the impact of food production on the environment, food waste and food by-product recovery and valorisation.

### **Lecture 1 – Fermentation as a strategy for food waste valorization (2 hrs.)**

**Prof. Annalisa Ricci**

The lecture will provide an overview of the application of the fermentation process for the recovery of biomass derived from the food chain. Examples of fermentation processes, applied for the recovery and valorization of agri-food waste/by-products, will be presented. The possible applications of the high-value compounds, produced during the fermentation process, will be discussed as well. The introduction of practical examples will be a useful tool to illustrate the potentiality and the difficulties of the application of this method at an industrial scale.

### **Lecture 2 – Edible insects (1 hr)**

**Prof. Augusta Caligiani**

The lecture will provide an overview of the application of insects as a promising alternative technology for valorizing wastes/by-products from the agri-food sector, and their recent introduction in the food system as novel foods. Insights in the insect biomass composition and amino acids profile, the safety issues of the use of insect protein (i.e. allergenicity), fat, chitin application will be presented. Few examples of the use of insects as valuable alternative-protein source in food and feed sectors will be also discussed.

### **Lecture 3 – Recovery and valorization of the food agro industrial by-products (1 hr)**

**Prof. Barbara Prandi**

The course will provide an initial background on biomass deriving from the entire food chain (from the farmers to the consumers). Innovative and sustainable processes for the extraction of the most important compounds, with a particular attention to proteins, lipids, carbohydrates will be introduced and compared. Particular attention will be put on the use of advanced analytic techniques for the identification of valuable molecules and for the assessment of their integrity. Examples of fields of valorization of the animal by-products chain will be also described.

### **Lecture 4 – A way to produce sustainable and traditional food products linked to the environment: Iberian dry-cured ham, paprika ("Pimentón de La Vera"), cheese ("Torta"), Virgin Olive Oil (2 hrs.)**

**Prof. Ana Isabel Andrés Nieto**

The lecture will provide an overview of the most significant food products produced in Extremadura, as perfect examples of sustainable management of Mediterranean forests called "Dehesa". Processing of Iberian dry-cured ham and cheese ("Torta") from Merino sheeps will be presented. Other examples of sustainable and traditional food products will be presented, as paprika ("Pimentón de La Vera") and Virgin Olive Oil. The legislative framework, the nutritional and sensorial quality of these products, the environmental and local social responsibility of this production will be also highlighted.

## Lecture 5 – Green extraction methods for the recovery of bioactive compounds from agri-food by-products (2 hrs.)

**Prof. Marisa Timón Andrada**

The lecture will provide an overview of the extraction methods for the recovery of bioactive compounds (phenolic, carotenoid, fiber) from agri-food by-products with special attention to those considered as “green extraction methods”, their advantages and drawbacks as compared to more traditional but environmentally unfriendly methods. The possible applications of these high-value compounds in food, cosmetic and nutraceutical industry will be discussed. The difficulties of the application of this method at an industrial scale will be also explained.

### Group activities

1. Identification of bioactive compounds from agri-food by-products in the labels of cosmetic, nutraceutical and food products found in the market. Search and discussion of the agri-food sources and flow charts.
2. Identification of traditional food products from students’ own countries. Are they produced in a sustainable way?
3. How can the Sustainable Development Goals (SDG) be implemented in a specific food industry? Search for case examples

### Module bibliography and reference materials/theoretical framework

- Madhura Rao, Aalt Bast and Alie de Boer. Valorized Food Processing By-Products in the EU: Finding the Balance between Safety, Nutrition, and Sustainability. *Sustainability* 2021, 13, 4428. <https://doi.org/10.3390/Su13084428>.
- Lucas Cantao Freitas, Jhonatas Rodrigues Barbosa, Ana Laura Caldas da Costa, Fernanda Wariss Figueiredo Bezerra, Rafael Henrique Holanda Pinto, Raul Nunes de Carvalho Junior. From waste to sustainable industry: How can agro-industrial wastes help in the development of new products? *Resources, Conservation & Recycling*, 2021, 169, 105466.
- Ana Sofia Brandao, Artur Gonçalves, Jose M.R.C.A. Santos. Circular bioeconomy strategies: From scientific research to commercially viable products. *Journal of Cleaner Production*, 2021, 295, 126407.
- Mónica Moreno-González & Marcel Ottens. A Structured Approach to Recover Valuable Compounds from Agri-food Side Streams. *Food and Bioprocess Technology*, 2021, <https://doi.org/10.1007/s11947-021-02647-6>.
- K.C. Surendra et al., 2020. Rethinking organic wastes bioconversion: Evaluating the potential of the black soldier fly (*Hermetia illucens* (L.)) (Diptera: Stratiomyidae) (BSF) *Waste Management* 117, 58–80
- Simone Mancini et al., 2022. Exploring the Future of Edible Insects in Europe. *Foods* 11, 455.
- Caligiani et al., 2018. Composition of black soldier fly prepupae and systematic approaches for extraction and fractionation of proteins, lipids and chitin. *Food Research International*, 105, 812-820
- Morone, P.; Koutinas, A.; Gathergood, N.; Arshadi, M.; Matharu, A. 2019. Food waste: Challenges and opportunities for enhancing the emerging bio-economy. *Journal of Cleaner Production*, 221, 10-16.
- Hadj Saadoun, J.; Bertani, G.; Levante, A.; Vezzosi, F.; Ricci, A.; Bernini, V.; Lazzi, C. 2021. Fermentation of Agri-Food Waste: A Promising Route for the Production of Aroma Compounds. *Foods*, 10, 707.
- Khubber, S.; Marti-Quijal, F.; Tomasevic, I.; Remize, F.; Barba, F.J. Lactic acid fermentation as a useful strategy to recover antimicrobial and antioxidant compounds from food and by-products. *Current Opinion in Food Science* 2022, 43, 189-198.



## Management module (4 hours)

Sustainable food systems are needed to ensure appropriate food production and reduce waste, while also safeguarding human and environmental health. The management module addresses the topics of sustainable food production and consumption models in contexts of high population density and socio-economic heterogeneity where concerns are growing around the economic and political dimensions of food systems, including concentration in the industry and retail sectors, power imbalances, lack of transparency, and issues concerning access to and control over natural resources, including land, water, energy and genetic resources. Innovative approaches are thus increasingly called upon to play a greater role to connect environmental sustainability and social innovation, production and consumption, global concerns, and local dynamics. Key issues of the module will be the concept of transition in terms of potential contribution of innovative policies, localised production and distribution approaches, novel technologies and foods, and alternative consumption scenarios.

### Lecture 1 – Alternative food networks for a sustainable transition (2 hrs.)

**Prof. Maria Cecilia Mancini/Marianna Guareschi**

The lectures will provide a general knowledge of the role played by the Alternative Food Networks (AFNs) in linking environmental sustainability and social innovation, production and consumption, global concerns and local dynamics through innovative localized production and distribution approaches, and alternative food and consumption scenarios.

The lecture will also present an ongoing project regarding an organic district in the Province of Parma based on the integration of the organic agriculture techniques with agro-ecology principles.

### Lecture 2 – Insects as a sustainable alternative source of animal protein (2 hrs.)

**Prof. Gaelle Pantin-Sohier**

The lecture will provide an overview of edible insect consumption in Western countries. This alternative food could become part of a healthy and sustainable food source aimed at meeting a growing food demand while at the same time preserving the environment. This lecture will provide knowledge on nutritional transitions linked to global changes already underway (exhaustion of natural resources, changes in lifestyle, changes in the supply of food). Introducing really new food products implies an evolution of behaviors and requires a better comprehension of the social, cultural, psychological, and sensory determinants, and dietary preferences and practices. This lecture proposes an analysis of these preferences and practices in order to identify possible innovations for food companies seeking to offer healthy, sensory, nutritional and functional food, and strategies for public policies and regulations to accompany these changes in consumption patterns.

### Module bibliography and reference materials/theoretical framework

- DuPuis, E.M.; Goodman, M.K. *Alternative Food Networks: Knowledge, Practice, and Politics*; Routledge: New York, NY, USA, 2012. *Sustainability* 2019, 11, 859–18 of 20 15.
- Renting, H.; Schermer, M.; Rossi, A. *Building Food Democracy: Exploring Civic Food Networks and Newly Emerging Forms of Food Citizenship*. *Int. J. Sociol. Agric. Food* 2012, 19, 289–307.
- Hedberg, R.C. *The ecology of alternative food landscapes: A framework for assessing the ecology of alternative food networks and its implications for sustainability*. *Landsc. Res.* 2016, 41, 795–807. [CrossRef]
- Dixon, J.; Richards, C. *On food security and alternative food networks: Understanding and performing food security in the context of urban bias*. *Agric. Hum. Values* 2016, 33, 191–202. [CrossRef] Altieri, M. A. (2018). *Agroecology: the science of sustainable agriculture*. CRC Press. Pp 432.
- González De Molina, M., & Lopez-García, D. (2021). *Principles for designing Agroecology-based Local (territorial) Agri-food Systems: a critical revision*. *Agroecology and Sustainable Food Systems*, 1-33.
- Onwezen, M. C., Bouwman, E. P., Reinders, M. J., & Dagevos, H. (2021). *A systematic review on consumer acceptance of alternative proteins: Pulses, algae, insects, plant-based meat alternatives, and cultured meat*. *Appetite*, 159, 105058.

## Law module (4 hours)

The *Law module* aims at familiarising participants with the holistic approach the European Union (EU) is undertaking towards food sustainability and climate change. In this respect, classes (sub-divided into two lessons of two hours) will delve into the most recent non-legislative and legislative acts the EU Commission is proposing. Regarding the former, specific attention is devoted to an overall analysis of the EU Green Deal alongside the Farm to Fork Strategy as the cornerstones of forthcoming EU actions, linking together sustainable development, climate change, food sustainability and health protection. Regarding the latter, a critical assessment of the recently adopted regulation on climate neutrality is proposed to understand how this piece of legislation fits within the broader scheme of international obligations the EU commits to respect.

Reading materials (e.g., legal acts, judgments, literature etc.) will be circulated in advance to allow a meaningful and informed dialogue between the instructor and the students.

### Lecture 1 – EU Law and Sustainability: From Climate to Food (2 hrs.)

**Prof. Marco Inglese**

Lecture 1 is delivered by Dr. Marco Inglese, University of Parma. The first lecture, having a frontal structure, will delve into the most recent non-legislative and legislative acts the EU Commission is proposing. Regarding the former, specific attention is devoted to an overall analysis of the EU Green Deal alongside the Farm to Fork Strategy as the cornerstones of forthcoming EU actions, linking together sustainable development, climate change, food sustainability and health protection. Regarding the latter, a critical assessment of the recently adopted regulation on climate neutrality is proposed in order to understand how this piece of legislation fits within the broader scheme of international obligations the EU commits to respect.

### Lecture 2 – Working Group: Towards a Legal Definition of Sustainability (2 hrs.)

**Prof Laura Pineschi**

Lecture 2 is jointly managed by Professor Laura Pineschi and Dr. Marco Inglese, University of Parma. Having a cooperative structure, this lecture will promote a common work between the instructors and the participants with the objective of stimulating critical thinking and interactions. Participants will be required to draft a policy paper to be submitted to political institutions, highlighting the key legal points of food sustainability and climate change.

### Module bibliography and reference materials/theoretical framework

- Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions – The European Green Deal, COM/2019/640 final.
- Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – A Farm to Fork Strategy for a fair, healthy and environmentally-friendly food system, COM/2020/381 final.
- Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999 ('European Climate Law'), OJ L 243, 9.7.2021, p. 1–17

## On-line module

Three meetings concerning “Soil system budget: source of data. Realization of the input and output database.”, “Calculation of Nitrogen budget at the municipality scale” and “Evaluation of nitrogen use efficiency in arable land and of the risk of water pollution”.

## Contacts

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