

Partager



Email destinataire :

Vous devez renseigner un email valide

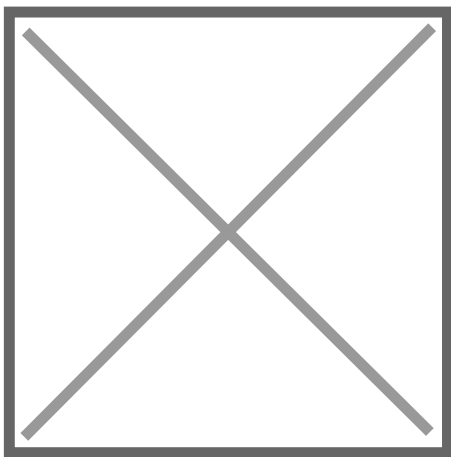
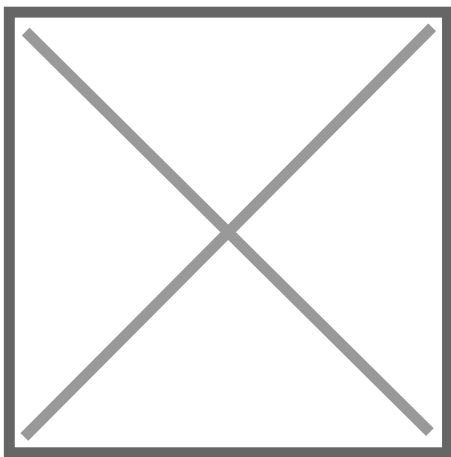
Envoyer

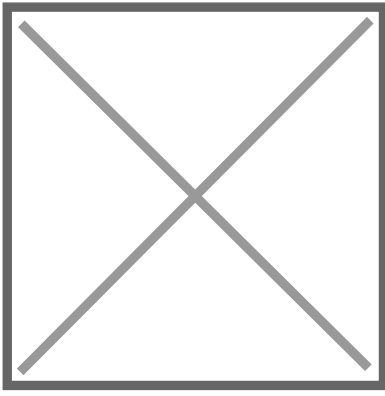
Une erreur est survenue. Merci de réessayer ultérieurement

Le mail de partage a bien été envoyé.

Ajouter au comparateur

M2 FIPDes (Food Innovation and Product Design)





Master
Mention Nutrition et Sciences des aliments
Régime(s) d'inscription
Formation initiale
Langue(s) d'enseignement
Anglais

FIPDes est un master international Erasmus Mundus en deux ans sur l'innovation alimentaire :
www.fipdes.eu

Pour aborder le défi d'une production et consommation durables d'aliments, FIPDes adopte une approche interdisciplinaire, intégrant les sciences et technologies alimentaires, l'ingénierie et l'entrepreneuriat.

FIPDes forme des talents internationaux capables de développer des solutions alimentaires durables, saines et accessibles pour les générations futures, à l'échelle locale et globale.

FIPDes est un master interdisciplinaire en deux ans (M1+M2 obligatoires), avec mobilité internationale obligatoire.

FIPDes est porté par quatre universités européennes : AgroParisTech (France), Technological University Dublin (Irlande), Université de Naples Federico II (UNINA, Italie) et Université de Lund (LU, Suède).

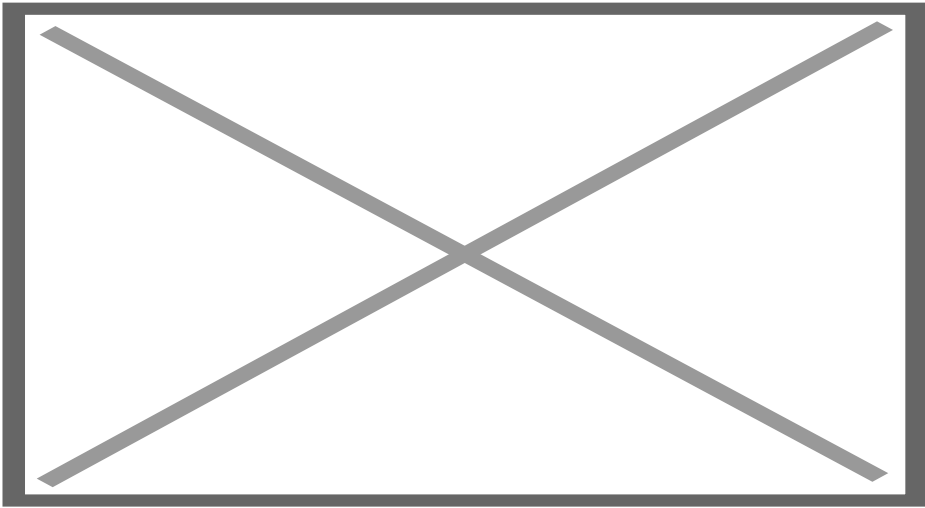
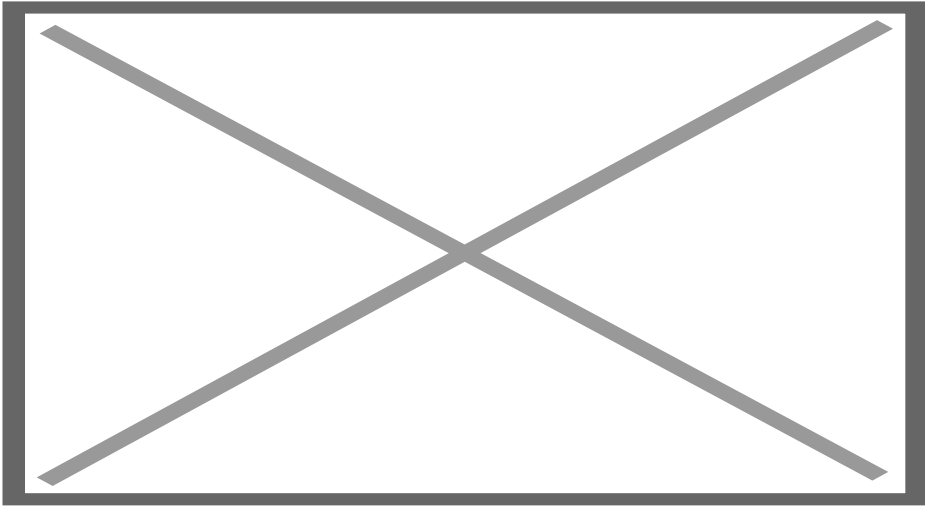
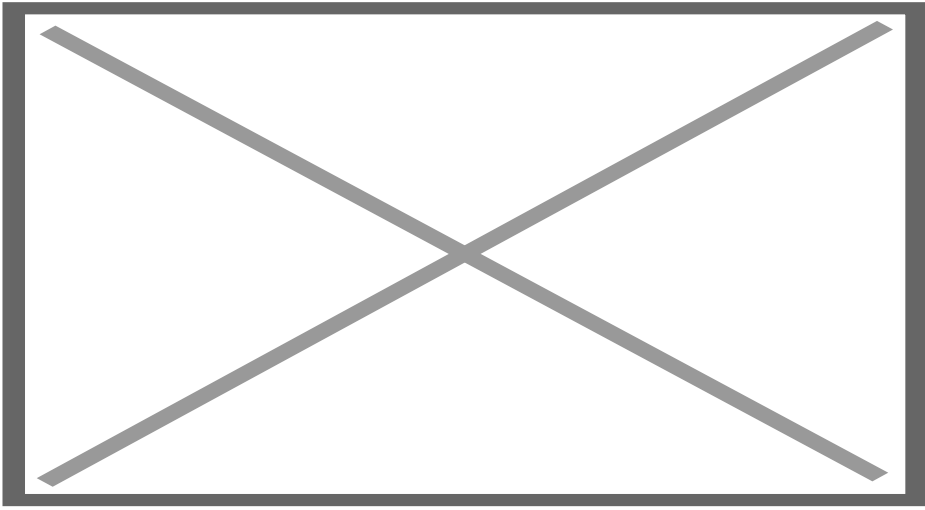
La première année couvre des matières clés telles que les sciences et technologies alimentaires, l'alimentation durable, l'ingénierie de la formulation, le marketing et l'innovation culinaire, grâce à des cours dispensés à Paris et à Dublin.

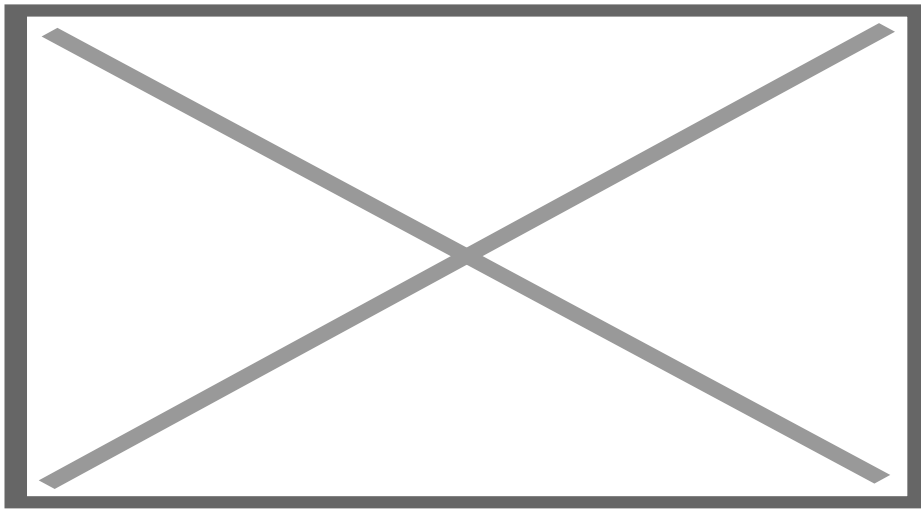
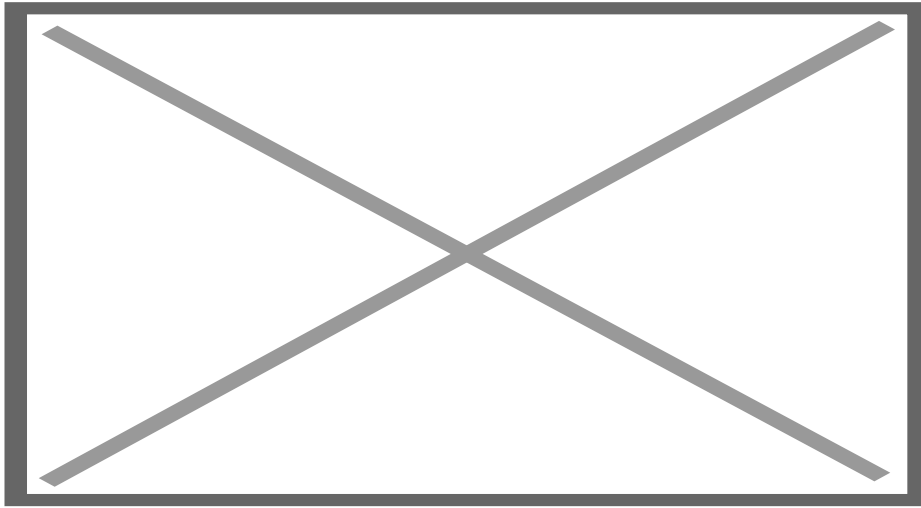
La deuxième année propose 3 parcours spécialisés dans des domaines clés de l'innovation :

- Food Design & Engineering (AgroParisTech, FR)
- Food Packaging Design & Logistics (LU, SE)
- Healthy Food Design (UNINA, IT)

FIPDes a un site web dédié (www.fipdes.eu) où trouver toute information ainsi que de témoignages sur les activités internationales et le devenir d'anciens élèves.

[Télécharger la fiche détaillée](#)
[Je candidate](#)





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Informations

- [Présentation](#)
- [Admission](#)
- [Programme](#)

Présentation

Compétences

- Intégrer et d'appliquer avec succès des connaissances issues de différentes disciplines et systèmes culturels.
- Mener des projets variés en collaboration avec divers partenaires et acteurs publics et privés (e.g. universités internationales, industriels, écosystèmes d'entrepreneuriat).
- Approfondir les compétences techniques tout en explorant les capacités créatives.
- Renforcer les capacités d'adaptation et d'entrepreneuriat.
- Développer un réseau international d'acteurs afin d'être prêt à relever de nouveaux défis professionnels à l'échelle locale et mondiale.
- Développer des compétences non techniques très recherchées telles que la gestion d'équipe, le leadership et la communication en anglais vers différents types d'auditoires.

Objectifs pédagogiques de la formation

La spécialité Food Design and Engineering a pour objectifs:

- De former les étudiants aux enjeux scientifiques, sociétaux et techniques du développement de produits alimentaires durables dans un contexte d'innovation globale.
- De développer les connaissances et les compétences en ingénierie des produits pour évaluer, concevoir et optimiser les processus et les produits alimentaires aux caractéristiques souhaitées et à différentes échelles de fabrication (de l'échelle cuisine, à l'échelle laboratoire jusqu'à l'échelle industrielle).
- De développer des compétences transversales indispensables pour les innovateurs et recherchées par les recruteurs à l'échelle mondiale (intelligence interculturelle, créativité, gestion de projet, communication scientifique).

Débouchés

Professionnels

Après un Master ou Master + Doctorat : chercheur ou enseignant-chercheur

Après un Master ou Master + Doctorat : ingénieur (recherche-développement, contrôle, production...) dans les domaines santé, pharmacie, agroalimentaire, biotechnologies, instruments et réactifs, cosmétique, dépollution et environnement

**Domaines : santé, pharmacie, agroalimentaire, biotechnologies, instruments et réactifs, cosmétique, dépollution et environnement
responsable contrôle qualité matières premières et fabrications**

Après un master : Chargé(e) d'études

Ingenieur R&D

Ingénieur conseil en nutrition

Responsable assurance qualité

Responsable application en produits alimentaires

Responsable analyse sensorielle

Responsable de projets R&D

Chargé de mission développement durable

Chef de projet

Ingénieur d'études industrie / recherche publique

Responsable RSE

Chargé d'affaires publiques dans les domaines concernés

Chargé de mission en secteur associatif, collectivité locale

Enseignants-chercheurs

Poursuite d'études

Doctorat

Mastère spécialisé

Admission

Capacité d'accueil

Places

10

Public visé et prérequis

L'admission directe au M2 FIPDes n'est pas possible, il faut avoir fait le M1 FIPDes pour accéder au M2 FIPDes. Plus d'information sur le Master FIPDes : www.fipdes.eu

Have completed M1 FIPDes

Pièces justificatives

Obligatoires

Lettre de motivation.

Tous les relevés de notes des années/semestres validés depuis le BAC à la date de la candidature.

Curriculum Vitae.

Facultatives

Pièce libre.

Dossier VAPP (obligatoire pour toutes les personnes demandant une validation des acquis pour accéder à la formation) <https://www.universite-paris-saclay.fr/formation/formation-continue/validation-des-acquis-de-l'experience>.

Document justificatif des candidats exilés ayant un statut de réfugié, protection subsidiaire ou protection temporaire en France ou à l'étranger (facultatif mais recommandé, un seul document à fournir) :

- Carte de séjour mention réfugié du pays du premier asile
- OU récépissé mention réfugié du pays du premier asile
- OU document du Haut Commissariat des Nations unies pour les réfugiés reconnaissant le statut de réfugié
- OU récépissé mention réfugié délivré en France
- OU carte de séjour avec mention réfugié délivré en France
- OU document faisant état du statut de bénéficiaire de la protection subsidiaire en France ou à l'étranger.

Programme

Food Packaging and Logistics (Lund)

Matières	ECTS	Semestre	Cours	TD	TP	Cours- TD	Cours- TP	TD- TP	A distance	Projet	Tutorat
Innovation Engineering	7.5	Semestre 1	20		60						

Innovation Engineering

ECTS : 7.5

Semestre calendaire : Semestre 1

Détail du volume horaire

Cours magistraux : 20

Travaux pratiques : 60

Langue d'enseignement

Anglais

Enseignement à distance

non

Prérequis

Completed M1 FIPDes

Programme / plan / contenus

The major part of the course is devoted to project work, which allows participants to work in teams to experience a systematic design and innovation process. Class sessions will include a mix of lectures and practical exercises related to methods, tools and strategies for design and innovation. Guest lecturers will provide insight into real industry cases, and teams are provided with coaches that are active researchers within the field of design and innovation. Peer review and feedforward techniques are used throughout the course to ensure critical reflection on both processes and outcomes. The course is a project course based on the challenges related to UN sustainable development goals.

Objectifs d'apprentissage

The purpose of the course is to give participants a deepened understanding of how innovations of both technical and social character are created. The course deals with design and development of both new products (goods and services) and new processes (technological and organizational), with a particular focus on methods, tools and strategies for the early phases of the innovation process. The course is based on a generic design thinking process, and includes lectures and exercises related to theories on design processes and methods within the topic of design and innovation. Through needs-motivated projects guided by coaches, course participants will spend the major part of the course creating conceptual solution proposals and evaluating these with respect to three overlapping criteria; desirability, feasibility and viability. The aim of the course is to get a broader perspective on the challenges related to UN sustainable development goals.

Compétences

[illegible]

Packaging Material Science

ECTS : 7.5

Semestre calendaire : Semestre 1

Langue d'enseignement

Anglais

Enseignement à distance

non

Prérequis

Completed M1 FIPDes

Programme / plan / contenus

• Lectures on different packaging material given by experts on different packaging material • Basic experiments on different packaging materials and their features • Minor projects on different packaging material and their features • Parralell supply chain project to evalutae packaging material features througout supply chains.

Objectifs d'apprentissage

The course is an interdisciplinary course with the aim to provide students with knowledge and practice in features and functions of different packaging materials and the evaluation and testing of them, in a supply chain context.

Modalités pédagogiques particulières

Daniel Hellström, John Olsson

Compétences

Knowledge and understanding For a passing grade the student must • Understand and explain different features of different packaging materials • Evaluate different features during different stress tests and apply it to deifned supply chains • Perform basic tests of different packaging material and evaluate the consequences in a supply chain.

Competences and skills For a passing grade the student must • Understand and explain the consequences of choosing different packaging material for different products • Independently plan, execute and report on packaging material evaluation projects, and its consequences in supply chains.

Judgement and approach For a passing grade the student must • Critically review and use information in the packaging material science literature, and analyse the consequences for different actors in the supply chains • Critically and constructive evaluate and give feedback on

Matières	ECTS	Semestre	Cours	TD	TP	Cours- TD	Cours- TP	TD- TP	A distance	Projet	Tutorat
<u>Packaging Logistics</u>	7.5	Semestre 1	42	40	28						

Packaging Logistics

ECTS : 7.5

Semestre calendaire : Semestre 1

Détail du volume horaire

Cours magistraux : 42

Travaux pratiques : 28

Travaux dirigés : 40

Apprentissage autonome : 0

Langue d'enseignement

Anglais

Enseignement à distance

non

Prérequis

Completed M1 FIPDes

Programme / plan / contenus

Packaging logistics is a concept that integrates packaging and logistics in order to improve the efficiency and effectiveness of the supply chain. Packaging logistics uses logistics knowledge about technology and economy along with the properties of packaging in different industrial applications. The course primarily consists of a project where the purpose is to improve an existing packaging system from a packaging logistics perspective. The project is supported by lectures, cases and feedback seminars, where different analyses and syntheses are introduced. Different methods for analysing packaging will also be included as well as the current state and trends in packaging logistics research and practice. Relevance for a sustainable development Packaging and transports are identified as important when a sustainable society is to be developed. The environmental aspects are included in all subjects covered in the course.

Objectifs d'apprentissage

To give students knowledge and deep understandings in how the packaged product influences supply chain performance, i.e. packaging logistics. The aim is also to give students an understanding of packaging system components and the impact of packaging on supply chains. Furthermore, the course provide students with the skill of analysing, designing and choosing packaging system components based on the need and requirements of companies and other organisations in supply chains. The course provides students with a holistic and systems thinking on packaging in supply chains, and contributes to a synthesis of packaging and logistics knowledge. The aim is also to give students insights into the potentials of packaging in the information society.

Matières	ECTS	Semestre	Cours	TD	TP	Cours- TD	Cours- TP	TD- TP	A distance	Projet	Tutorat
Packaging Technology and Development	7.5	Semestre 1	40		28						

Packaging Technology and Development

ECTS : 7.5

Semestre calendaire : Semestre 1

Détail du volume horaire

Cours magistraux : 40

Travaux pratiques : 28

Langue d'enseignement

Anglais

Enseignement à distance

non

Prérequis

Completed M1 FIPDes

Programme / plan / contenus

The course is built on project-based learning in which the foremost course component is to implement an industry-assigned packaging development project. The project is carried out in a group and follows a research approach in which theories on packaging development, consumer insights, and sustainable development are converted into practical application in the project. You will receive feedback during the project from your supervisor and from seminars. Support in the project is provided through lectures and study visits with researchers from the Department and representatives from industry. The lectures present theory on the development of packaging systems for various applications, on different packing materials, on market and consumer aspects, as well as aspects of sustainable development of packaging. Guest lectures and study visits provide good insights into how different companies work with packaging development and production.

Objectifs d'apprentissage

The course provides theoretical and practical knowledge in packaging development and innovation, and deals with the significance of packaging in society. Upon course completion, you will understand how to run a packaging development project with others, and how packaging affects sustainable development in society. You will also have the experience of practical project work with a relevant industry.

Compétences

Knowledge and understanding For a passing grade the student must • Understand and explain the basic functions of packaging. Identify and explain the main functions of packaging.

Healthy Food Design (UNINA)

Matières	ECTS	Semestre	Cours	TD	TP	Cours- TD	Cours- TP	TD- TP	A distance	Projet	Tutorat
Chemical Reactions and Food Quality Design	6	Semestre 1	38		10						

Chemical Reactions and Food Quality Design

ECTS : 6

Semestre calendaire : Semestre 1

Détail du volume horaire

Cours magistraux : 38

Travaux pratiques : 10

Langue d'enseignement

Anglais

Enseignement à distance

non

Prérequis

Completed M1 FIPDes

Programme / plan / contenus

- Chemical reactions in foods and impact on safety and sensory aspects (Browning reactions, Maillard reaction, Lipid oxidation, Interplay between Maillard reaction and lipid oxidation, Emulsion stability, Proteolysis, Oxidation Peroxidation, Reduction, Enzyme treatments, Formation of volatiles molecules; modification of texture; Color formation; loss of nutritive value, dicarbonyls loading, thermal induced toxicants formation, chemical modifications and safety in gluten-free and lactose-free products)
- Analytical techniques to evaluate food quality
- Proteomics, lipidomics and metabolomics applied to healthy food characterization
- Antioxidant Capacity of foods
- Modelling food quality
- Sensory molecules upon food processing: tastants and volatiles
- Allergens: legislation, labels and chemical analysis
- EU directive “Novel food”

Objectifs d'apprentissage

To acquire the knowledge, understanding and ability to control the chemical reactions occurring during food manufacturing and impacting food quality.

Compétences

To identify the appropriate markers, techniques and methodologies for the quality control and the safety validation of novel foods/ingredients and processes

- Knowledge and understanding of : 1) the main constituents of quality of healthy foods and nutraceuticals; 2) chemical and biochemical methods of analysis for assessing the chemical safety of foods; 3) legislation of allergens and of “novel foods”

Matières	ECTS	Semestre	Cours	TD	TP	Cours- TD	Cours- TP	TD- TP	A distance	Projet	Tutorat
<u>Microbiology Applied to Healthy Food Design</u>	6	Semestre 1	23		25						

Microbiology Applied to Healthy Food Design

ECTS : 6

Semestre calendaire : Semestre 1

Détail du volume horaire

Cours magistraux : 23

Travaux pratiques : 25

Langue d'enseignement

Anglais

Enseignement à distance

non

Prérequis

Completed M1 FIPDes

Programme / plan / contenus

Overview of lactic acid bacteria. Microbiology of probiotics. Microbiological safety in food industry. Technological aspects of fermented foods. Novel foods. Terchniques in food microbiology. Legislation aspects.

Objectifs d'apprentissage

To give the adequate knowledge and skills in the field of fermented foods from the point of view of microbiological involvements

Compétences

To monitor microbial population during food processing by using conventional and molecular techniques. To select microorganisms for healthy food development. To implement HACCP principles to a food process. To learn main characteristics of microorganisms involved in food fermentation. To understand the role of microorganisms in the chemical and physical modifications during food fermentation. To learn the main characteristics of probiotics. To understand the interaction between probiotics and human gut. To learn basic concept of food safety. To perform a microbiological analysis of a food samples both by using conventional and molecular techniques. To monitor microbial population during food processing. To select microorganisms for healthy benefits to human body. To implement HACCP principles to a food process.

Nature de l'évaluation

Evaluation Continue non Intégrale

Matières	ECTS	Semestre	Cours	TD	TP	Cours- TD	Cours- TP	TD- TP	A distance	Projet	Tutorat
Mediterranean Diet Products and Ingredients	6	Semestre 1	24	12	24						

Mediterranean Diet Products and Ingredients

ECTS : 6

Semestre calendaire : Semestre 1

Détail du volume horaire

Cours magistraux : 24

Travaux pratiques : 24

Travaux dirigés : 12

Langue d'enseignement

Anglais

Enseignement à distance

non

Prérequis

Completed M1 FIPDes Basic knowledges on food chemistry and technology

Programme / plan / contenus

History of culinary Italian traditions from end of '700 to now. The born of gastronomy and its evolution in the different Mediterranean regions. Mediterranean traditions and gastronomy practices: molecular events underpinning sensory and health effects of Mediterranean dishes. Typical processes and food pairs of Mediterranean gastronomy: Marinade with lemon and vinegar, Frying in Virgin Olive oil, Earthenware (terracotta) cooking of tomato sauce. Mozzarella cheese manufacturing. Olive oil manufacturing. Pizza manufacturing. Vinification and wine sensory analysis.

Objectifs d'apprentissage

To provide the anthropological and cultural background behind the common relationship between food and culture that can be found in all countries of Mediterranean sea. To acquire basic knowledge of the Italian culinary culture and traditional food processing.

Compétences

Knowledge of the Mediterranean culinary culture and gastronomy. Understanding of the molecular events underpinning the sensory and health effects of the Mediterranean recipes.

Nature de l'évaluation

Evaluation Continue non Intégrale

Matières	ECTS	Semestre	Cours	TD	TP	Cours- TD	Cours- TP	TD- TP	A distance	Projet	Tutorat
<u>Senior Project: Design and Development of Healthy Foods</u>	6	Semestre 1	8	8	24						

Senior Project: Design and Development of Healthy Foods

ECTS : 6

Semestre calendaire : Semestre 1

Détail du volume horaire

Cours magistraux : 8

Travaux pratiques : 24

Travaux dirigés : 8

Langue d'enseignement

Anglais

Enseignement à distance

non

Prérequis

Completed M1 FIPDes

Programme / plan / contenus

Students are in charge of developing an individual project concerning an innovation in food development or research. In particular, students design a new food or a new research on a specific topic starting from the state of the art to the selection of procedures and expected results definition.

Objectifs d'apprentissage

To deepen and apply the skills and knowledge acquired during the first year courses.

Compétences

To integrate the theoretical and practical skills of product development; to demonstrate a critical awareness of the industrial R&D problems associated with new food design and product development/validation.

- Knowledge and understanding of the background related to a specific topic in food design and nutrition field.
- Skills: To integrate the theoretical and practical skills of product development; to demonstrate a critical awareness of the industrial R&D problems associated with new food design and product development/validation.

Nature de l'évaluation

Evaluation Continue non Intégrale

Matières	ECTS	Semestre	Cours	TD	TP	Cours- TD	Cours- TP	TD- TP	A distance	Projet	Tutorat
<u>Nutrition Applied to Healthy Food Design</u>	6	Semestre 1	48	10	10						

Nutrition Applied to Healthy Food Design

ECTS : 6

Semestre calendaire : Semestre 1

Détail du volume horaire

Cours magistraux : 48

Travaux pratiques : 10

Travaux dirigés : 10

Langue d'enseignement

Anglais

Enseignement à distance

non

Prérequis

Completed M1 FIPDes

Programme / plan / contenus

• Physiology of human gastro-intestinal tract, brain and gustatory system. • Design of healthy foods: the step by step approach. • Personalized nutrition and target population in food design. • Nutrient metabolism, bioavailability and functionality in health and disease condition. • Nutrient sensing and design of healthy foods • Gut microbiota: composition, role in nutrient metabolism, interaction with diet and host health. • Design of healthy foods by targeting gut microbiota. • Body weight control: food intake and energy expenditure. Physiological and psychological mechanisms behind appetite and food choice. Food factors modulating satiety. • Foods/ingredients modulating appetite control and energy expenditure: the market and EFSA opinions. • European legislation on nutritional and health claims. Methodologies for validation of efficacy of functional foods/ingredients. Biomarkers of non-communicable chronic diseases, oxidative stress, inflammation, hunger and satiety.

Objectifs d'apprentissage

• To provide advanced knowledge on physiological systems, nutrient metabolism and European legislation on nutritional and health claims • To provide skills to design healthy foods tailored on specific categories of consumers and to validate their efficacy

Compétences

To design and validate healthy foods tailored on specific categories of consumers in the frame of European legislation on nutritional and health claims

Master thesis Food Packaging and Logistics (Lund)

[illegible]

Master Thesis Lund

ECTS : 30

Semestre calendaire : Semestre 2

Langue d'enseignement

Anglais

Enseignement à distance

non

Prérequis

Completed M1 FIPDes

Programme / plan / contenus

The degree project is an independent project. It is to be executed individually or in pairs. The degree project is to include the following assessed components: • a document describing the goals of the degree project • a written report in Swedish or English with a summary in English • a separate summary which is aimed at a popular science readership • oral presentation of the degree project at a public seminar at the Faculty of Engineering • an oral and written critical review of another student's degree project at a public seminar where it is presented. The document describing the goals of the degree project is to be written at an early stage and must be approved by all supervisors and the examiner. It is to include a description of the problem to solve, the disciplinary foundation and proven experience on which the project is to be based, the main sources of information, and the project's expected contribution to the advancement of knowledge. The document is also to include a general description of the approach, choice of method, resource requirements and time needed. The contents of the document are to be gradually integrated in the written report. The written report is to describe the degree project and its findings. If two students have collaborated on the project, the contribution of each student must be clearly discernible. The popular science summary is to be written in accordance with the general LTH guidelines. The written report is to be made available in a form suitable for review at least one week before the seminar, which is to be timetabled at some point between 15 August and the Monday of Midsummer week with the exception of the period 22 December - 6 January. The oral critical review is to be based on a fellow student's written report when it is presented at a public seminar. The review is to be documented in writing before the seminar. One degree project can be reviewed by more than one student.

Objectifs d'apprentissage

The aim of the degree project is for the student to develop

Master thesis Healthy Food Design (UNINA)

Matières	ECTS	Semestre	Cours	TD	TP	Cours- TD	Cours- TP	TD- TP	A distance	Projet	Tutorat
Master Thesis UNINA	30	Semestre 2									
■											

Master Thesis UNINA

ECTS : 30

Semestre calendaire : Semestre 2

Langue d'enseignement

Anglais

Enseignement à distance

non

Prérequis

Completed M1 FIPDes

Programme / plan / contenus

The contents may change according with the available projects and the research fields of the supervisors.

Objectifs d'apprentissage

The experimental thesis aims at giving students lab working, data analysis and critical skills in a specific research area in the field of food innovation and health.

Compétences

- knowledge of safety issues in research laboratory;
- knowledge of many research methodologies and experimental approach for problem solving;
- lab working and analytical skills
- skills on dissemination of research findings

Nature de l'évaluation

Evaluation Continue non Intégrale

Food Design and Engineering (AgroParisTech) - Tronc commun

Matières	ECTS	Semestre	Cours	TD	TP	Cours- TD	Cours- TP	TD- TP	A distance	Projet	Tutorat
Professional development and career plan	0	Semestre 1		6.5							

Professional development and career plan

ECTS : 0

Semestre calendaire : Semestre 1

Détail du volume horaire

Travaux dirigés : 6.5

Langue d'enseignement

Anglais

Enseignement à distance

non

Prérequis

Completed M1 FIPDes

Programme / plan / contenus

Rules are provided for the functioning of the workshop: kindness in the relationships and discretion.

Information is given about the differences between the good self-presentation's norms in a recruitment setting according to the nationality of the recruiter. The French good self-presentation norms are specified.

Each student trains to speak about himself (herself), to answer interview questions and to write a CV and a covering letter according to these norms. The self-presentations are enriched by the feedbacks and reflections of the other participants.

Information is given about the difficulties, misunderstandings as well as positive occurrences which may appear when living and studying in a foreign country in order to favour reflections and thoughts about these issues.

Objectifs d'apprentissage

To help the students figure out which job or complementary education will match their interests, motivations, personal characteristics, skills, knowledge, choice of place to live and eventually their career planning once they graduate.

To give them some clues for internship or job seeking and to train them to communicate in a French recruitment setting.

To propose to them the necessary insights about the functioning of the workshop in its specific setting to help them develop collaborative skills and thus make the workshop productive and useful for each participant.

To explain how linguistic, cultural and personal differences are likely to influence their interactions in order to increase their cooperation in the workshop and help them elaborate their Erasmus + experience.

Matières	ECTS	Semestre	Cours	TD	TP	Cours- TD	Cours- TP	TD- TP	A distance	Projet	Tutorat
Senior Project: Scaling-up and Sustainability Assessment	6	Semestre 1	9	9	18					36	

Senior Project: Scaling-up and Sustainability Assessment

ECTS : 6

Semestre calendaire : Semestre 1

Détail du volume horaire

Cours magistraux : 9

Travaux pratiques : 18

Travaux dirigés : 9

Projet tutoré 9

Projet : 36

Apprentissage autonome : 9

Langue d'enseignement

Anglais

Enseignement à distance

non

Prérequis

Completed M1 FIPDes

Programme / plan / contenus

Project work at the experimental kitchen and pilot scale.

- Creativity and brainstorming sessions
- Selected lectures and tutorials on specific topics (i.e. scale-up; food & flavour formulation, food control, food process design);
- Multidisciplinary tutoring;
- Subjects will include both "theoretical" and practical part (lab., kitchen, pilot and semi-pilot scale).

Objectifs d'apprentissage

Make students reflect on the new issues generated by the scale change when passing from a “kitchen prototype” to the industrial scale.

Plan, carry out and evaluate a scale-up process on concrete cases issued from the TU Dublin food prototype showcase.

Put the students into a project management situation working on a practical case.

Allow the students to develop and improve capacities in terms of project management and team work, in particular in the context of research and innovative project.

Organisation générale et modalités pédagogiques

Tutorials, workshops in experimental kitchen, experimental work in the technological hall, project work in teams

Compétences

Matières	ECTS	Semestre	Cours	TD	TP	Cours- TD	Cours- TP	TD- TP	A distance	Projet	Tutorat
Food Chemistry : from Research to Sustainable Food Design and Development	4	Semestre 1	9	9	24						

Food Chemistry : from Research to Sustainable Food Design and Development

ECTS : 4

Semestre calendaire : Semestre 1

Détail du volume horaire

Cours magistraux : 9

Travaux pratiques : 24

Travaux dirigés : 9

Apprentissage autonome : 6

Langue d'enseignement

Anglais

Enseignement à distance

non

Prérequis

B2 English Level.

- Basic knowledge of food science and process engineering
- Completed M1 FIPDes

Programme / plan / contenus

The module deals with food reactivity applied to food quality design (nutritional, safety, sensorial and technological dimensions). It is set-up with some lectures and a research-based lab-work.

The following items will be covered: Reactivity of processed food: main reaction pathways, role of ingredients, key precursors and process parameters; Exploring the relationships between chemical composition, reactivity and quality; Exploring the relationships between product formulation and processing; Methods of experimental design ; practice of experimental techniques linked to the measurement of specific properties or molecular markers (e.g. antioxidant power, flavour analysis, chemical composition, oxygen diffusion, spectrophotometric and chromatographic techniques, etc.).

Objectifs d'apprentissage

- Understand the scientific and technical issues related to the field of food chemistry and reaction engineering in food matrices (context, research issue, industrial issue, economic issue, etc.).
- Measure and understand chemical reactions and their dynamics in processed food products (real or model ones).

- Orientate the reactivity and functionality of chemical

Matières	ECTS	Semestre	Cours	TD	TP	Cours- TD	Cours- TP	TD- TP	A distance	Projet	Tutorat
French Language or Foreign Language for French Speaking Students	2	Semestre 1		36							
■											

French Language or Foreign Language for French Speaking Students

ECTS : 2

Semestre calendaire : Semestre 1

Détail du volume horaire

Travaux dirigés : 36

Apprentissage autonome : 9

Langue d'enseignement

Français

Enseignement à distance

non

Prérequis

Completed M1 FIPDes

Programme / plan / contenus

French life, French integration, mentality, first aid kit, culture, company culture, CVs, cover letter, job interview....

Activate, consolidate and expand their knowledge, develop autonomy and fluency in the language, a level of autonomy (B1 / B1 + CEFR / European Framework) or operability (B2 / B2 +) to make courses or studies in Francophone countries if the student wishes.

Cultures, civilization and news offer extensive range of options to make them alive and interactive courses.

Nature de l'évaluation

Evaluation Continue non Intégrale

[Molecular and Physical Gastronomy](#)

3 Semestre 1 6 9

Molecular and Physical Gastronomy

ECTS : 3

Semestre calendaire : Semestre 1

Détail du volume horaire

Cours magistraux : 6

Travaux dirigés : 9

Projet tutoré 12

Apprentissage autonome : 9

Langue d'enseignement

Anglais

Enseignement à distance

non

Prérequis

Completed M1 FIPDes

Programme / plan / contenus

As this course's content corresponds to “Molecular Gastronomy for innovation”, it has to include informations+concepts+methods+values+anecdotes on the various items:

1. Cooking: its social link, art, technique components
 - Discovering cuisine: what it is, cultural aspects, history, particular regional developments, ways of doing, organization, relationship with the food industry
 - 1.2. Social link: how it is achieved, how it could be improved, what “eating” means
 - 1.3. The art component of cuisine: what is art, what is culinary art, how artists work, their goals and methods
 - 1.4. The technical component of cuisine
 - 1.4.1. First order descriptions of culinary processes (chemical, physical), based on the use of the “formalism for disperse systems” (DSF)
 - 1.4.2. Green chemistry and cuisine: the extent of chemical modifications during culinary processes and their importance for regulation
 - 1.4.3. The issue of potential vs. actual bioactivity (including bioavailability, bioaccessibility, matrix effects)
2. Traditional cuisine:
 - 2.1. Culinary definitions
 - 2.2. Culinary precisions: a key for innovation
 - 2.2.1. How to collect them?
 - 2.2.2. How to test them?
 - 2.2.3. What to do with results?
 - 2.2.4. The “third part”

Matières	ECTS	Semestre	Cours	TD	TP	Cours- TD	Cours- TP	TD- TP	A distance	Projet	Tutorat
<u>Physical Chemistry for the Structuration of Food Products</u>	4	Semestre 1	11	6	7						

Physical Chemistry for the Structuration of Food Products

ECTS : 4

Semestre calendaire : Semestre 1

Détail du volume horaire

Cours magistraux : 11

Travaux pratiques : 7

Travaux dirigés : 6

Projet tutoré 24

Langue d'enseignement

Anglais

Enseignement à distance

non

Prérequis

Completed M1 FIPDes

Programme / plan / contenus

This module is shared with French local students of the IPP study track. The courses are in English.

The course deal with physical chemistry applied to food structure design. There is a mix of tutoring, guest lectures, bibliographic study cases and tests of the acquired knowledge.

Objectifs d'apprentissage

This course aims to demonstrate how formulation and processes lead to the creation of product structures and the underlying physicochemical mechanisms. It also provides an opportunity to explore tools for studying and controlling the resulting structures: observations at different scales, indirect analyses, modelling, and simulation.

Upon completion of this course, students will have acquired knowledge of the following systems and their applications:

- thickened solutions and gels
- emulsions
- foams
- suspensions of solid particles
- amorphous, crystalline, and powdered solid states
- agglomeration phenomena.

For each case, the course covers the theoretical foundations of the mechanisms involved, applications, process aspects related to the structuring of the system, and characterization methods.

Organisation générale et modalités pédagogiques

Matières	ECTS	Semestre	Cours	TD	TP	Cours- TD	Cours- TP	TD- TP	A distance	Projet	Tutorat
<u>Bibliographic review</u>	5	Semestre 1		6							

Bibliographic review

ECTS : 5

Semestre calendaire : Semestre 1

Détail du volume horaire

Travaux dirigés : 6

Projet tutoré 9

Apprentissage autonome : 45

Langue d'enseignement

Anglais

Enseignement à distance

non

Prérequis

Completed M1 FIPDes

Programme / plan / contenus

- Exploration of the topic
- Bibliographic research
- Scientific writing
- Oral presentation
- Regular follow-up activities

Objectifs d'apprentissage

- Reformulate a research question based on a clear research brief
- Carry out a bibliographic research
- Apply the most relevant bibliographic search tools
- Develop a critical analysis on the methodology and the content of the study
- Write an original scientific overview

Organisation générale et modalités pédagogiques

Tutorial

Tutored project

Modalités pédagogiques particulières

The student must demonstrate an ability to evaluate his or her own project and those of others in terms of relevant scientific and deontological aspects.

The work is to be carried out individually. The student is

Stage/Master thesis Food Design and Engineering (AgroParisTech)

Matières	ECTS	Semestre	Cours	TD	TP	Cours- TD	Cours- TP	TD- TP	A distance	Projet	Tutorat
Master Thesis AgroParisTech	30	Semestre 2		18							

Matières	ECTS	Semestre	Cours	TD	TP	Cours- TD	Cours- TP	TD- TP	A distance	Projet	Tutorat
■											

Master Thesis AgroParisTech

ECTS : 30

Semestre calendaire : Semestre 2

Détail du volume horaire

Travaux dirigés : 18

Projet tutoré 12

Apprentissage autonome : 10

Langue d'enseignement

Anglais

Enseignement à distance

non

Prérequis

Completed M1 FIPDes

Programme / plan / contenus

The Msc. Thesis is the final module of the Erasmus Mundus Joint Master in Food Innovation and Product Design (FIPDes). Based on a 5 to 6 months internship, it includes the following items:

- Running and interpretation of an original experimental and scientific work
- Development and mastery of the project within a given research framework
- Writing a Msc. Thesis report
- Presentation and dissemination of results

Objectifs d'apprentissage

The aim of the thesis project is for the student to develop and demonstrate the knowledge and skills required to work independently and be able to critical reasoning, reflection, analysis and discussion.

Organisation générale et modalités pédagogiques

- Tutored project
- Experimental work carried out in a hosting laboratory of the FIPDes network

Modalités pédagogiques particulières

Values and attitudes

For a passing grade on the thesis project the student must demonstrate an ability to evaluate his or her own project and those of others in terms of relevant scientific, social

Food Design and Engineering (AgroParisTech) -modules à choix

Matières	ECTS	Semestre	Cours	TD	TP	Cours- TD	Cours- TP	TD- TP	A distance	Projet	Tutorat
<u>Product Process Interaction</u>	4	Semestre 1	24		24						

Product Process Interaction

ECTS : 4

Semestre calendaire : Semestre 1

Détail du volume horaire

Cours magistraux : 24

Travaux pratiques : 24

Langue d'enseignement

Anglais

Enseignement à distance

non

Prérequis

Completed M1 FIPDes

Programme / plan / contenus

Integrated analysis of the effects of formulation and processing methods on the functional properties of food, in relation to composition, operating conditions, and transport phenomena.

1. The course will present unit operations such as spray drying, freeze-drying, emulsification, high-pressure processing, and other thermomechanical texturizing processes. These will be approached through an understanding of the physical and chemical principles governing food structure and the relationship between formulation, process operating conditions, and product functional properties. Selected examples will be presented, drawing on the research experience of the lecturers, to illustrate concrete and innovative applications in the food industry.
2. The methodologies covered will include dimensional analysis to account for scaling changes, as well as the study of transport phenomena, enabling the prediction of the effects of processes on food products. These approaches will also be illustrated with examples from the instructors' experience, incorporating real-world cases and innovative applications in the food industry.
3. Students will apply the concepts studied to practical cases thus becoming active participants in their own learning. This approach will allow them to illustrate how to consider the properties of the product and their evolution in order to adapt the operating conditions of the processes and the product formulation.

Objectifs d'apprentissage

Matières	ECTS	Semestre	Cours	TD	TP	Cours- TD	Cours- TP	TD- TP	A distance	Projet	Tutorat
Free module	2	Semestre 1									
■											

Free module

ECTS : 2

Semestre calendaire : Semestre 1

Langue d'enseignement

Anglais

Enseignement à distance

non

Programme / plan / contenus

One module to choose among a list.

Nature de l'évaluation

Détail renseigné au niveau Élément Constitutif

[Modelling](#)

Food Process and Properties	4	Semestre 1	33
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Modelling Food Process and Properties

ECTS : 4

Semestre calendaire : Semestre 1

Détail du volume horaire

Travaux dirigés : 33

Projet tutoré 12

Apprentissage autonome : 3

Langue d'enseignement

Anglais

Enseignement à distance

non

Prérequis

Completed M1 FIPDes

Fundamentals in process engineering (writing mass and energy balances) and in materials processing technologies (heat treatment, separation)

Basic knowledge of Python coding

Basic knowledge of chemical or biochemical kinetics

Programme / plan / contenus

Review of Modelling and Python

- Review of Mass/Energy Balances
- Basic Python structures, useful libraries (numerical, plotting)

Regression and Parameter Estimation

- Fitting Simple Models from Experimental Data
- Goodness-of-Fit Criteria

Modelling Reactions and Transformation Phenomena

- ODE Systems, Numerical Solution
- Parameter Identification in ODEs

Modelling Unit Operations

- Coupled Mass/Energy Balances
- Consideration of Product Quality and/or Total Annual Cost

Coupling of Operations and Process Modelling at the Scale of a Workshop or the Entire Industrial Site

- Transformation Sequences
- Scenario Analysis and Optimization Supervised

Lieu(x) d'enseignement

PALAISEAU

Partenaire(s) académique(s) de la formation

TU Dublin, Ireland; Lund University, Sweden and UNINA, Italy

Contact(s)

- **Barbara REGA**
Responsable de formation
- **Secretary FIPDes**
Secrétariat
- **Moussa MARWEN**
Responsable de formation

Liens

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[Plus d'informations sur les bourses](#)

<http://www.universite-paris-saclay.fr/formation/master/nutrition-et-sciences-des-aliments/m2-fipdes-food-innovation-and-product-design>