

Point de l'ordre du jour :

Participation de l'Université d'Orléans au Master Erasmus Mundus Joint Master « Insects as Solutions for a Sustainable Future ».

VU les articles L.613-1, L.711-1, L712-6 et suivants du code de l'éducation ;

VU les statuts de l'université d'Orléans ;

VU l'avis émis par le conseil académique en date du 3 février 2026 ;

VU l'avis émis par la CFVU en date du 2 mars 2026 ;

Le master Erasmus Mundus Joint Master « Insects as Solutions for a Sustainable Future » (EMJM-ISSF) est un programme sur deux ans, à 120 crédits ECTS, délivré conjointement par quatre établissements d'enseignement supérieur européens : l'Université de Tours (UT) (porteur), l'Université d'Orléans (UORL), KU Leuven (KUL) en Belgique et l'Universidade Nova de Lisboa (UNL) au Portugal. Ce programme est également soutenu par un réseau de plus de 60 partenaires associés issus de l'industrie et du monde universitaire dans 34 pays.

Le master Erasmus Mundus Joint Master ISSF est lauréat de fonds européens permettant d'accueillir 4 promotions de 20 étudiants par promotion. La première promotion sera accueillie en septembre 2026. Le financement européen permettrait de financer 60 bourses pour les étudiants sur l'ensemble des 4 promotions. Pour atteindre l'équilibre financier il est prévu d'accueillir 20 étudiants non boursiers autofinancés. Les étudiants autofinancés pourront être éligibles pour des aides Erasmus à la mobilité études et stages.

Le dossier ci-joint comprend le programme pédagogique et la répartition des enseignements dispensés dans les 4 établissements ainsi que les données financières s'y rapportant. La convention de partenariat est également jointe en annexe.

Le Conseil d'administration approuve la participation de l'Université d'Orléans au Master Erasmus Mundus Joint Master « Insects as Solutions for a Sustainable Future » et autorisation donnée au Président de signer la convention de partenariat.

Effectif statutaire :	36
Membres en exercice :	35

Quorum :	Atteint
Membres présents :	21
Membres représentés :	3
Total :	24

Décompte des votes :

Abstentions :	2
Votants :	22
Blancs ou nuls :	0

Suffrages exprimés :	22
Pour :	22
Contre :	0

La délibération est adoptée.

Fait à Orléans, le 17 avril 2026

Le Président de l'Université



Éric BLOND

DELAI DE RECOURS : En application des articles R.421-1 et suivants du code de justice administrative, la présente délibération pourra faire l'objet, dans un délai de deux mois à compter de sa notification et/ou de sa publication, d'un recours gracieux auprès du Président de l'Université d'Orléans (Château de la Source – 45000 Orléans) et/ou d'un recours pour excès de pouvoir devant le tribunal administratif d'Orléans.



**EMJM
in
Insects as Solutions for a Sustainable Future**

Annexes

Annexe 1. ISSF Curriculum outline

Annexe 2. Jointness of the ISSF Curriculum

Annexe 3. Learning outcomes of the ISSF Curriculum

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ANNEXE 1. Insects as Solutions for a Sustainable Future CURRICULUM outline

Semester 1: University of Tours and University of Orléans						Jointness	
Module	Course name	Hours	Face-to-face hours	Lectures (L) Tutorial (T) Practical (P)	ECTS	Jointness with modules in preceding/following semesters	Staff teaching mobility
M1.1	Insect Biology 1	112 h	48 h	24 L 24 P	4	All the master program 2.1 Insect Biology 2 2.5 Insects in Industry 3.1 Insect Biology 3 3.2 Fundamental skills 3	UORL KUL UNL
M1.2	Fundamental skills 1	112 h	48 h	38 L 10 T	4	2.2 Fundamental skills 2 2.3 Project work on Insect production 3.2 Fundamental skills 3 3.3 Experimental field or lab project	UORL
M1.3	Immersive project 1 – Field project	112 h	48 h	18 L 30 P	4	All the master program for experimental design 2.4 Experimental Design 3.2 Fundamental skills 2 3.3 Experimental field or lab project	UORL
M1.4	Insects and multitrophic interactions	140 h	48 h	33 L 15 T	5	2.5 Insects in Industry 3.4 Vector-pathogen interactions	UORL
M1.5	Integrated Pest management	140 h	48 h	28 L 4 T 16P	5	2.5 Insects in Industry 3.5 Surveillance and vector control	UORL UT
M1.6	Global change, adaptation, and conservation	140 h	48 h	30 L 6 T 12 P	5	3.6 Ecoepidemiology of vector-borne diseases in a global changing environment	UORL
M1.7	French Language and Culture in Loire Valley	84 h	24 h	12 L 12 T	3	all the master program for intercultural awareness	
		840 h	312 h	183L 47T 82P	30		

Semester 2: KU Leuven						Jointness	
Module	Course name	Hours	Face-to-face hours	Lectures (L) Tutorial (T) Practical (P)	ECTS	Jointness with courses in preceding/following semesters	Staff teaching mobility
M2.1	Insect Biology 2	130 h	38 h	26 L 12 P	5	1.1 Insect Biology 1 3.1 Insect Biology 3	UT UNL
M2.2	Fundamental Skills 2	156 h	52 h	52 L	6	1.2 Fundamental skills 1	
M2.3	Immersive Project 2 - Project Work in Insect Production	84 h	48 h	3 T 45 P	3	1.2 Fundamental skills 1 3.5 Surveillance and vector control	
M2.4	Experimental Design	84 h	28 h	28 L	4	1.3 Field project 3.2 Fundamental skills 3 3.3 Experimental field or lab project	
M2.5	Insects in Industry	168 h	59 h	42 L 2 T 15 P	6	1.4 Insects and multitrophic interactions 1.5 Integrated pest management 3.5 Surveillance and vector control	UT
M2.6	Innovation and Entrepreneurship	84 h	28 h	26 L 2T	3	all the master programme for entrepreneurship culture	
M2.7	Dutch Language and Cultures	84 h	40 h	40 T	3	all the master programme for intercultural awareness	
		790 h	293 h	174L 47T 72P	30		

Semester 3: NOVA University of Lisbon						Jointness	
Module	Course name	Hours	Face-to-face hours	Lectures (L) Tutorial (T) Practical (P)	ECTS	Jointness with courses in preceding/following semesters	Staff teaching mobility
M3.1	Insect Biology 3	196 h	66 h	31 L 11 T 24 P	7	1.1 Insect Biology 1 2.1 Insect Biology 2	
M3.2	Fundamental skills 3	112 h	76 h	12 L 12 T 52 P	4	1.2 Fundamental skills 1 1.3 Field project	
M3.3	Immersive Project 3 -- Medical Entomology Techniques	112 h	44 h	6 L 8 T 30 P	4	1.2 Fundamental skills 1 1.3 Field project	
M3.4	Vector-pathogen interactions	84 h	29 h	15 L 8 T 6 P	3	1.4 Insects and multitrophic interactions 2.1 Insect Biology 2	
M3.5	Surveillance and vector control	140 h	48 h	32 L 4 T 12 P	5	1.5 Integrated pest management 2.5 Insects in industry	UT-UORL
M3.6	Ecoepidemiology of vector-borne diseases in a global changing environment	112 h	38 h	14 L 6 T 18 P	4	1.6 Global change, adaptation and conservation	
M1.7	Portuguese language and culture	84 h	28 h	18 L 4 T 6 P	3	all the master programme for intercultural awareness	
		840h	329h	128L 53T 148P	30		

Semester 4: University of Tours, University of Orléans, KU Leuven, NOVA University of Lisbon						
Module	Course name	Duration	ECTS	Jointness		Staff mobility
Master Thesis	Master thesis	6 months	30	Common list of master thesis projects and evaluation		UT, UORL, KUL, UNL

SEMESTER 1 – University of Tours – University of Orléans

Course Name Insect Biology 1 Semester: 1 ; Module: 1.1
University: University of Tours and University of Orléans Coordinator(s): Christophe Bressac and Claudio Lazzari Position of Coordinators: Christophe Bressac (Associate Professor); Claudio Lazzari (Professor)
Goals and outline of the course: The first part of the course is an immersion in the goals of sustainability. It will give them basic knowledge on SDGs and introduce them to the entire master programme along the 3 semesters. The second part of the course is an initiation or a reinforcement – depending on the basic background of students – on the structure and function of insects. Knowledge on developmental programs and stages, and external anatomies will allow students to recognize different insect orders, families, genus and species, and familiarize them with stereomicroscopes and forceps handlings. Dissections of model insects – reared in the laboratory or caught in nature – will give students valuable skills to investigate insect anatomy and prepare for microscopic investigations. This course is designed to provide the basis of insect body plan and functional morphology for the whole master programme.
Learning outcomes: By the end of the course the students will be able to: 1. Understand the importance of insects in the SDGs – Sustainable Development Goals – in reference to the master programme, with a worldwide approach. 2. Understand the basics of life cycle analyses that are the scientific references of sustainability evaluation in agricultural and agri-food productions. 3. Understand the developmental strategies and recognise the stages of Holometabolous and Hemimetabolous insects. 4. Dissect and understand the anatomy of some insect models. 5. Prepare and recognize tissues and cells by microscopic techniques. 6. Link anatomy and function of organs such as digestive gut, locomotor apparatus, neural system, reproductive tract, sensory organs.
Syllabus: 1. Sustainable development a. Conferences on how insects are involved in sustainability. b. Introduction on the measures of sustainability. Life cycle analyses of food products from the Agribalyse® tool. What is a system analysis? How to measure carbon footprint, eutrophication risk, resource consumptions and release into air-water-soil ? 2. Functional anatomy of insects a. Recognizing and naming the stages of development in Hemimetabolous and Holometabolous insects. Crickets and Black Soldier Flies will be used as models. Morphological approaches. b. External and internal insect anatomy. Organization of the nervous, digestive, circulatory, respiratory, sensorial, locomotion and reproductive systems. c. Tissues and cells of insects in relation with their functions, shape of the nucleus as a diagnostic of the cell stages and physiology. Testis of Black soldier flies will serve as examples. d. Ingestion organs and insect feeding habits.
Assessment: The first evaluation will take into account: (1) the work performed by students during practicals (anatomical drawings, poster preparation and oral presentation) (2) a final written examination. Second chance assessment: In case of failure at the first evaluation, a second written evaluation will be proposed.

ECTS	Total number of hours (face-to-face)	Total number of hours (face-to-face + personal work)	Number of hours of lectures	Number of hours of tutorials	Number of hours of practical work
4	48h	112h	24h		24h

Course Name Fundamental skills 1 – Fundamental skills applied to insects

Semester: 1 Module: 1.2

University: University of Tours and University of Orléans

Coordinator(s): Emiliane Taillebois

Position of Coordinators: Emiliane Taillebois (Associate Professor)

Goals and outline of the course:

By the end of the course the students will acquire the necessary knowledge in a variety of disciplines that will be mobilized in other teaching units. This will ensure in-depth comprehension of the different tools and skills that are needed for studying insects at individual, population and ecological levels. This course intends to give fundamental knowledge applied to insects in the following areas:

- Molecular biology & proteomics
- Genetics and genomics
- Population genetics
- Behavioural and sensorial ecology

Learning outcomes:

By the end of the course, the students will have acquired the fundamental skills to:

1. Study insects at an individual level
2. Study insects at the population level
3. Study insect behaviour and sensory ecology

All this broad-based knowledge will be used in the specific teaching units of the first semester and supplemented during the following semesters.

Syllabus:

1. Fundamental approaches and tools to study insects at the individual level

- 1.1. Molecular systematics & metabarcoding
- 1.2. Epigenetics & molecular markers
- 1.3. Proteomic analysis
- 1.4. Electrophysiology and cellular imaging

2. Population genetics and phylogeography

- 2.1. Structuration of populations
- 2.2. Evolutionary Forces
- 2.3. Fundamental genetics for invasion and conservation

3. Behavioural and sensorial ecology

- 3.1. Social life in insects
- 3.2. Sensorial modalities for communication in insects
- 3.3. Application to nestmate recognition
- 3.4. Optimal foraging strategies

Assessment: The first assessment will consist of a final written exam (100% of the grade) with a document analysis part.

Second chance assessment: In case of failure at the first evaluation, a second oral examination will be proposed.

ECTS	Total number of hours (face-to-face)	Total number of hours (face-to-face + personal work)	Number of hours of lectures	Number of hours of tutorials	Number of hours of practical work
4	48h	112h	38h	10h	

Course Name Immersive Project 1 - Field Project

Semester: 1 Module: 1.3

University: University of Tours and University of Orléans

Coordinator(s): Stéphane Boyer and Joël Meunier

Position of Coordinators: Stéphane Boyer (Professor); Joël Meunier (Researcher, CNRS)

Goals and outline of the course:

Students will gain knowledge about experimental design, common statistical analyses, literature search and scientific writing. Theoretical courses will provide the tools and methodology to develop a scientific project and produce a report in the form of a short research article. Theoretical and practical courses will be proposed at "The Insect Canopy Observatory" Infrastructure so that students can directly apply the skills and knowledge to produce the final report upon which they will be evaluated.

Learning outcomes:

By the end of the course the students will have:

1. Acquired the basics of designing an experiment and understanding the importance of knowing how to identify what is a scientific question, a hypothesis, and a prediction.
2. Learned the fundamental tools needed to optimize the search for scientific literature related to an experimental project.

They will be able to:

3. Collect samples and data following precise and repeatable protocols.
4. Analyse the data they have generated using appropriate statistical approaches.
5. Reflect critically on their results and present their findings orally in a clear and efficient manner.
6. Present their findings in a written report and use current tools to cite the associated literature.
7. Apprehend the principles of the peer-review system, the complexity of the scientific publication process and the rules of Open Science.

Syllabus:

1. Experimental design & data collection

- a. Experimental design
 - i. The basic rules of experimental design
 - ii. Designing an experiment with constraints
- b. Data collection
 - i. Collecting data in the field and in the laboratory
 - ii. Methods of data collection (behaviour, biodiversity, physiology, genetic, etc.)
 - iii. Data collection by groups of students

2. Statistical analyses

- a. What are statistics for?
- b. Overview of the most common parametric and non-parametrical tests
- c. Deciding which statistical approach to use
- d. Analysing data sets collected in the previous step

3. Literature search and writing skills

- a. Literature search and management
 - i. Advanced use of a free literature search engine (*Google scholar*)
 - ii. Advanced use of a free AI-based software to improve literature search (*Researchrabbit*)
 - iii. Advanced use of a free literature management/citation software (*Zotero*)
 - iv. Publication process and the rise of Open science
- b. Writing reports and manuscripts
 - i. Do's and don'ts of report and manuscript writing
 - ii. The costs and benefits of AI-based software for manuscript writing

Assessment: Students will be evaluated for their motivation and dedication during the field session, the quality of their oral presentation at the end of the field session and the quality of their final written report.

Second chance assessment: A second chance examination will be proposed in the form of a written examination.

ECTS	Total number of hours (face-to-face)	Total number of hours (face-to-face + personal work)	Number of hours of lectures	Number of hours of tutorials	Number of hours of practical work
4	48h	112h	18h		30h

Course Name Insects and multitrophic interactions

Semester: 1 Module: 4.1

University: University of Tours and University of Orléans

Coordinator(s): David Giron and Elisabeth Huguet

Position of Coordinators: David Giron (Director of Research at CNRS); Elisabeth Huguet (Professor)

Goals and outline of the course:

The course will present the role that insects can play in multitrophic interactions, in particular in their relationship with plants. The impact of biotic and abiotic factors in these interactions will be discussed as well as how fundamental knowledge on these interactions can enable the development of innovative strategies in sustainable agriculture and/or conservation biology.

Learning outcomes:

At the end of the course, students should have acquired the knowledge and skills to:

1. Identify the different roles played by insects in their interactions with plants, as pests of plants, vectors of plant diseases or plant pollinators.
2. Analyse mechanisms (in their molecular, physiological, behavioural and ecological components) involved in the interactions of insects with their host plants, taking into account the role played by microorganisms (associated with insects or associated with plants) in these interactions, as well as cascading effects on higher trophic levels.
3. Interpret the impact of abiotic and biotic stressors on insect-plant interactions, in particular in the context of global change.
4. Reflect critically on how fundamental knowledge on insect-plant interactions and how surveillance methods can help to mitigate risks linked to insects as pests or vectors of plant diseases. Reflect critically on the causes and consequences of pollinator decline.
5. Evaluate the risks and opportunities provided by knowledge on plant multitrophic interactions for the development of innovative strategies in sustainable agriculture and/or conservation biology.

Syllabus:

0. Introduction

General concepts in insect multitrophic interactions, presentation of the module syllabus

1. Insects as pests of plants

- a. Evolution of plant-insect interactions
- b. Plant defence: plant perception and responses
- c. Insect manipulation of plant defences / plant physiology
- d. Impact of plant-insect interactions at higher trophic levels
- e. Role of microorganisms in insect-plant interactions
- f. Insect-plant interactions in a changing world
- g. How to apply our knowledge to protect plants from insect pests
- h. Risk assessment and mitigation concerning plant pests in Europe

2. Insects as vectors of plant diseases

- a. General introduction on the main categories of pathogen-vector interactions
- b. Receptors in insect vectors and other molecular/cellular interactions between insects and phytopathogens
- c. Enabling transmission
- d. Vector Manipulation by Plant Pathogens
- e. Epidemiology, surveillance, control, decision support

3. Insects and pollination

- a. Diversity of pollinating insects
- b. Plant-pollinator interactions
- c. Causes and consequences of pollinator decline

Assessment: The first evaluation will take into account: (1) the work performed by students during tutorials (oral presentation of a scientific article and active participation) and will represent 40 % of the final mark; (2) a final written examination, which will represent 60 % of the final mark.

Second chance assessment: In case of failure at the first evaluation, a second oral evaluation will be proposed.

ECTS	Total number of hours (face-to-face)	Total number of hours (face-to-face + personal work)	Number of hours of lectures	Number of hours of tutorials	Number of hours of practical work
5	48h	140h	33h	15h	

Course Name Integrated Pest management
Semester: 1 Module: 1.5
University: University of Tours and University of Orléans

Coordinator(s): Marlène Goubault and Steeve Thany

Position of Coordinators: Marlène Goubault (Professor University of Tours); Steeve Thany (Professor University of Orléans)

Goals and outline of the course:

Students will acquire fundamental knowledge that is mandatory to understand the mode of action of pesticides, the issues linked to their use on the environment and the limit of their sustainability. Specific information about the different alternative strategies to conventional pesticide treatments will be presented. For all these approaches, the advantages and associated risks will be developed. This global overview will help to discuss the methodologies that are the most effective to build an Integrated and Sustainable Pest Management Strategy.

Learning outcomes:

By the end of the course the students will be able to:

1. implement their expertise in pesticides and biopesticides engineering, with a precise comprehension of the advantages & disadvantages of pesticides, of their mode of actions and the risks associated with their use.
2. implement their expertise in biocontrol to identify and critically compare the different types of biological control strategies, with a global understanding of the key biological mechanisms underlying their success or failure.
3. critically evaluate and select the most suitable pest management strategy according to the local ecological and socio-economic context.
4. as transversal skills, the student will be able to i) develop a critical thinking about the problematic of pest management, ii) analyse scientific documents, iii) produce a scientific experimental report.

Syllabus:
1. Insects control by pesticides

1.1. Problematic of insect pests & pesticides

1.2. Synthetic insecticides

1.2.1. Neurotoxic Insecticides

1.2.2. Insect growth perturbators

1.2.3. Evolution of resistance mechanisms

1.3. Biopesticides

1.4. Innovation challenges & Intelligent design

2. Alternative methods of pest regulation

2.1. Biological control using natural enemies

2.1.1. Definition, development, and associated risks

2.1.2. Biological control by introduction

2.1.3. Biological control by augmentation

2.1.4. Biological control by conservation

2.1.5. Application & case study

2.2. Chemical mediators and insect control

2.2.1. Strategical use of chemical and service plants: development and risks associated

2.2.2. Application & case study

3. Implementation of new production systems: current challenges

3.1. Temporal synchrony & climatic change

3.2. Landscape & the importance of local context

3.3. Integrated strategies to overcome insecticide resistance

3.4. Agroecological transition & socio-economic context

Assessment: The assessment will consist of a final written exam (50% of the grade) and a report for practical courses (50% of the grade).

Second chance assessment: In case of failure, a second written session (100%) will be proposed.

ECTS	Total number of hours (face-to-face)	Total number of hours (face-to-face + personal work)	Number of hours of lectures	Number of hours of tutorials	Number of hours of practical work
5	48h	140h	28h	4h	16h

Course Name Global change, adaptation, and conservation
Semester: 1 Module: 1.6
University: University of Tours and University of Orléans

Coordinator(s): Stéphanie Bankhead and Franck Dedeine

Position of Coordinators: Stéphanie Bankhead (Associate Professor University of Orléans); Franck Dedeine (Associate Professor University of Tours)

Goals and outline of the course:

This module takes the form of a series of lectures given by a large number of scientists who are experts in their field. The aim is to enable the Erasmus mundus students to learn about the latest scientific advances in the field of conservation biology and population adaptation through a diversity of methodological approaches and taxa studied. The day devoted to the field trip will be linked to module 3, entitled 'Field project', in order to show the importance of putting into practice the theoretical knowledge acquired during the course.

Learning outcomes:

At the end of the course, students should have acquired the knowledge and skills to:

1. Identify the different factors that threaten insects in their natural habitat in the context of global change.
2. Understand the concepts and methods that are used to predict the migration and distribution of insects at different spatial and temporal scales.
3. Understand and analyse the molecular, organismal and populational mechanisms by which insects can adapt and survive in a changing world.
4. Have some general knowledge of the challenges of insect conservation and the basic applied science involved.
5. Develop an integrative vision of the insect biodiversity, including knowledge of insects at different organization levels (from molecules to ecological communities and evolutionary biology of species) and at different scales of space and time.
6. Reflect critically on the causes and consequences of insect population decline.

Syllabus:
0. Introduction

Concepts about global change and threats to insects; syllabus presentation

1. Insect biodiversity under threat

- a. Insect populations global decline
- b. Micro-pollutants sub-lethal effects
- c. Climate change effects: thermal ecology and thermotolerance
- d. Ecological and economic consequences of invasive species
- f. New epidemics brought by invasive insects
- g. Inbreeding depression and limited adaptive potentials
- h. Consequences on insect (meta-)population dynamics

2. Insect responses to global change

- a. Ecological niche models and species distribution
- b. Landscape ecology and phytophagous insect migration
- c. Individual acclimation: phenotypic plasticity and ecophysiology
- d. Population genetic adaptation: process and constraints
- e. Paradox loss: genetic diversity and insect invasion success
- f. Roles of microbial partners in insect adaptation
- g. Roles of epigenetics in insect adaptation
- h. Genomics of adaptive evolution and speciation

3. Insect conservation

- a. Conservation ecology and genetics of natural insect populations
- b. Conservation of heritage insect species
- c. Management of habitats

Assessment: The assessment will consist of a final written exam, which will account for 100% of the grade.

Second chance assessment: In case of failure at this first evaluation, a second chance oral examination will be proposed.

ECTS	Total number of hours (face-to-face)	Total number of hours (face-to-face + personal work)	Number of hours of lectures	Number of hours of tutorials	Number of hours of practical work
5	48h	140h	30h	6h	12h

Course Name French Language and Culture in Loire Valley

Semester: 1 Module: 1.7

University: University of Tours

Coordinator(s): Marie-Pierre Baylocq-Sassoubre and Anne-Sophie Frémont-Gâtineau

Position of Coordinators: Marie-Pierre Baylocq-Sassoubre (Pedagogical engineer) and Anne-Sophie Frémont-Gâtineau (Certified Professor)

Goals and outline of the course:

Many different activities will be performed, including outside the classroom, focusing on the 4 skills: speaking, listening, writing and reading. The proposed activities favour the intercultural exchanges and place the student in a real communication situation. Discussions in class, excursions and serious games will enable students to acquire cultural skills.

Learning outcomes:

Objective 1: By the end of the course the students will be able to introduce themselves, orientate themselves, speak about their family, friends, country, hobbies, tastes, everyday life and travels, in French.

Objective 2: Students will gain knowledge of Tours and Loire Valley history, monuments, traditions and landscapes.

Syllabus:

1. Introducing oneself - Asking/giving personal information

- Informal and formal ways of addressing someone
- Present tense of usual verbs
- Gender and number
- Nationality adjectives
- Using what and which in French
- Figures and numbers
- Week days/months/seasons

2. Talking about family

- The family and family situations
- Speaking about life events
- Painting a portrait of someone
- Present tense of other verbs
- Possessive adjectives

3. Talking about hobbies and activities - Proposing an outing - Accepting/refusing a proposal

- Vocabulary concerning hobbies and free time
- Present tense of all 1st group verbs
- How to formulate a question
- Prepositions of place

4. Everyday activities

- Relating a whole day
- Expression of time
- Pronominal verbs

5. History and culture of Loire Valley and Tours city - Transport and how to travel

- Discovering French heritage through Loire Valley and Tours emblematic sites and monuments, focusing on historical and cultural venues
- Means of transportation
- Asking/indicating directions
- Using the interrogative words such as: where ? how ?
- The imperative mode of the verbs
- Present tense of some irregular verbs

Assessment: Final assessment (DELFI style exam):

- 1 listening test on a covered subject
- 1 reading test on another covered subject
- 1 short writing test to talk about the student's everyday life (for example)
- 1 speaking test, during the class itself, with simple questions about the student's personal life, hobbies, identity, friends, family,) related to the program.

Second chance assessment: A second chance examination will be proposed in the form of a writing test.

ECTS	Total number of hours (face-to-face)	Total number of hours (face-to-face + personal work)	Number of hours of lectures	Number of hours of tutorials	Number of hours of practical work
3	24	84	12h	12h	

SEMESTER 2 – KU Leuven

Course Name: Insect Biology 2

Semester: 2 **Module:** 2.1

University: KU Leuven

Coordinator(s): Jozef Vanden Broeck and Vanessa Franssens

Position of Coordinators: Jozef Vanden Broeck (Full Professor) and Vanessa Franssens (Doctor)

Goals and outline of the course:

The student gains profound knowledge in fundamental and applied aspects of the physiology of insects, the largest class of animals on our planet. The student will demonstrate insight into patterns and processes that occur in these animals. He/she will understand the functional role and evolution of physiological mechanisms that allow insects to adapt to changes in their environment. Knowledge of these mechanisms has also led to applications with significant economic or societal benefits.

In this course, the student will analyse and integrate information regarding molecular, cellular, organismal and environmental mechanisms controlling functional processes in insects. These processes will be situated in their ontogenetic and phylogenetic context. In addition, the student will develop practical skills and acquire insight in different research approaches that are followed in fundamental and applied insect physiology.

Learning outcomes:

By the end of the course, students will be able to clearly communicate – in written form as well as orally - the findings of recent scientific research reports on physiological topics to the other students of the course and can critically analyse, interpret and discuss these findings in group. Students are also capable of situating and discussing the importance of scientific findings and applications in the broader context of the human society.

In addition, the students will cooperate with fellow-students and acquire the necessary attitudes, as well as the sense of responsibility, to participate in a team and jointly work out a task plan. They possess a sufficiently critical attitude allowing them to autonomously obtain knowledge, to stay informed of recent international developments, and defend a well-founded point-of-view with a sense of originality and creativity.

Syllabus:

The course is divided in two activities: lectures and exercises.

The following topics in insect physiology are covered in the lectures:

- nutrition and feeding; digestion of food;
- control of metabolism; interplay between regulators of metabolism and developmental hormones;
- excretion; salt and water balance regulation;
- sensory perception and neurophysiology;
- neuroendocrine and endocrine regulation;
- locomotion and biomechanics;
- respiration; integument and moulting;
- reproduction and courtship behaviour;
- circulatory system, haemocytes and immunity;
- ecophysiology of diapause and polyphenisms; epigenetics;
- biotechnological applications;
- insecticides and their modes of action; insecticide resistance mechanisms.

The exercises will consist of a practical course sessions (4x 3 hours):

- microdissection of specific insect organs;
- biological and biochemical assays;
- behavioural and neurophysiological observations;
- analysis of hormone-dependent expression in insect cells carrying a reporter construct;

Assessment:

The CU will be assessed partially via continuous assessment (exercises) and partially via examination with open and closed questions (lectures). The evaluation for the exercise's activity consists of a report. 85% of the total score will be based on examination about the content of the course (college activity): evaluation within the exam period, while the other 15% of the total score is based on the exercise activity.

A student passes when the weighted average of the component scores is at least 10/20. The exercises are mandatory. If a student does not participate, he/she cannot pass for the course (NA).

Second chance assessment:

The examination can be retaken in the second examination period, with the same modalities as in the first examination period but there is no second evaluation opportunity for the mandatory exercise parts.

ECTS	Total number of hours (face-to-face)	Total number of hours (face-to-face + personal work)	Number of hours of lectures	Number of hours of tutorials	Number of hours of practical work
5	38	130	26	0	12

Course name: Fundamental Skills 2 – Fundamental skills applied to bioprocess engineering
Semester: 2 Module: 2.2

University: KU Leuven

Coordinator(s): Jeroen De Smet and Dries Vandeweyer

Position of Coordinators: Jeroen De Smet (Associate Professor) and Dries Vandeweyer (Assistant Professor)

Goals and outline of the course:

This course consists of two learning activities: Bioprocess engineering and Unit operations in the food industry. Goals and outlines are separated per learning activity.

Bioprocess engineering

During this course you will learn to apply diverse state-of-the-art (molecular) techniques to engineer and monitor (industrial) bioprocesses. Focus is on the taxonomic and functional characterization of microbial communities and their individual members through the use of state-of-the-art techniques, illustrated with examples and exercises. The second part of the course focuses on the genetic modification of bacteria, yeasts, plants and animals, illustrated with practical examples.

Unit operations in the food industry

By the end of this course, students know the basic principles of unit operations applied in the context of food industry. They can describe and compare unit operations and relate them to specific raw materials, intermediate and end products. The students can explain the working mechanism of relevant equipment, in relation to chemical, microbiological and biochemical prerequisites of a specific production process. They can apply the principles of unit operations on known or unknown production processes.

Learning outcomes:

By the end of the course, the student:

1. has a thorough knowledge of various (molecular) tools that are used in biotechnology and the advantages and disadvantages of these techniques
2. is familiar with innovative technologies in molecular biology
3. is able to use the acquired knowledge to function as a beginning engineer in applied research or in the biotechnological sector
4. is able to think out a strategy to perform cloning and manage and design a biotechnological process
5. can describe the basic principles of unit operations
6. can discuss and compare different unit operations related to specific raw materials, intermediate and end products
7. can describe the mode of operation of equipment used, in relation to the chemical, microbiological and biochemical prerequisites of a specific production process
8. can apply the principles of unit operations on known (beer production) or new production processes
9. can describe and explain the production process of beer

Syllabus:

This course exists of two learning activities: Bioprocess engineering and Unit operations in the food industry. Two syllabi will be provided, separated per learning activity.

Bioprocess engineering

- Microbial communities: importance, establishment and environmental factors
- Detection, identification, quantification and characterization of microbial strains
- Taxonomic and functional characterization of microbial communities
- Novel cultivation approaches
- Synthetic microbial communities
- Genetic engineering of microorganisms and higher organisms
- New trends in biotechnology
- Biosafety and ethical aspects of biotechnology

Unit operations in the food industry

Part 1: Unit operations

- Preparation of raw materials
 - Cleaning
 - Sorting and ranking
 - Peeling
 - Blanching
- Changing particle size
 - Size reduction
 - Extrusion
- Mixing and forming
- Separating and concentrating
- Temperature change
 - Heat transfer
 - Evaporation and distillation
 - Baking and roasting
 - (Deep-)frying
 - Irradiation
- Applications

Part 2: Case study: beer production

Assessment:

The CU will be assessed via a written examination with open questions. The focus of the exam is on understanding the course material insightfully and articulating it scientifically correctly, rather than memorization.

Second chance assessment:

The written examination can be retaken in the second examination period, with the same modalities as in the first examination period.

ECTS	Total number of hours (face-to-face)	Total number of hours (face-to-face + personal work)	Number of hours of lectures	Number of hours of tutorials	Number of hours of practical work
6	52	156	52	0	0

Course name: Immersive project 2 - Project Work Insect Production
Semester: 2 Module: 2.3

University: KU Leuven

Coordinator(s): Mik Van Der Borgh

Position of Coordinators: Mik Van Der Borgh (Associate Professor)

Goals and outline of the course:

Students carry out themselves the different typical steps in the rearing and processing of insects. The students rear insects and investigate various aspects related to this process. They then harvest and process the reared insects and carry out chemical and microbial quality analyses. The students will also isolate valuable compounds such as proteins, fats and chitin from the insects and prepare and evaluate insect-based products. Insects will have access to the "Insect Pilot Plant".

Learning outcomes:

Upon completion of this project work, students will have mastered several practical aspects peculiar to the industrial insect industry production and processing chain.

Syllabus:

Lab tutorials are provided via Toledo (the KU Leuven digital learning environment).

Assessment:

The laboratory work requires thorough preparation. After finishing the practical work, students are required to compose a report.

To evaluate student performance, we will employ both continuous assessment (80%, which includes lab reports, and group work) and a written exam to evaluate the practical knowledge of the student (20% of the total point). Continuous evaluation implies compulsory attendance for the lab work. Any absence must be justified with an attestation to the lecturer(s) responsible.

Second chance assessment:

If you do not pass, there will be no practical re-examination, but a written examination will count for 20% of the grade, with the grade obtained in the first examination (80%) being retained.

ECTS	Total number of hours (face-to-face)	Total number of hours (face-to-face + personal work)	Number of hours of lectures	Number of hours of tutorials	Number of hours of practical work
3	48	84		3	45

Course name: Experimental Design

Semester: 2 Module: 2.4

University: KU Leuven

Coordinator(s): Peter Goos

Position of Coordinators: Peter Goos (Professor); Arno Strouwen (Professor)

Goals and outline of the course:

This course discusses the design of factorial experiments. Initially, the focus is on completely randomised experimental designs. Next, the focus shifts to experimental designs involving a restricted randomisation. First, the concept of blocking is discussed. Next, split-plot and strip-plot designs are studied.

The emphasis in the course is on the optimal design of experiments. In optimal design of experiments, the experimental design is tailored to the problem at hand (unlike classical experimental design, where inflexible, standard designs are chosen from catalogues). The course builds on concepts from regression and analysis of variance, such as fixed and random effects, power calculations, variance inflation factors, multicollinearity, confidence intervals, prediction and lack-of-fit tests.

Every topic in the course is introduced and illustrated by means of a case study from research and industry. The case studies are realistic in the sense that they involve quantitative and qualitative experimental factors, experimenters have to deal with limited budgets and difficulties to randomise, and forbidden combinations of factor levels. In each of the case studies, the goal is to enhance to performance of a process or a product. The areas of application are the food industry, the pharmaceutical sector, and the metal and chemical industries, among others.

Learning outcomes:

This course deals with modern methods for setting up highly informative experiments. More specifically, it provides an in-depth treatment of the optimal experimental design approach, which is extremely flexible and can handle all kinds of practical constraints that may occur in the planning phase of an experiment. During the course, the students learn how to use the JMP software, which is state of the art for the optimal design of experiments. The focus is on factorial experiments, i.e., experiments studying multiple treatment factors.

Syllabus:

The textbook used is "Optimal design of experiments: A case study approach", co-authored by Peter Goos and Bradley Jones (see references). The software used is JMP.

Assessment:

The exam in June counts for 15 of the 20 points for the course. The assignment counts for 5 of the 20 points in June. A hard copy of the book "Optimal Design of Experiments: A Case Study Approach" can be brought to the exam (photocopies and prints of e-versions of the book are not allowed).

Second chance assessment:

The exam in August/September counts for 20 points. The score for the assignment is not carried over to August/September. A hard copy of the book "Optimal Design of Experiments: A Case Study Approach" can be brought to the exam (photocopies and prints of e-versions of the book are not allowed).

ECTS	Total number of hours (face-to-face)	Total number of hours (face-to-face + personal work)	Number of hours of lectures	Number of hours of tutorials	Number of hours of practical work
4	28h	84h	28h		

Course Name: Insects in Industry
Semester: 2 Module: 2.5
University: KU Leuven

Coordinator(s): Mik Van Der Borgh

Position of Coordinators: Mik Van Der Borgh (Associate Professor)

This course consists of two learning activities: 'Insects for food, feed and biotechnical application' and 'Industrial insect production and processing in practice'. Goals and outlines are separated per learning activity.

Insects for food, feed and biotechnical applications
Goals and outline of the course:

This course delves into the various aspects of the emerging insect value chain in Europe. Firstly, it provides an overview of this new sector, before exploring each aspect in a scientific manner. The course covers biological, chemical, microbial, and technological perspectives, as well as legislation and consumer behaviour. The lecturers involved in this course each have extensive expertise in a specific field in which they teach.

Learning outcomes:

Students are expected to accurately articulate their acquired knowledge, while also drawing connections among the different concepts addressed in the lessons.

Syllabus:

Presentations are provided by the lecturers via Toledo (the KU Leuven digital learning environment).

Industrial insect production and processing in practice
Goals and outline of the course:

Students will engage with the practices and background of the various stages in the emerging industrial insect value chain. The program covers insect rearing and the processing of insect-based products. Industry experts will elucidate the context in which they operate and the applicable technologies. A visit to insect sector companies will supplement these explanations and offer a practical outlook.

Learning outcomes:

Students are expected to understand and explain the new insect sector's specific practical aspects.

Syllabus:

Presentations are provided by the lecturers via Toledo (the KU Leuven digital learning environment). Students have to take notes during the company visits.

Assessment: Both learning activities are evaluated with a written exam.

Second chance assessment: The written exam can be retaken in the second examination chance, following the same procedures as the first.

ECTS	Total number of hours (face-to-face)	Total number of hours (face-to-face + personal work)	Number of hours of lectures	Number of hours of tutorials	Number of hours of practical work
6	59	168	42	2	15

Course Name Innovation and Entrepreneurship

Semester: 2 Module: 2.6

University: KU Leuven

Coordinator(s): Guy Meynants, Tim Benijts

Position of Coordinators: Guy Meynants (Professor), Tim Benijts (Senior Lecturer)

Goals and outline of the course:

A number of topics are explained around entrepreneurship, innovation and the role of the engineer in a company, using concrete cases or in general terms, around the following topics:

- Enterprises and their context for the engineer
- Disruptive innovation and continuous improvement
- Patents and protection of innovation
- Production chain and production development
- Business planning
- Strategy of an enterprise and start-up
- Marketing
- Staff

Learning outcomes:

- Students gain important experience in following basic skills:
 - Possess basic scientific-disciplinary knowledge and insight into the field of industrial engineering science.
 - Analyse and solve problems
 - Acting ethically
 - Reflecting critically
- The student has an understanding of basic concepts of entrepreneurship and innovation.
- The student will be able to think critically, rationally and logically coherently about the functioning of companies at different stages (start-up and growth of start-ups and operation within medium and large companies).
- The student understands the innovation process, the different forms of innovation and the protection of innovation.
- The student has an understanding of the production process and quality control.

Syllabus:

Presentations containing the content of the 8 topics of this course will be provided via Toledo (the KU Leuven digital learning environment).

Assessment: Assessment via closed-book exam with open-ended and multiple-choice questions. The multiple-choice questions are subject to gamma correction.

Second chance assessment: In case of failure at the first evaluation, a second examination will be proposed.

ECTS	Total number of hours (face-to-face)	Total number of hours (face-to-face + personal work)	Number of hours of lectures	Number of hours of tutorials	Number of hours of practical work
3	28	84	26	2	0

Course name: Dutch Language and Cultures
Semester: 2 Module: 2.7
University: KU Leuven

Coordinator(s): Lieve De Wachter

Position of Coordinators: Lieve De Wachter (Professor); Kevin Seurs (Research Associate)

Goals and outline of the course:

The syllabus contains the 800 most frequent words and common constructions in Dutch. Both theory and practice (in the form of exercises) are provided. Students who work through the textbook and workbook will be able to understand and communicate on an A2 level in Dutch after completing the course. Thanks to the texts, the videos, listening exercises, ... they will also get acquainted with the Belgian way of life and culture.

Theory and practice are mixed during the course. Students will get acquainted with vocabulary, but will also develop their reading, listening, speaking and writing skills thanks to the multimethods approach that is adopted. Apart from the cultural information in the textbooks and during classes, students also follow two lectures on Belgian cultural issues, organized by KU Leuven in the 'About Belgium' programme.

Learning outcomes:

The main aim of this course is to help students acquire basic communicative skills in Dutch (level A1 of the Common European Framework). The course deals with the basic grammar notions and language functions and aims at the mastering of approximately 800 highly frequent words of Dutch. A lot of attention goes to culture with various lectures about Belgium. The course provides extensive practice in listening, reading, speaking and writing.

Syllabus:

R. Devos en H. Fraeters, Vanzelfsprekend, Leuven (Acco), 2008. The multimedia course materials 'Vanzelfsprekend' offer video, audio CDs, texts and exercises, very frequently used language functions and approximately 800 highly frequent Dutch words. The material also includes a lot of cultural information on Belgium and Flanders.

Assessment:

Exam outside of the normal examination period. There will be a test (writing, speaking, listening and reading) at the end of the course as well as a number of assignments during the course.

Second chance assessment: In case of failure at the first evaluation, a second examination similar to the first assessment will be proposed.

ECTS	Total number of hours (face-to-face)	Total number of hours (face-to-face + personal work)	Number of hours of lectures	Number of hours of tutorials	Number of hours of practical work
3	40h	84h		40h	

SEMESTER 3 – NOVA University of Lisbon

Course Name Insect Biology 3 - Insects as vectors or human disease agents Semester: 3 Module: 3.1					
University: NOVA University of Lisbon Coordinator(s): Paulo Almeida Position of Coordinators: Full Professor					
Goals and outline of the course: This curricular unit addresses the conceptual basis for students to grasp the understanding of Medical Entomology, focusing on arthropod groups as vectors of diseases, analysing the types and mechanisms of pathogen transmission, and the role of Arthropods as agents of disease. Special focus will be given to the most important vector species of the main vector borne diseases and their bioecology. The concepts of Vector Efficiency, Vector Competence, and Vectorial Capacity are central to understanding the epidemiology of vector borne diseases, and an essential basis for the vigilance and control of vectors, addressed in other curricular units. The problematics of biodiversity and population variation, focusing on the introduction of exotic species in the context of climate change, enables the student to discuss vector screening and control programs, in the context of globalization and One Health, directed at re/emergent vector-borne diseases.					
Learning outcomes: Upon completion of this unit students should be able to: 1- Define Medical Entomology in the context of Global Health. 2- Define arthropod vector and arthropod as a pathogenic agent or disease agent, describe and distinguish types and mechanisms of transmission of pathogens. 3- Describe the medical importance, and in what role, geographic distribution, and life cycles of arthropod groups: Scorpionida; Araneae; Acari; Triatominae; Cimicidae; Phthiraptera; Siphonaptera; Simuliidae; Ceratopogonidae; Phlebotominae; Culicidae; Tabanidae; Glossinidae; Muscomorpha. 4- To know the most important vector species of the main vectorborne diseases, namely their bioecology. 5- Identify medically important arthropods, either as vectors or disease agents, using dichotomous keys. 6- Define the concepts of Vectorial Efficiency, Vector Competence, and Vectorial Capacity. 7- Analyse the introduction of exotic species in the context of climate change and vector-borne re/emergent diseases in the One Health context.					
Syllabus: 1- Medical Entomology in the context of Global Health. 2- Definition and concept of arthropod Vector. Types and mechanisms of pathogen transmission. Arthropods as agents of disease. 3- Phylum Arthropoda: taxonomy and identification; 4- Main arthropod groups of medical relevance: scorpions, spiders, mites, ticks, lice, bedbugs, triatomine bugs, fleas, black flies, sand flies, culicoides, mosquitoes, horseflies, tsetse flies and synanthropic flies. Systematics, geographic distribution, life cycle, bioecology. 5- Most important vector species of the main vector-borne diseases, and their bioecology. 6- Identification of medically important arthropods using dichotomous identification keys. 7- Entomological parameters with epidemiological importance: Vector Efficiency, Competence, and Vectorial Capacity. 8- Impact of climate change on vector bioecology, and introduction of exotic species, in the context of (re)emerging diseases and One Health.					
Assessment: The assessment/evaluation will have four components: i) theoretical exam with multiple choice and other types of questions, short answer and longer answer questions; ii) practical laboratory exam; iii) seminar, in which the students will present a scientific article, with critical analysis and discussion; iv) continuous assessment/evaluation, concerning point tests and questions in the online Moodle platform, as well as questions and identification of specimens in laboratory practical classes. Each evaluation element will be graded with a score of 0-20 points, in which the students need a 50% approval in each. The final mark is constituted by: (grade of the theoretical exam x 0.4) + (grade of practical exam x 0.3) + (grade of the Seminar x 0.2) + (grade of continuous evaluation x 0.1).					
Second chance assessment: This assessment should be performed before the students leave the country, as it comprises a practical component. For the theoretical exam, online tests will be carried out, similar to the one above, using safe browser system. Oral online exams will also be considered.					

EC TS	Total number of hours (face-to-face)	Total number of hours (face-to-face + personal work)	Number of hours of lectures	Number of hours of tutorials	Number of hours of practical work
7	66	196	Lect-8; TeoPrat-4; Eval-5; Seminar-4	11	24

Course Name Fundamental skills 3 - Medical Entomology Techniques

Semester: 3 Module: 3.2

University: NOVA University of Lisbon

Coordinator(s): Teresa Novo

Position of Coordinators: Auxiliary Professor

Goals and outline of the course:

Students will be trained to define entomological assessment objectives, plan and execute fieldwork, process and preserve captured specimens, taxonomically identify and analyse them, and organise and digitise results. They will also be able to critically discuss findings, methodologies, and propose necessary adaptations.

Learning outcomes:

At the end of the course, students should have acquired knowledge and skills that allow them to:

1. Define the objectives of an entomological assessment and the respective fieldwork aimed at capturing the target species;
2. Plan and prepare fieldwork;
3. Execute fieldwork according to the defined objectives;
4. Process the captured material for sorting, labelling and long-term preservation/assembly or future laboratory processing;
5. Taxonomically identify and analyse the material according to the objectives;
6. Organize, digitize and analyse the results obtained;
7. Critically discuss the results obtained, the methodologies used and propose adaptations to them.

Syllabus:

1. Assessment of insect populations of medical/veterinary interest: objectives and planning of the respective fieldwork;
2. Entomological collection methods according to the target taxonomic group and life stage. Advantages and disadvantages of each method and its selection;
3. Methods of preservation of captured specimens for transport to the laboratory, according to the objectives of the study;
4. Planning of the fieldwork and preparation of appropriate material for the capture and preservation of specimens for transport to the laboratory;
5. Execution of the fieldwork;
6. Processing of the captured material for preservation and labelling;
7. Taxonomic identification of captured specimens;
8. Laboratory processing of the material according to the study objectives;
9. Collection of field and laboratory data, database elaboration and its statistical treatment;
10. Analysis and critical discussion of the results obtained, the methodologies used and proposals for possible corrections and improvements.

Assessment:

1. Continuous evaluation based on the presence and active participation in classes and fieldwork and tasks proposed throughout the course - 50%.
 2. Seminar in which students present a scientific article relevant to the topic - 10%
 3. Evaluation of written report with about 2500 words (excluding graphs and bibliography) - 40%.
- The evaluation of the UC will have three components: i) evaluation of the practical work carried out and tasks presented during the classes; ii) seminar, in which students will present a scientific article in the area; iii) presentation of a report of up to 2500 words on the work carried out in the practical and field classes. Each evaluation element will be graded with a score of 0-20 points. The final grade to the UC will be given by: (participation grade x 0.5) + (seminar grade x 0.1) + (report grade x 0.4).

Second chance assessment:

1. Continuous evaluation based on the presence and active participation in classes and fieldwork and tasks proposed throughout the course - 50%. – evaluation obtained during classes/fieldwork will be maintained.
2. Seminar in which students present a scientific article relevant to the topic - 10%
3. Evaluation of written report with about 2500 words (excluding graphs and bibliography) - 40%.

EC TS	Total number of hours (face-to-face)	Total number of hours (face-to-face + personal work)	Number of hours of lectures	Number of hours of tutorials	Number of hours of practical work
4	76	112	8 +4 seminar	12	Lab-40 FieldWork-12

Course Name Experimental project (field and/or laboratory)
Semester: 3 Module: 3.3
University: NOVA University of Lisbon

Coordinator(s): Carla Sousa

Position of Coordinators: Associated Professor

Goals and outline of the course:

In this curricular unit (CU), the objective is for students to attend and participate in the laboratory activities, from a research standpoint, under the work frame of the laboratories of Medical Entomology. Students are expected to rotate through different laboratories to engage with various laboratory procedures, methodologies, and fieldwork. A personalized internship will be designed for each student, considering the knowledge, skills, and competencies intended to be acquired by the student. Students will have access to the In Vivo Arthropod Security Facility.

Learning outcomes:

As individual projects with execution plans outlined according to the internship objectives, each student's tutor is responsible for ensuring that the learning objectives are achieved based on the experimental project's programmatic content.

Syllabus:

These laboratory internships will last for 10 working days, with a daily schedule of three (3) hours, supplemented by four tutorial guidance sessions lasting 2 hours each. At the end of the curricular unit, a seminar lasting 3+3 hours will take place, allowing each student to orally present their project. The working schedule will vary according to laboratorial protocols and research needs. Integrated into a research team, the students should familiarize themselves with the research methodologies to be developed. Consequently, the internship's programmatic content will depend on the laboratories where students will intern and the subjects that interest the student the most. To this end, the internship plan, concerning its objectives, content, and methodologies, will be collaboratively developed by the student and the tutor.

Assessment:

Approval in the curricular will be obtained if total attendance of the scheduled internship is observed, and the final grade is equal to or higher than 10 points, on a scale of 0-20 points. The final grade will be calculated considering the grades obtained in 1) the continuous evaluation by the internship tutor; 2) the written report at the end of the internship; 3) the oral presentation of the internship, according to the following formula: Final CU grade = (tutors' grade x 0.4) + (written report grade x 0.3) + (internship presentation grade x 0.3).

Second chance assessment: Identical to the first evaluation season.

EC TS	Total number of hours (face-to-face)	Total number of hours (face-to-face + personal work)	Number of hours of lectures	Number of hours of tutorials	Number of hours of practical work
4	44	112	Seminar-6	8	30

Course Name Vector-pathogen interactions

Semester: 3 Module: 3.4

University: NOVA University of Lisbon

Coordinator(s): Henrique Silveira

Position of Coordinators: Full Professor

Goals and outline of the course:

The dynamics of vector-borne diseases are influenced by a variety of factors. Transmission depends on intrinsic factors such as vector immunity, feeding behaviour, and the microbiome, as well as extrinsic and environmental factors. Additionally, many of these factors can be manipulated by the pathogens themselves. Significant progress has been made in understanding specific interactions, such as the transmission of malaria parasites or arboviruses by mosquitoes. However, fundamental questions with broad, generalizable implications remain challenging. Addressing these questions requires data from various vector-pathogens, and the ability to integrate this complex biological information into new knowledge and applications, which depends, above all on highly trained professionals.

Learning outcomes:

At the end of the course, students should have acquired the knowledge and skills to:

1. Understand the importance of the digestive, reproductive and immunological systems of the vectors and the development of pathogens;
2. To know the relation of the microbiota with the pathogens and insect vectors and how to use them in the control and prevention of the transmission of pathogens;
3. To know how to perform the diagnosis of pathogens in field insects and correlate with the developmental cycles of the different pathogens in their vectors;
4. Analyse the factors that affect vector competence. To identify the main factors related to the interaction between the different pathogens and their vectors and to recognize potential factors that can be investigated in order to control and prevent the transmission of pathogens by their vectors;
5. Reflect critically on published studies in the area of pathogen-vector interactions and formulate new scientific hypotheses.

Syllabus:

1. Physiology: Digestive system; Digestion and interaction with pathogens; Reproductive system
2. Immunity: Signalling pathways; Cellular and humoral responses; Immunity from Mosquito to *Plasmodium*, Triatomines to *Trypanosoma*, Mosquito to Viruses and Ticks
3. Microbiome of insects: Importance of microbiota for insects; Interaction among insect vector, pathogen and microbiota; Intestinal microbiota and use in paratransgenic insects
4. Diagnosis of pathogens in insect vectors. Protozoa and viruses
5. Vector competence and its determinants: mosquito and virus; triatomine and trypanosome; *Anopheles* and *Plasmodium*; phlebotomines and Leishmania; Ticks and pathogens
6. Applications for control: Transmission blocking vaccines and drugs; genetic transformation

Assessment:

The evaluation of the students will consist of three different processes: exercises applied in each stage of the UC; presentation of a project prepared by the student using one of the topics of the programmatic content; critical analysis of an article provided by teachers and its presentation in a seminar. Each evaluation element will be graded with a score of 0-20 values. The final classification of the UC will consist of the average of the notes of the exercises, the seminar of presentation of the project and the critical evaluation of an article.

Second chance assessment:

Students who do not obtain a classification higher than 10, take a final exam which will cover the entire subject (practical and theoretical).

EC TS	Total number of hours (face-to-face)	Total number of hours (face-to-face + personal work)	Number of hours of lectures	Number of hours of tutorials	Number of hours of practical work
3	84	29	9 + 6 seminar	8	6

Course Name Surveillance and vector control

Semester: 3 Module: 3.5

University: NOVA University of Lisbon

Coordinator(s): João Pinto

Position of Coordinators: Associate Professor

Goals and outline of the course:

The course focus on the most innovative and effective strategies currently used or in development for the surveillance and control of disease vectors.

Learning outcomes:

At the end of the course, students should have acquired the knowledge and skills to:

1. Describe the basic organizational and operational components of vector surveillance and control programs.
2. Apply currently available tools for control and monitoring of insect vector populations.
3. Study the presence of insecticide resistance and analyse mechanisms of resistance in natural insect vector populations, including their molecular, ecological and behavioural components.
4. Propose best practices for insecticide resistance management in the context of vector control programs.
5. Reflect on novel monitoring and control strategies under development.

Syllabus:

1. Vector-borne disease control programs: organization and integration in the healthcare system.
2. Vector control: concept, methods and application.
 - . Chemical control: insecticides for public health, formulations and application.
 - . Biological control: predators, microorganisms.
 - . Physical control: larval source reduction, house screening.
 - . Evaluating the efficacy of control methods.
 - . Integrated vector management.
2. Monitoring insecticide resistance in insect vectors.
 - . Concepts of susceptibility, tolerance and resistance.
 - . Methods for detecting resistance in natural vector populations.
 - . Mechanisms and molecular basis of insecticide resistance.
 - . Insecticide resistance management.
2. Innovative solutions for vector monitoring and control.
 - . GIS-based risk analysis of vector-borne diseases.
 - . Intelligent mosquito traps for sentinel monitoring.
 - . Genetically engineered mosquitoes.
 - . Ecological control: mass trapping, autodissemination and push-pull strategies.

Assessment:

The evaluation of the CU will have two components: i) a theoretical online exam with 40 multiple choice questions and four medium development questions; ii) a seminar, in which the students will present a scientific article on a topic of the UC. Each evaluation element will be graded with a score of 0-20 values. The final classification of UC will be given by: (grade of the theoretical exam x 0.5) + (seminar grade x 0.5).

Second chance assessment:

Theoretical online exam with 40 multiple choice questions and four medium development questions.

EC TS	Total number of hours (face-to-face)	Total number of hours (face-to-face + personal work)	Number of hours of lectures	Number of hours of tutorials	Number of hours of practical work
5	48	140	Lec-12 TeoPra-14 Seminar-4 Evaluation -2	4	12

Course Name Ecoepidemiology of vector-borne diseases in a global changing environment

Semester: 3 Module: 3.6

University: NOVA University of Lisbon

Coordinator(s): Carla A. Sousa

Position of Coordinators: Associated Professor

Goals and outline of the course:

The aim of the course is to empower students to develop activities under the work frame of vector-borne diseases epidemiology, an increasing challenge due to the current environmental (climate but not only) changes. With the student as central element of individual knowledge search, teachers will promote and guide the learning process implementing different learning resources (e.g. flipped learning classes, gaming strategies). Practical classes developed in collaborative and problem-based learning with discussion of subjects and concepts will train students on different activities needed for those willing to develop their professional or academic careers associated to the epidemiology of vector-borne diseases.

Learning outcomes:

At the end of the course unit students should:

1. Identify the main vector-borne diseases and know their ecoepidemiology in a changing environment. Malaria, arboviruses, leishmaniasis, tick-borne diseases, filariases, African (Sleeping Disease) and American (Chagas Disease) human trypanosomes: distribution, pathogens, transmission, hosts and life cycles.
2. Know historical aspects of vector-borne diseases.
3. Differentiate anthroponotic and zoonotic diseases, biotic, abiotic factors and the influence of environmental changes.
4. Understand concepts of endemic, epidemic, pandemic, outbreak, transmission, incidence and prevalence.
5. Know the clinical, laboratory, treatment and prevention of vector-borne diseases.
6. Understand the causes of neglected and (re) emerging diseases
7. Have a critical view of current world policies for these diseases and contextualize them in their reality.

Syllabus:

1. Epidemiological Concepts: endemic, epidemic, pandemic, outbreak, transmission, incidence, prevalence, zoonotic, anthroponotic, neglected and (re) emerging diseases, transmitted by arthropod vectors.
2. Epidemiological estimators and models of transmission
3. Historical Aspects of vector-borne diseases.
4. Importance of diseases transmitted by arthropod vectors in Global Health and as causes of Neglected Diseases.
5. Ecoepidemiology of anthroponoses and zoonoses: biotic, abiotic factors, influence of climate and environmental changes.
6. Ecoepidemiology, clinical and prevention of vector-borne diseases: arboviruses (Yellow Fever, dengue, Zika, chikungunya and West Nile), Malaria, Leishmaniasis, Chagas disease, Sleeping sickness, filariases, Human diseases caused by ticks - their distribution, pathogens, transmission, reservoirs, life cycles - vectors / humans, symptoms, clinical diagnosis, laboratory, treatment and prevention measures.

Assessment:

In this curricular unit it will be used a combination of methods to comprehensively evaluate students. It was considered the context of the course, learning objectives of the curricular unit, and the cultural diversity of students for selecting the following student's assessment methods. Thus, Evaluation will have three components.

- Theoretical exam with multiple choice and other types of questions, short answer and longer answer questions; this type of evaluation provides a systematic way to assess students' knowledge and understanding and allows standardized and objective grading.
- Practical laboratory quizzes that will assess application of knowledge and problem-solving skills.
- Continuous assessment/evaluation, concerning point tests and questions in the online Moodle platform; this will reflect the engagement and active involvement of the student in the learning process and provides insights into students' understanding of the material

Each evaluation element will be graded with a score of 0-20 points, in which the students need a 50% approval in each. The final mark is constituted by: (grade of the theoretical exam x 0.6) + (grade of practical quizzes x 0.2) + (grade of continuous evaluation x 0.2).

Second chance assessment: As above.

EC TS	Total number of hours (face-to-face)	Total number of hours (face-to-face + personal work)	Number of hours of lectures	Number of hours of tutorials	Number of hours of practical work
4	38	112	14	6	18

Course Name Portuguese language and culture

Semester: 3 Module: 3.7

University: NOVA University of Lisbon

Coordinator(s): João Pinto

Position of Coordinators: Associated Professor

Goals and outline of the course:

For students to reach the proposed learning objectives, activities implemented in the CU will focus on the development of 4 skills: speaking, listening, writing and reading. The proposed activities will favor intercultural exchanges and place the student in a real communication situation. Discussions in class, excursions and seminars will enable students to acquire linguistic and cultural skills in an interactive manner. The documentation and bibliography given to students will allow autonomous study and group work, aiming at obtaining the level A1 of the Common European Framework of Reference.

Learning outcomes:

Objective 1: By the end of the course the students will be able to use the Portuguese language to introduce and orientate themselves, as well as sustaining basic conversations about their family, friends, country, hobbies and everyday life.

Objective 2: Students will gain knowledge of essential aspects of the history and culture of Portugal, monuments and traditions.

Syllabus:

1. Introducing oneself

- How to address someone
- Figures and numbers
- Weekdays/months/seasons/years
- Name, gender and age
- Date and place of birth

2. Family

- Family and family situations
- Speaking about life events
- Describing someone

3. Hobbies and activities

- Vocabulary concerning hobbies and free time
- How to formulate a question and an invitation
- Accepting/refusing a proposal

4. Everyday activities

- Forms of communication (verbal, written, visual)
- Asking directions and means of transportation
- Asking for a meal or drink
- Expression of time

5. History and culture of Portugal

- Discovering Portuguese heritage: foundation, middle age, discoveries, constitutional monarchy, republic, contemporary history.
- Monuments, museums and calendar of cultural events.
- Gastronomy, music and folklore.
- The overseas diaspora and the cultural melt-pot: Arabic, African, Asian and South American influence.
- Getting around in Lisbon: map, public transportation and sites of interest.

Assessment:

Assessment will be made by means of an exam with listening, reading/speaking and writing components on a given topic.

Second chance assessment: As describe above.

EC TS	Total number of hours (face-to-face)	Total number of hours (face-to-face + personal work)	Number of hours of lectures	Number of hours of tutorials	Number of hours of practical work
3	28	84	TeoPra-12 Seminar-6	4	FieldWork-6

SEMESTER 4 – Master thesis project at full or associated partner institutions

Course name: 6-month Master Thesis project

University: University of Tours, University of Orléans, KU Leuven, NOVA University of Lisbon

Coordinator(s): The selection committee will be involved in distribution of master thesis projects. Supervision of each student during the Master thesis project will be ensured by the co-promoter (from the institution/company proposing the project) and by a nominated promoter (staff from the ISSF consortium) relevant to the master thesis subject.

Position of Coordinators: Professors and associated professors from all four HEIs.

Goals and outline of the course:

The master thesis will last 6 months and can be performed worldwide in the public and private sectors in any full or associate partner institution. A joint list of Master thesis projects emanating from the member HEIs and associated partners will be approved and presented to the students before distribution of the projects. Supervision of each student during the Master thesis project will be ensured by the co-promoter (from the institution/company proposing the project) and by a nominated promoter (staff from the ISSF consortium) relevant to the master thesis subject. Evaluation of master thesis written reports and oral defences will be performed jointly with representatives of all HEIs present at the coordinator's campus (UT).

The master thesis will be written and defended in English.

Learning outcomes:

Graduates will be able to / will have the:

- Learn specialised knowledge within the insect science field including insight into relevant research, entrepreneurial and development work.
- Learn specialised knowledge of methods within the main field of study.
- Ability to contribute to research, entrepreneurial and development work.
- Ability to identify, formulate and manage complex problems in a critical, independent and creative manner.
- Ability to plan and use adequate methods to implement advanced tasks within given frameworks,
- Ability to create, analyse and critically evaluate different technical solutions.
- Ability to integrate knowledge in a critical and systematic manner.
- Ability to in writing clearly describe and discuss his or her conclusions in English, including the knowledge and arguments that form the basis of the conclusions.
- Ability to orally clearly describe and discuss his or her conclusions in English, including the knowledge and arguments that form the basis of the conclusions.
- Within the framework of the specific degree project, ability to identify which problems need to be addressed to observe sustainable development.
- Awareness of ethical aspects related to research and development work.
- Ability to work independently and to be able to collaborate with pairs.

ECTS – 30

Duration 6 months

Assessment of Master Thesis project:
The following evaluation matrix has been designed.

PROCESS

Name student:

TOTAL

outstanding	very good	good	satisfactory	sufficient	insufficient	weak	very weak
-------------	-----------	------	--------------	------------	--------------	------	-----------

Approach and planning (research attitude, scientific approach, planning, work accurately, ...)							
Initiative and autonomy (independent study attitude, self-reliance, solving problems, transition from independent synthesis toward a final result, ...)							
Communication (interim reporting, internal team communication, ...)							
Team spirit (social relations, consultation, responsibility, attention to context, handling of discussions and criticism, ...)							
Commitment and motivation (attitude, work ethic, perseverance, ...)							

Process - work ethics

Mark

Assignment analysis (focused analysis and limitation of the subject matter, adequate research questions, ...)							
Information acquisition and processing (research efficiency, scientific approach to the process and interpretation, evaluating quality of sources, ...)							
Attention for broader context (sustainability, social, ethical, economic aspects, security, ...)							
Quality of the working methods (planning, design decisions and research methods, optimising and adjusting design/test methods, ...)							
End result quality (achievement of the objectives, is the job well-done, ...)							
Critical analysis (correct interpretation of the work and results, reflection on methods used, justification of choices and assumptions, ...)							
Personal contribution (creativity, personal share in the contribution to the experiments and/or research, ...)							

Process - methodology & results

Mark

The final marks for work ethics and methodology & results are not necessarily the weighted average of the assessment of the above indicators

Remarks evaluator

THESIS

Name student:

TOTAL

outstanding	very good	good	satisfactory	sufficient	insufficient	weak	very weak
-------------	-----------	------	--------------	------------	--------------	------	-----------

Structure and design (logical structure and layout, clear and specific titles, employment and quality of figures and tables, ...)								
Language use (clear and correct sentence structure, spelling, ...)								
Scientific rigor (correct citation, accurate representation of results, active in personal writing style, correct references to figures and tables, ...)								

Thesis - form

Mark

Assignment analysis (assignment's context, targeted analysis and definition, correct and clear formulation of objectives and research, ...)								
Information processing (quantity and quality of sources employed, appropriate documentation of results, ...)								
Attention to the broader context (situation with respect to the literature and/or previous work, when relevant due attention to aspects such as ethics, economics, sustainability, security, ...)								
Quality of the work method (clear and accurate approach and method descriptions, effectiveness of the methods used, ...)								
End result quality (are the objectives achieved, clear and correct wording of the conclusion and requirements for further research, ...)								
Critical analysis (assessment of the quality of one's own work and results, reflection on methods used, justification of choices and assumptions, comparison with the literature and other results, ...)								
Personal contribution (creativity, own stake, experimental work/research, ...)								

Thesis - content & product

Mark

The final marks for form and content & product are not necessarily the weighted average of the assessment of the above indicators

Remarks evaluator

PRESENTATION & DEFENCE

Name student:

TOTAL

outstanding	very good	good	satisfactory	sufficient	insufficient	weak	very weak
-------------	-----------	------	--------------	------------	--------------	------	-----------

Structure and design (logical structure and build-up, use and quality of figures and illustrations, ample space for presentation of own work, ...)								
Language (employment of correct terminology, clarity and purpose, the use of standard English, speech rate proficiency and articulation, ...)								
Attitude & Timing (public interaction, confidence and maturity, politeness during questions and answers, respecting time limitations, ...)								

Presentation & defence - form

Mark

Clear and correct formulation of the problem and research questions, of the approach and working methods employed, and of the conclusions								
Insight and mastery of the subject matter (quality of the proposed work, accuracy and factual nature of the answers given during the defence, ...)								
Maturity and resilience at the defence (control of his/her level of nervousness, reacting appropriately and constructively to questions, ...)								
Critical analysis (accurate quality assessment of their own work and results, reflection on their chosen methods and models, ...)								

Presentation & defence - content & product

Mark

The final marks for form and content & product are not necessarily the weighted average of the assessment of the above indicators

Remarks evaluator

20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5
Greatest distinction			Great distinction		Distinction		Satisfactory				Insufficient		Very insufficient (not compensable)		
At least some indicators are of outstanding quality and the others are very good.			Most indicators are of outstanding quality or very good and the others are good.		Most indicators are good, very good or of outstanding quality and the others are at least sufficient.		Some indicators are good, very good or of outstanding quality and the others are at least sufficient.		Most indicators are at least sufficient, the gaps in the others are not fundamental.		Most indicators are at least sufficient, the gaps in the others are fundamental but can be compensated when the total result suffices.		Most indicators are insufficient, weak or very weak, there are fundamental gaps in various areas that cannot be compensated.		Most indicators are evaluated as very weak. The few positive elements are coincidental.

The marks in the above table are a guideline for the evaluators.

The total results for work ethic/form and for methodology & results/content & product are not necessarily the (weighted) average of the evaluation of the different indicators.

ANNEXE 2. Jointness of the ISSF Curriculum

Module	Semester 1 UT- UORL	Semester 2 KUL	Semester 3 UNL
Module 1 Insect Biology	1.1 Insect Biology 1 Introduction to Sustainable Development Goals Overview of entire ISSF master program Insect life cycles Taxonomy and anatomy Required for all the master program 2.1 Insect Biology 2 2.5 Insects in Industry 3.1 Insect Biology 3 3.2 Fundamental skills 3	2.1 Insect Biology 2 Fundamental and applied knowledge on insect physiology: all aspects of insect physiology (except immunity) Follow-up of 1.1 Insect Biology 1 Required for 3.1 Insect Biology 3	3.1 Insect Biology 3 Focus on biology of arthropod vectors of animal and human diseases Follow-up of 1.1 Insect Biology 1 2.1 Insect Biology 2
Module 2 Fundamental skills	1.2 Fundamental skills 1 Fundamental skills applied to insects in: -Molecular biology and proteomics -Genetics and genomics -Population genetics -Behavioral and sensorial ecology Required for 2.2 Fundamental skills 2 2.3 Project work on Insect production 3.2 Fundamental skills 3 3.3 Experimental field or lab project	2.2 Fundamental skills 2 Bioprocess engineering State of the art molecular techniques Unit operation in the food industry Follow-up of 1.2 Fundamental skills 1	3.2 Fundamental skills 3 Medical entomology techniques in -Field work -Taxonomic identifications -Statistical analysis Follow-up of 1.2 Fundamental skills 1 1.3 Field project
Module 3 Immersive project	1.3 Field Project Experimental design & data collection Statistical analyses Literature search and writing skills Required for All master course 2.4 Experimental Design 3.2 Fundamental skills 2 3.3 Experimental field or lab project	2.3 Project Work in Insect Production Rearing and processing of insects Biochemical and microbiological analyses Follow-up of 1.2 Fundamental skills 1 Required for 3.5 Surveillance and vector control	3.3 Experimental field or laboratory project Personalized internship in medical entomology in a field and/or laboratory setting Follow-up of 1.2 Fundamental skills 1 1.3 Field project
Module 4 Specialty	1.4 Insects and multitrophic interactions Insects as pests of plants Insects as vectors of plant diseases Insects and pollination Required for 2.5 Insects in Industry 3.4 Vector-pathogen interactions	2.4 Experimental Design Design of factorial experiments Follow-up of 1.3 Field project Required for 3.2 Fundamental skills 3 3.3 Experimental field or lab project	3.4 Vector-pathogen interactions Insect immunity Insect-microbe interactions Vector competence Follow-up of 1.4 Insects and multitrophic interactions 2.1 Insect Biology 2
Module 5 Specialty	1.5 Integrated Pest management Insects control by pesticides Alternative methods of pest regulation Current challenges for implementation Required for 2.5 Insects in Industry 3.5 Surveillance and vector control	2.5 Insects in Industry Insects for food, feed, biotechnical applications, biocontrol and pollination -Industrial insect production and processing in practice Follow-up of 1.4 Insects and multitrophic interactions 1.5 Integrated pest management Required for 3.5 Surveillance and vector control	3.5 Surveillance and vector control Vector-borne disease control programs Monitoring insecticide resistance Innovative solutions for vector monitoring and control Follow-up of 1.5 Integrated pest management 2.5 Insects in Industry
Module 6 Specialty	1.6 Global change, adaptation, and conservation Insect biodiversity under threat Insect responses to global change Insect conservation Required for 3.6 Ecoepidemiology of vector-borne diseases in a global changing environment	2.6 Innovation and Entrepreneurship Entrepreneurship, innovation and the role of the engineer in a company Required for all the master program for entrepreneurship culture	3.6 Ecoepidemiology of vector-borne diseases in a global changing environment Epidemiological Concepts Global Health Ecoepidemiology Follow-up of 1.6 Global change, adaptation and conservation
Module 7 Language and culture	1.7 French Language and Culture in Loire Valley Required for all the master program for intercultural awareness	2.7 Dutch Language and Cultures Required for all the master program for intercultural awareness	3.7 Portuguese language and culture Required for all the master program for intercultural awareness

ANNEXE 3. Learning outcomes of the ISSF Curriculum

Global learning outcomes

- Mobilize and produce specialized knowledge

After a first cycle degree in life sciences or related fields students will be able to mobilize specialized knowledge in insect sciences, some of which is at the forefront of knowledge, and which can serve as the basis for original thinking. Critical thinking skills will be developed to be able to conduct reflective and distanced analysis of issues pertaining to insect sciences. Students will be able apply their knowledge and understanding, and problem-solving abilities in different environments within broad contexts related to insect sciences.

- Implement advanced and specialized uses of scientific tools

Students will be trained to use digital and statistical tools, together with specialized tools in the field of insect biology.

• Contribute to project work related to professional contexts

Students will have the ability, within a professional context, to integrate knowledge, conduct a project and manage complex, unpredictable professional or study contexts, while maintaining scientific integrity and rigour and respecting social, deontological and ethical issues related to the different domains of application in insect sciences.

Students will learn to work in collaboration with pairs and also in an independent manner. Students will have the learning skills to allow them to be employable or to continue to study (at PhD level) in a largely autonomous manner.

• Implement specialized communication for knowledge transfer

Students will learn to critically select and analyse a variety of specialized resources to document a topic and synthesize that data for use. They will be able to communicate clearly, orally and in writing, on the scientific context to specialist and non-specialist audiences.

Specific Learning outcomes for each Module

Modules S1	Learning outcomes – Graduates will be able to:
M1.1 Insect Biology 1	- Understand the importance of insects for Sustainable Development Goals. - Understand the basics of life cycle analyses for sustainability evaluation in agricultural and agri-food productions. - Understand developmental strategies and recognize Holometabolous/Hemimetabolous stages. - Dissect and understand the anatomy of insect models. - Prepare and recognize tissues and cells by microscopic techniques. - Link anatomy and function of organs.
M1.2 Fundamental skills 1	- Learn fundamental skills to study insects at an individual level. - Learn fundamental skills to study insects at the population level. - Learn fundamental skills study insect behaviour and sensory ecology.
M1.3 Immersive project 1 – Field project	- Acquire the basics of designing an experiment and understanding the importance of knowing how to identify what is a scientific question, a hypothesis, and a prediction. - Learn the fundamental tools needed to optimize the search for scientific literature. - Collect samples and data following precise and repeatable protocols. - Analyse the data generated using appropriate statistical approaches. - Reflect critically on their results and present their findings orally in a clear manner. - Present their findings in a written report and use current tools to cite literature. - Apprehend the principles of the peer-review system, the scientific publication process and the rules of Open Science.
M1.4 Insects and multitrophic interactions	- Identify the different roles played by insects in their interactions with plants, as pests of plants, vectors of plant diseases or plant pollinators. - Analyse mechanisms involved in the interactions of insects with their host plants, considering the role played by microorganisms in these interactions, as well as cascading effects on higher trophic levels. - Interpret the impact of abiotic and biotic stressors on insect-plant interactions, also in the context of global change. - Reflect critically on how fundamental knowledge on insect-plant interactions can help to mitigate risks linked to insects as pests or vectors. - Reflect critically on the causes and consequences of pollinator decline. - Evaluate the risks and opportunities provided by knowledge on plant multitrophic interactions for the development of innovative strategies in sustainable agriculture and/or conservation biology.
M1.5 Integrated Pest management	- Implement expertise in pesticides and biopesticides engineering, with a precise comprehension of the advantages & disadvantages of pesticides, of their mode of actions and the risks associated with their use.

	- Implement expertise in biocontrol to identify and critically compare the different types of biological control strategies, with a global understanding of the key biological mechanisms underlying their success or failure. - Critically evaluate and select the most suitable pest management strategy according to the local ecological and socio-economic context. - Develop critical thinking about the problematic of pest management, analyse scientific documents, produce a scientific experimental report.
M1.6 Global change, adaptation, and conservation	- Identify the different factors that threaten insects in their natural habitat in the context of global change. - Understand the concepts and methods that are used to predict the migration and distribution of insects at different spatial and temporal scales. - Understand and analyse the molecular, organismal and populational mechanisms by which insects can adapt and survive in a changing world. - Learn about challenges of insect conservation and the basic applied science involved. - Develop an integrative vision of the insect biodiversity. - Reflect critically on the causes and consequences of insect population decline
M1.7 French Language and Culture in Loire Valley	- Acquire basic French language skills (A1 level). - Gain knowledge on French and Loire Valley culture.

Modules S2	Learning outcomes – Graduates will be able to:
M2.1 Insect Biology 2	- Acquire knowledge in fundamental and applied aspects of the physiology of insects. - Learn the functional role and evolution of physiological mechanisms that allow insects to adapt to changes in their environment. - Develop practical skills and acquire insight in different research approaches that are followed in fundamental and applied insect physiology.
M2.2 Fundamental Skills 2	- Acquire knowledge on molecular innovative tools that are used in biotechnology and the advantages and disadvantages of these techniques. - Acquire knowledge to function as a beginning engineer in applied research or in the biotechnological sector. - Implement a strategy to perform cloning and manage and design a biotechnological process. - Describe the basic principles of unit operations. - Discuss and compare different unit operations related to specific raw materials, intermediate and end products. - Describe the mode of operation of equipment used, in relation to the chemical, microbiological and biochemical prerequisites of a specific production process. - Apply the principles of unit operations on known (or new production processes).
M2.3 Immersive Project 2 - Project Work in Insect Production	- Master typical insect rearing, harvesting and stabilizing techniques. - Master chemical and microbial quality analyses on insects. - Be able to isolate fats, protein, chitin and other valuable compounds from insects.
M2.4 Experimental Design	- Implement an optimal experimental design approach with a focus on factorial experiments, i.e., experiments studying multiple treatment factors. - Learn the use of JMP software, which is state of the art for the optimal design of experiments.
M2.5 Insects in Industry	- Acquire knowledge on the use of insects in human food and animal feed from a broader societal perspective. - Acquire knowledge on legal and food safety aspects and issues, and interpret recent developments in these areas. - Able to describe the microbiological, chemical and physicochemical aspects of insect use, and explain any connections. - Able to describe and explain the necessary technological principles behind insect processing. - Able to describe, optimize and implement procedures for microbiological, chemical, physicochemical and sensory analyses where necessary.
M2.6 Innovation and Entrepreneurship	- Understands basic concepts of entrepreneurship and innovation. - Able to think critically, rationally and logically coherently about the role and responsibilities of entrepreneurs in a company. - Able to think in a critical, rational and logically coherent way about the functioning of companies in the different phases (start-up and growth of start-ups and the functioning within medium-sized and large companies). - Having insight into the innovation process, the different forms of innovation and the protection of innovation.

	- Understand the production process and quality control.
M2.7 Dutch Language and Cultures	- Acquire basic communicative skills in Dutch (level A1 of the Common European Framework). - Gain knowledge on Belgium culture with various lectures about Belgium.

Modules S3	Learning outcomes – Graduates will be able to :
M3.1 Insect Biology 3	- Define Medical Entomology in the context of Global Health. - Define arthropod vectors, describe and distinguish types and mechanisms of transmission of pathogens. - Describe the medical importance of vector arthropod groups.
M3.2 Fundamental skills 3	- Define the objectives of an entomological assessment and the respective fieldwork aimed at capturing the target species. - Plan and prepare fieldwork. - Execute fieldwork according to the defined objectives. - Process the captured material for sorting, labelling and long-term preservation or future laboratory processing. - Taxonomically identify and analyse the material according to the objectives. - Organize, digitize and analyse the results obtained. - Critically discuss the results obtained, the methodologies used and propose adaptations to them.
M3.3 Immersive Project 3 - Medical Entomology Techniques	- Define a scientific question based on arthropod vectors. - Design the protocol. - Implement the protocol in a specialized infrastructure. - Analyse results and reflect critically. - Present results in a clear and efficient way.
M3.4 Vector- pathogen interactions	- Understand the importance of the digestive, reproductive and immunological systems of the vectors and the development of pathogens. - Learn the relation of the microbiota with the pathogens and insect vectors and how to use them in the control and prevention of the transmission of pathogens. - Learn how to perform the diagnosis of pathogens in field insects and correlate with the developmental cycles of the different pathogens in their vectors. - Analyse the factors that affect vector competence and recognize factors that can be investigated in order to control and prevent the transmission of pathogens by their vectors. - Reflect critically on published studies in the area of pathogen-vector interactions and formulate new scientific hypotheses.
M3.5 Surveillance and vector control	- Describe the basic organizational and operational components of vector surveillance and control programs. - Apply currently available tools for control and monitoring of insect vector populations. - Study the presence of insecticide resistance and analyse mechanisms of resistance in natural insect vector populations. - Propose best practices for insecticide resistance management in the context of vector control programs. - Reflect on novel monitoring and control strategies under development.
M3.6 Ecoepidemiology of vector-borne diseases in a global changing environment	- Identify the main vector-borne diseases and know their ecoepidemiology in a changing environment. - Know historical aspects of vector-borne diseases. - Differentiate anthroponotic and zoonotic diseases, biotic, abiotic factors and the influence of environmental changes. - Understand concepts of endemic, epidemic, pandemic, outbreak, transmission, incidence and prevalence. - Know the clinical, laboratory, treatment and prevention of vector-borne diseases. - Understand the causes of neglected and (re) emerging diseases. - Have a critical view of current world policies for these diseases and contextualize them in their reality.
M1.7 Portuguese language and culture	- Acquire basic communicative skills in Portuguese (level A1 of the Common European Framework). - Gain knowledge on Portuguese culture.

Module S4	Learning outcomes – Graduates will be able to:
Master Thesis	- Learn specialised knowledge within the insect science field including insight into relevant research, entrepreneurial and development work. - Learn specialised knowledge of methods within the main field of study. - Ability to contribute to research, entrepreneurial and development work. - Ability to identify, formulate and manage complex problems in a critical, independent and creative manner.

- Ability to plan and use adequate methods to implement advanced tasks within given frameworks.
- Ability to create, analyse and critically evaluate different technical solutions.
- Ability to integrate knowledge in a critical and systematic manner.
- Ability to in writing clearly describe and discuss his or her conclusions in English, including the knowledge and arguments that form the basis of the conclusions.
- Ability to orally clearly describe and discuss his or her conclusions in English, including the knowledge and arguments that form the basis of the conclusions.
- Within the framework of the specific degree project, ability to identify which problems need to be addressed to observe sustainable development.
- Awareness of ethical aspects related to research and development work.
- Ability to work independently and to be able to collaborate with pairs.

ANNEXE 4. Overview of all associated partners, their research domain, location and contribution to the master's program. G.L. = provide expertise via guest lectures, MT Int. = Provide master thesis internship opportunities; Com. = Participate in boards of ISSF; Schol. = Explore opportunities to deliver additional scholarships, Prom. = Promotion of the EMJM ISSF in network. The ISO 3166-1 alpha-2 code was used to encode countries.

Partner			Location		Contribution to the EMJM ISSF					Contact person
Domain	Type	Name	Region	Country	Teaching G.L	Management MI Int.	Schol.	Dissemination Com. Prom.		
Ecology	Academic	Stellenbosch University	Africa	ZA	X			X	Mr John Terblanche	
		Tokyo University of Agriculture and	Asia	JP	X	X		X	Mr Madoka Nakai	
		UMR Santé de la Vigne et Qualité du Vin,		FR	X	X	X		Mr Quentin Chesnais and Mrs	
		Max Planck Institute for Chemical Ecology		DE	X	X		X	Mr Martin Kallenpoth	
		University of Pisa, Department of Agriculture,			X	X	X	X	Mr Andrea Lucchi	
		University of Naples Federico II - UNINA		IT	X	X		X	Mr Francesco Pennacchio	
		University of Valencia		ES	X	X	X	X	Mr Salvador Herrero	
	Research	Université de Neuchâtel		CH	X	X	X	X	Mr Sergio Rassman	
		DGIMI INRAE Montpellier			X		X		Mrs Nathalie Volkoff	
		PHIM (Plants Health Institute of Montpellier)		FR	X	X			Mr Stéphane Blanc	
		SiFCIR laboratory			X	X	X		Mrs Valérie RAYMOND	
DOÑANA Biological Station - Spanish National Research Council			ES	X	X	X		Mr Xim Cerda		
Manaaki Whenua - Landcare Research		Oceania	NZ	X	X	X	X	Mrs Claudia Lange		
Research/Academic	INSA Lyon	Europe	FR	X	X		X	Mrs Federica Calevo		
Ecology, Health	Academic	Lyon University -Laboratoire de Biométrie et Biologie Evolutive	Europe	FR	X	X	X	X	Mr Emmanuel Desouhant and Mr Fabrice Vavre	
		UMR MIVEGEC Institut de Recherche et			X	X	X	X	Mr Frédéric Simard	
		University of Georgia Athens - Department of Entomology	North-America	US	X	X	X	X	Mr Mike Strand and Mr Gaelen Burke	
	Government	FAO and International Atomic Energy Agency (IAEA)	Europe	AT		X			Mr Adly Abd-Alla	
	Industry	IRIDEON - Innovation Partners		ES	X			X	Mr João Encarnação	
		CIRMF	Africa	GA	X	X	X	X	Mr Larson BOUNDENGA	
Ecology, Production	Research	Fiocruz, Rio de Janeiro	South-America	BR	X	X	X	X	Mr Ademir Martins	
	Academic	CNRS Paris Saclay IDEEV	Europe	FR	X	X	X	X	Research director Laure Kaiser	
	Industry	Universidad Nacional de Colombia Research	South-America	CO	X	X	X	X	Mrs. Karol Barragan Fonseca	
Health	Research	BESTICO	Europe	FR		X	X	X	Mr Damien Morel	
	Research	International Centre of Insect Physiology and Ecology	Africa	KE	X	X	X		Mr Chrysantus Tanga	
	Academic	Faculty of Medicine - University Agostinho Neto	Africa	AO	X	X	X	X	Mrs Ema Fernandes and Mr Joaquim Van Dunen	
		University of Cape Verde			X	X	X	X	Mrs Isabel Inês Araújo	
		University Jean Piaget of Cape Verde			X	X	X	X	Mrs Lara Ferrero Gómez	
		University of São Tomé and Príncipe			ST	X			X	Mr Albuquerque Maia
		Aga Khan University	Asia	PK	X	X	X		Mr Erum Khan	
		University "La Sapienza"-Department of Public	Europe	IT	X	X	X	X	Mrs Alessandra della Torre	
		Faculdade de Ciencias da Universidade de		PT		X			Mrs Teresa Rebelo	
		School of Agriculture, University of Lisbon			X	X		X	Mrs Elsa Silva	
		School of Public Health, University of Sao			X	X	X	X	Mrs Maria Anice Mureb Sallum	
		Institute of Biomedical Sciences, University of São Paulo	South-America	BR	X	X	X	X	Mr Marcelo Urbano Ferreira	
		Instituto de Biotecnologia - Sao Paulo State University			X	X	X	X	Mr Paulo Eduardo Martins Ribolla	
		Universidad Nacional Toribio Rodriguez de Mendoza			PE	X	X	X	X	Mr Eddyson Montalvo Sabino
	Vector Genetics Laboratory, University of California Davis	North-America		US	X			X	Mr. Greg Lanzaro	
	Government	Centre National de la Recherche Scientifique et Technologique	Africa	BF	X	X	X	X	Mrs Maiga Hamidou and Mr Roch Dabire	
		INSP-Instituto Nacional de Saúde Pública		CV	X	X	X	X	Mrs Maria da Luz Mendonça	
		INS-Instituto Nacional de Saúde		MZ	X	X	X	X	Mr Ayubo Kampango	
		Centro Nacional de Endemias		ST	X	X	X	X	Mrs Maria Jesus Trovoadá	
		INASA- Instituto Nacional de Saúde Pública		GW	X	X	X	X	Mr Bacar Embaló	
		Industry	RentoKil - Spain	Europe	SP	X			Mr. Ruben Bueno Märi	
Research		Ifakara Health Institute	Africa	TZ	X	X	X	X	Mr Emmanuel Kaindoa	
		Institute of Molecular Biology and	Europe	GR	X	X	X	X	Mr John Vontas	
Production	Academic	Makerere University	Africa	UG	X	X	X	X	Mrs. Dorothy Nakimbugwe	
	Thomas More University of Applied sciences	Europe	BE	X	X			Mrs Lotte Frooninckx		
	Czech University of Life Sciences Prague		CZ	X	X	X	X	Mrs Lenka Kouřimská		
	University of Copenhagen		DK	X	X			Mr Antoine Lecocq		
	University of Patras		GR	X	X	X	X	Mr Christos Rumbos		
	University di Torino		IT	X	X	X	X	Mrs Laura Gasco		
	University of Insubria			X	X	X	X	Mrs Gianluca Tettamanti		
	University of Porto		PT	X	X	X	X	Mr Luis Miguel Cunha		
	University of Reading	UK	X		X	X	Mrs Afroditi Chatzifragkou			
	Research	Université du Laval	North-America	CA	X	X	X	X	Mr Grant Vandenberg	
	CEIF and Texas A&M	US		X	X	X	X	Mr Jeff Tomberlin		
	Industry	Entobol	Asia	VN	X	X	X	X	Mr Jeroen De Wachter	
		Flyblast		BE	X	X		X	Mr Johan Jacobs	
		Ynsect			X	X	X	X	Mr Antoine Hubert	
		Innovafeed		FR	X	X	X	X	Mrs Audrey Schuller	
		Evonik		DE	X	X	X	X	Mr Elmar Rother	
		Protix		NL	X	X	X	X	Mr Eric Schmitt	
		Inagro		BE	X	X	X	X	Mr David Deruytter	
		ILVO			X		X	X	Mrs Veerle Verlinden	
		ATB Potsdam		DE	X	X	X	X	Mr Oliver Schlüter	
DIL				X	X	X		Mr Sergiy Smetana		



Présentation du Erasmus Mundus Joint Master «Insects as Solutions for a Sustainable Future» :

Le master Erasmus Mundus Joint Master « **Insects as Solutions for a Sustainable Future** » (EMJM-ISSF) est un programme de deux ans, à 120 crédits ECTS, délivré conjointement par quatre établissements d'enseignement supérieur européens : l'**Université de Tours** (UT) et l'**Université d'Orléans** (UORL) en France, **KU Leuven** (KUL) en Belgique et l'**Universidade Nova de Lisboa** (UNL) au Portugal. Ce programme est également soutenu par un réseau de plus de 60 partenaires associés issus de l'industrie et du monde universitaire dans 34 pays.

ISSF formera une nouvelle génération d'experts en sciences des insectes, en leur apportant des compétences polyvalentes et interdisciplinaires leur permettant de s'épanouir sur divers marchés du travail mondiaux. En effet, les insectes jouent un rôle central dans la durabilité environnementale, l'agriculture, la technologie et la santé publique, en offrant des solutions innovantes aux défis mondiaux.

Le parcours de mobilité des étudiants (Figure 1) garantira une formation complète dans trois domaines clés des sciences entomologiques : les insectes dans les écosystèmes et les agrosystèmes (semestre 1, UT et UORL), les insectes dans l'industrie et l'innovation (S2, KUL) et les insectes en santé publique (S3, UNL). Les étudiants acquerront ainsi de solides connaissances théoriques et pratiques en entomologie. Au cours du dernier semestre, les étudiants effectuent un stage de recherche de 6 mois dans le milieu universitaire, associatif ou industriel. Les diplômés de l'ISSF recevront un diplôme conjoint des 4 universités. A noter que durant le premier semestre, les cours se dérouleront essentiellement à l'Université de Tours et 15 jours de travaux pratiques sont prévus à l'Université d'Orléans.

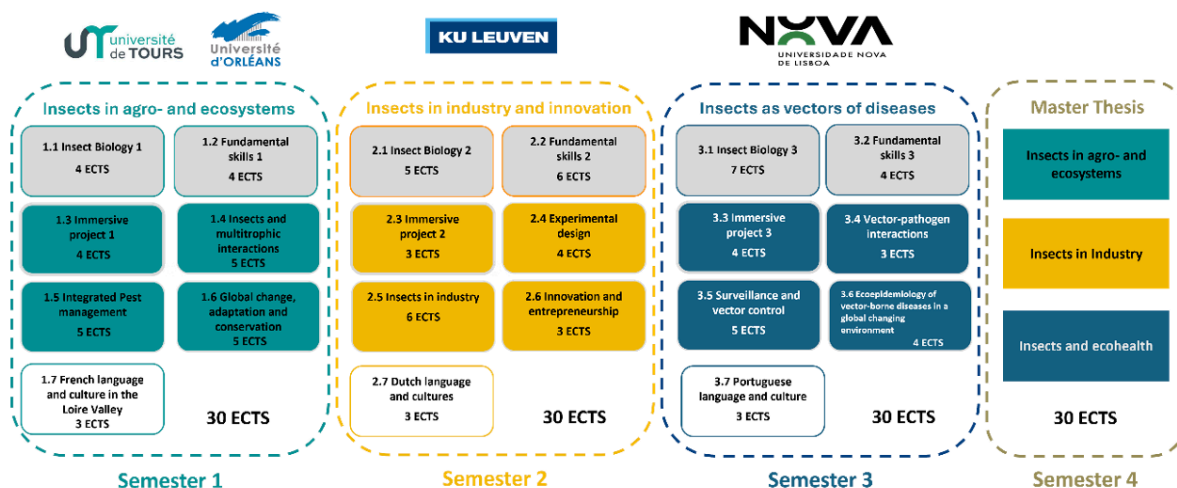


Figure 1 : Parcours de mobilité de EMJM-ISSF et Modules proposés à chaque semestre.

A chaque semestre (S1, S2 et S3) 7 modules sont proposés (voir Figure 1 et Tableau 1) :

Le module 1 correspond à des connaissances générales sur la biologie des insectes (taxonomie, morphologie et physiologie), les modules *Biologie des insectes 1, 2 et 3* ayant été conçus de manière à ce que chaque module s'appuie sur les connaissances acquises dans le module précédent. Plus précisément, le module *Biologie des insectes 1* commencera par une présentation globale de l'ISSF avec une introduction aux Objectifs de Développement Durable et à la manière dont les insectes peuvent apporter des solutions, par des collègues des quatre universités. Le module *Biologie des insectes 1* servira également de cours d'introduction à la taxonomie, à l'anatomie et aux cycles de vie des insectes. Le module *Biologie des insectes 2* sera axé sur la physiologie des insectes (à l'exception de l'immunité des insectes, qui sera abordée dans le module S3). Le module *Biologie des insectes 3* sera consacré spécifiquement à la biologie des arthropodes vecteurs de maladies animales et humaines.

Le module 2 correspond à des compétences fondamentales qui fourniront aux étudiants les outils et les compétences pertinents. Le module *Compétences fondamentales 1* fournira les connaissances et les compétences essentielles en biologie moléculaire, biochimie, génomique, génétique des populations, écologie comportementale et sensorielle, qui sont requises pour plusieurs modules des semestres 1, 2 et 3, y compris le module *Compétences fondamentales 2* sur les bioprocédés et le module *Compétences fondamentales 3* sur les techniques d'entomologie médicale.

Le module 3 correspond à un travail de projet immersif, dans le cadre duquel les étudiants développent leurs propres projets grâce à des infrastructures à la pointe de la technologie disponibles dans chaque établissement d'enseignement supérieur. Le premier projet immersif en S1, correspondant à un cours sur le terrain, est en partie consacré à la conception expérimentale et aux méthodes statistiques de base, qui seront approfondies dans un cours plus avancé sur la conception expérimentale pendant le S2. Les étudiants développeront également un projet de recherche à l'aide de plateformes uniques (l'Observatoire des insectes en canopée forestière) afin d'étudier la biodiversité des insectes dans les forêts tempérées au niveau de la canopée. Le deuxième projet immersif se déroulera dans l'usine pilote de production d'insectes (Insect Pilot Plant), permettant aux étudiants d'être confrontés aux questions liées à l'élevage de masse des insectes et aux applications biotechnologiques. Le troisième projet immersif du S3 permettra aux étudiants de suivre une formation personnalisée en laboratoire ou sur le terrain dans le domaine des insectes vecteurs de maladies animales ou humaines, tout en ayant accès à une installation hautement sécurisée pour la manipulation des insectes vecteurs (In Vivo Arthropod Security Facility). Les étudiants seront ainsi formés aux normes attendues pour la conception et le développement d'expérimentations sur le terrain, d'expériences en laboratoire et d'applications industrielles de recherche et développement.

Les modules 4 à 6 correspondent à des modules approfondis jugés nécessaires pour la spécialité en question. En ce qui concerne le S1, ces modules aborderont (1) les interactions multitrophiques entre les insectes, en particulier les interactions insectes-microbes-plantes, dans différents environnements ; (2) la lutte intégrée contre les ravageurs, y compris la lutte biologique ; (3) l'impact du changement climatique sur la biodiversité des insectes et la manière dont des mesures de conservation peuvent être mises en place. Pour le S2, ces modules correspondent (1) au renforcement des compétences en statistiques ; (2) à l'acquisition de connaissances et d'une vision pratique de la chaîne de valeur industrielle émergente des insectes ; (3) à la formation des étudiants à différents thèmes liés à l'innovation et à l'entrepreneuriat. Au cours du module S3, les modules porteront sur (1) la diversité des facteurs qui influencent la dynamique des maladies à transmission vectorielle ; (2) la surveillance et la lutte contre les vecteurs ; (3) l'épidémiologie des maladies à transmission vectorielle, notamment dans le contexte du changement climatique.

Le module 7 correspond à l'acquisition de compétences linguistiques de base et à la découverte des cultures de chaque pays, ce qui permet de promouvoir le multilinguisme, la sensibilisation interculturelle et de faciliter l'intégration des étudiants. Au S1, ce module sera assuré par le CUEFEE à l'Université de Tours.

Le stage de master (S4) Les 4 universités partenaires seront impliquées dans la coordination du semestre 4. Une liste commune de projets de stages de master émanant des établissements d'enseignement supérieur membres et des partenaires associés sera approuvée et présentée aux étudiants. Les étudiants pourront postuler spontanément auprès d'autres structures universitaires/privées qui ne sont pas (encore) partenaires du programme (sous réserve de validation). La supervision de chaque étudiant pendant le projet de mémoire de master sera assurée par le maître de stage (de l'institution/entreprise proposante) et par un tuteur compétent désigné (personnel enseignant de l'ISSF). L'évaluation des rapports écrits et des soutenances orales des mémoires de master sera effectuée conjointement avec les représentants de tous les établissements d'enseignement supérieur présents sur le campus du coordinateur (UT). Grâce à la rédaction et à la soutenance de leur mémoire

de master, les étudiants atteindront les objectifs académiques et professionnels suivants : esprit critique, compétences professionnelles, aptitudes à la recherche et compréhension du secteur.

Semester 1 : University of Tours and University of Orléans						Jointness	
Module	Course name	Hours	Face-to-face hours	Lecture (L) Tutorial (T) Practical (P)	ECTS	Jointness with modules in preceding/following semesters	Staff teaching mobility
M1.1	Insect Biology 1	112 h	48 h	24 L 24 P	4	All the master program 2.1 Insect Biology 2 2.5 Insects in Industry 3.1 Insect Biology 3 3.2 Fundamental skills 3	UORL KUL UNL
M1.2	Fundamental skills 1	112 h	48 h	38 L 10 T	4	2.2 Fundamental skills 2 2.3 Project work on Insect production 3.2 Fundamental skills 3 3.3 Experimental field or lab project	UORL
M1.3	Immersive project 1 – Field project	112 h	48 h	18 L 30 P	4	All the master program for experimental design 2.4 Experimental Design 3.2 Fundamental skills 2 3.3 Experimental field or lab project	UORL
M1.4	Insects and multitrophic interactions	140 h	48 h	33 L 15 T	5	2.5 Insects in Industry 3.4 Vector-pathogen interactions	UORL
M1.5	Integrated Pest management	140 h	48 h	4 T 16P	5	2.5 Insects in Industry 3.5 Surveillance and vector control	UORL UT
M1.6	Global change, adaptation, and conservation	140 h	48 h	30 L 6 T 12 P	5	3.6 Ecoepidemiology of vector-borne diseases in a global changing environment	UORL
M1.7	French Language and Culture in Loire Valley	84 h	24 h	12 L 12 T	3	all the master programme for intercultural awareness	
		840 h	312 h	183L 47T 82P	30		
Semester 2 : KU Leuven						Jointness	
Module	Course name	Hours	Face-to-face hours	Lectures (L) Tutorial (T) Practicals (P)	ECTS	Jointness with courses in preceding/following semesters	Staff teaching mobility
M2.1	Insect Biology 2	130 h	38 h	26 L 12 P	5	1.1 Insect Biology 1 3.1 Insect Biology 3	
M2.2	Fundamental Skills 2	156 h	52 h	52 L	6	1.2 Fundamental skills 1	
M2.3	Immersive Project 2 - Project Work in Insect Production	84 h	48 h	3 T 45 P	3	1.2 Fundamental skills 1 3.5 Surveillance and vector control	
M2.4	Experimental Design	84 h	28 h	28 L	4	1.3 Field project 3.2 Fundamental skills 3 3.3 Experimental field or lab project	
M2.5	Insects in Industry	168 h	59 h	42 L 2 T 15 P	6	1.4 Insects and multitrophic interactions 1.5 Integrated pest management 3.5 Surveillance and vector control	UT
M2.6	Innovation and Entrepreneurship	84 h	28 h	26 L 2T	3	all the master programme for entrepreneurship culture	
M2.7	Dutch Language and Cultures	84 h	40 h	40 T	3	all the master programme for intercultural awareness	
		790 h	293 h	174L 47T 72P	30		
Semester 3 : NOVA University of Lisbon						Jointness	
Module	Course name	Hours	Face-to-face hours	Lectures (L) Tutorial (T) Practicals (P)	ECTS	Jointness with courses in preceding/following semesters	Staff teaching mobility
M3.1	Insect Biology 3	196 h	66 h	31 L 11 T 24 P	7	1.1 Insect Biology 1 2.1 Insect Biology 2	
M3.2	Fundamental skills 3	112 h	76 h	12 L 12 T 52 P	4	1.2 Fundamental skills 1 1.3 Field project	
M3.3	Immersive Project 3 – Medical Entomology Techniques	112 h	44 h	6 L 8 T 30 P	4	1.2 Fundamental skills 1 1.3 Field project	
M3.4	Vector-pathogen interactions	84 h	29 h	15 L 8 T 6 P	3	1.4 Insects and multitrophic interactions 2.1 Insect Biology 2	
M3.5	Surveillance and vector control	140 h	48 h	32 L 4 T 12 P	5	1.5 Integrated pest management 2.5 Insects in industry	UT- UORL
M3.6	Ecoepidemiology of vector-borne diseases in a global changing environment	112 h	38 h	14 L 6 T 18 P	4	1.6 Global change, adaptation and conservation	
M1.7	Portuguese language and culture	84 h	28 h	18 L 4 T 6 P	3	all the master programme for intercultural awareness	
		840h	329h	128L 53T 148P	30		
Semester 4 : University of Tours, University of Orléans, KU Leuven, NOVA University of Lisbon							
Module	Course name	Duration	ECTS		Jointness		Staff mobility
Master Thesis	Master thesis	6 months	30		Common list of master thesis projects and evaluation		UT UORL KUL UNL

Tableau 1 : Vue d'ensemble des 4 semestres du EMJM-ISSF

L'intervention de l'Université d'Orléans dans le programme pédagogique s'effectuera lors du 1er semestre lors de la présence des étudiants à l'Université de Tours. Ces derniers se rendront à l'Université d'Orléans pour des TP sur un total de deux semaines.

Vue d'ensemble des promotions :

ISSF est lauréat de fonds européens permettant de financer 4 promotions avec 20 étudiants par promotion. La première promotion sera accueillie en septembre 2026 (Figure 2). Le financement européen permet de financer 60 bourses pour les étudiants sur l'ensemble des 4 promotions. Nous prévoyons également d'accueillir 20 étudiants non boursiers.

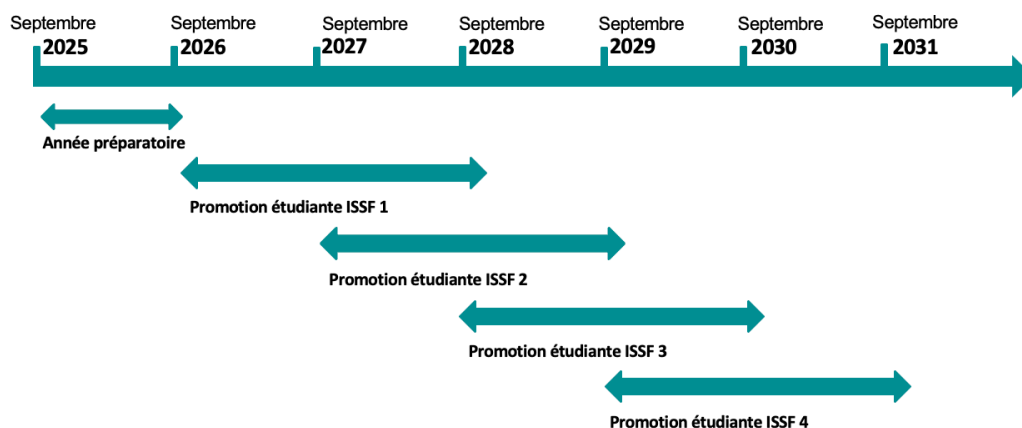


Figure 2 : Représentation dans le temps des 4 promotions ISSF

Des informations plus détaillées sont disponibles dans les annexes :

Annexe 1. Aperçu du programme d'études de l'ISSF

Annexe 2. Caractère conjoint du programme d'études de l'ISSF

Annexe 3. Compétences issues du programme d'études de l'ISSF

Annexe 4. Tableau et informations sur tous les partenaires associés

Résumé du financement du projet et de l'accord de partenariat joint en annexe du projet.

Recettes

Comme indiqué dans les tableaux ci-dessous, ISSF disposera de deux sources de recettes :

1) Recettes provenant du financement de l'UE (3 576 000 euros)

- Contribution de l'UE pour 60 bourses.
- Contribution pour la mise en place et le fonctionnement de la formation.

2) Recettes provenant des étudiants payants (297 000 euros)

Un total de 60 bourses est subventionné. Les 20 étudiants restants seront des étudiants autofinancés.

La stratégie suivante a été élaborée pour les bourses :

- (1) Un nombre plus élevé de bourses est ouvert la première année (18) afin de renforcer l'attractivité lors du lancement de l'ISSF ;
- (2) Le nombre de bourses sera progressivement réduit à 12 lors de la 4e édition, et s'accompagnera de stratégies visant à développer l'autofinancement afin d'évaluer la viabilité du programme.

Le revenu total provenant du financement de l'UE et des étudiants autofinancés s'élèvera donc à 3 873 000 euros.

REVENUS du financement européen				
	euros/mois/étudiant	euros/année/étudiant	euros pour 1 cohorte	euros pour 4 cohortes.
Contribution de l'UE aux bourses (60 étudiants)	1400	16800	504 000	2 016 000
Contribution institutionnelle de l'UE (80 étudiants)	750	9 000	360 000	1 440 000
Contribution de l'UE pour les besoins individuels				120 000
Total 4 admissions				3 576 000

REVENUS provenant des étudiants payants							
Stratégie : (1) Première cohorte = 18 bourses pour l'attraction ; (2) Dernière cohorte = 8 étudiants payant pour la durabilité ; (3) Frais plus bas pour les étudiants de l'UE = pour l'équilibre interculturel							
					Scénario de revenu (€) avec un tiers de l'UE ; 2/3 hors UE		
Scénario avec : UE 1/3 ; NON EU 2/3	Bourses	Bourses supplémentaires provenant des régions ciblées	Bourses totales	Étudiants payants	UE (4500 euros/an)	hors UE (9000 euros/an)	Total
Cohorte 1 - 20	16,00	2,00	18,00	2,00	9 000	18 000	27 000
Cohorte 2 - 20	14,00	2,00	16,00	4,00	9 000	54 000	63 000
Cohorte 3 - 20	11,00	3,00	14,00	6,00	18 000	72 000	90 000
Cohorte 4 - 20	9,00	3,00	12,00	8,00	27 000	90 000	117 000
Toutes les cohortes - 80	50,00	10,00	60,00	20,00	63 000	234 000	297 000
REVENU TOTAL UE + Étudiants payants						3 873 000	

La répartition des fonds s'effectuera selon les modalités indiquées dans le tableau ci-dessous :

Répartition des revenus aux institutions					
	UT	UORL	UNL	KUL	Consortium
Répartition de la contribution de l'UE aux institutions	521192	77672	412968	428168	1440000
Répartition des revenus issus des étudiants payants	107496	16020	85175	88310	297000
Répartition des bourses	2016000				2016000
Répartition des besoins spécifiques	50000	10000	30000	30000	120000
Répartition totale	2694688	103691	528143	546477	3873000

Les dépenses de fonctionnement se répartissent selon les rubriques ci-dessous :

Coûts institutionnels :

- Frais de scolarité : étant donné que l'UT et l'UORL se partageront l'organisation du S1, les deux établissements d'enseignement supérieur se partageront les frais de scolarité. Compte tenu de l'implication du personnel et du fait que la majorité des cours se dérouleront à l'UT, l'UT prendra en charge les frais de scolarité pour trois promotions et l'UORL pour une promotion.
- Coûts d'enseignement : couvrent les frais de personnel, les déplacements, les travaux pratiques en laboratoire, les chercheurs invités, etc.
- Frais généraux : peuvent couvrir les coûts supplémentaires liés aux cours de langue, aux projets immersifs, etc.
- Coûts administratifs et de sélection : l'UT emploiera un responsable administratif à temps plein pour aider à la gestion globale et à la supervision des étudiants. La KUL emploiera un administrateur à temps partiel. L'utilisation de la plateforme de candidature de la KUL et les vérifications d'éligibilité ont un coût de 90 euros par étudiant sélectionné pour l'entretien. Nous prévoyons d'interviewer 80 étudiants.

L'UORL et l'UNL peuvent compter sur les administrateurs locaux fournis par leur établissement d'enseignement supérieur.

- Journées d'accueil : les coûts ont été calculés pour chaque semestre à l'UT, la KUL et l'UNL.
- Frais de déplacement : ils ont été estimés pour les déplacements du personnel pour l'enseignement ou la participation à des réunions.

Coûts pour le consortium :

- Coûts des réunions du comité de sélection : frais de déplacement du personnel pour les entretiens avec les étudiants.
- Coûts d'assurance : pour les étudiants (estimés à 1 090 euros par étudiant).
- Coûts des stages de master : correspondent aux « bench fees » qui peuvent être demandés par les organismes d'accueil. Après consultation des partenaires associés, nous estimons que 5 étudiants par cohorte pourraient être concernés.
- Invités pour le comité externe : frais de déplacement et d'organisation.
- Promotion : coûts du matériel promotionnel et de la participation à des salons internationaux de l'éducation.

Coûts des bourses et des besoins spéciaux :

- Coûts des bourses pour 60 étudiants (2 016 000 euros)
- Coûts supplémentaires pour l'inclusion des étudiants handicapés (120 000 euros).

Le coût total est évalué à 3 835 525 euros.

COÛTS - 20 étudiants - 4 cohortes					
	UT	UORL	UNL	KUL	Consortium
Coûts institutionnels					
Les frais de scolarité	48000	16000	225000	75816	364816
Cours	231008	65000	186300	246000	728308
Frais généraux	28000	4000	32000	32000	96000
Administration	171000			44800	215800
Journées de bienvenue	12000		6000	4000	22000
Frais de déplacement	16000	4000	18900	12000	50900
Sous-total	506008	89000	468200	414616	1477824
Coûts du consortium					
Réunion pour la sélection finale des étudiants				16000	16000
Assurance (1090 € 20 x 4)	87200				87200
Coût du mémoire de master (= € 3000 x 5 x 4)				60000	60000
Évaluateurs externes			5000		5000
Promotion du programme	4000				4000
Sous-total	91200	0	5000	76000	172200
Total des coûts de l'institution + du consortium	597208	89000	473200	490616	1650024
Inflation	17916	2670	14196	14718	49501
Total des coûts de l'institution + du consortium avec inflation	615124	91670	487396	505334	1699525
Bourses (60 étudiants)	2016000				2016000
Coûts supplémentaires pour les besoins individuels	50000	10000	30000	30000	120000
Tous les coûts	2681124	101670	517396	535334	3835525

Solde des recettes

Avec des recettes totales de 3 873 000 euros et des dépenses évaluées à 3 835 525 euros, le solde est positif de 37475 euros. La stratégie consiste à réinvestir cette somme dans une édition suivante de ISSF sous la forme de deux bourses (2 x 18 000 euros).

Montant à percevoir par l'Université d'Orléans et échéancier :

Pour ce programme, l'UO recevra de la part du coordinateur (Université de Tours) un total de **103 691 EUR**. Ce budget alloué à l'UO couvre l'ensemble des coûts de fonctionnement du programme à l'UO.

Ce budget de **103 691 EUR** sera versé à l'UO selon un calendrier dépendant des versements effectués la Commission Européenne à l'Université de Tours.

Répartition du versement des fonds à l'Université d'Orléans :

- 1^{er} préfinancement : *Avril 2026 – 35 068 EUR*
- 2^{ème} préfinancement : *Juillet 2028 – 11 922.65 EUR*
- 3^{ème} préfinancement : *Janvier 2030 – 25 167.64 EUR*
- 4^{ème} préfinancement : *Janvier 2031 – 22 765.70 EUR*
- Paiement final : *Mars 2032 – 8 767.20 EUR*



Erasmus Mundus Joint Master
Insects as Solutions for a Sustainable Future
ISSF

PARTNERSHIP AGREEMENT

The **Université de Tours**, France (hereinafter UT), represented by Prof. Philippe ROINGEARD, President, the **Coordinating Institution** of the consortium,
on the one hand,

and the **Université d'Orléans** (hereinafter UORL), represented by Prof. Eric Blond, President,

and **KU Leuven** (hereinafter KUL), represented by Prof. Dr. Séverine Vermeire, rector,

and **Universidade NOVA de Lisboa** (hereinafter UNL), represented by Prof. Dr. Filomeno Fortes, Director of the NOVA Institute of Hygiene and Tropical Medicine,

recognised partner institutions of the partnership (the "Partners") on the other hand,

HAVE AGREED to the following terms and conditions, including those in the Annexes, which form an integral part of this Partnership Agreement.

Article 1- Objective of the present Partnership Agreement

On the basis of the present Partnership Agreement, the Partners shall contribute together to implement the requirements of the Grant Agreement (Annexe 1).

Article 2 - Entry into force and duration

§1. The Erasmus Mundus Joint Master Programme Insects as Solutions for a Sustainable Future (hereinafter ISSF) shall begin in October 2025 for the preparatory phase and 4 biennial editions will be offered by the Partnership (2026-2028; 2027-2029; 2028-2030; 2029-2031).

§2. The present Partnership Agreement shall enter into force following its signature by all the Partners. It shall be valid as long as the Grant Agreement (Annexe 1) is active. It shall be renewable and modifiable by mutual agreement of the Partners and following any new proposal accepted by the European Education and Culture Executive Agency (EACEA) of the European Commission. All such changes and modifications shall be made in writing and shall be signed by the authorised representative of each Partner.

§3. Should a Partner want to leave the Partnership Agreement before the end of the Grant Agreement, this Partner shall discuss this with the other Partners and shall follow the conditions stipulated in Grant Agreement (Annexe 1). It is not the case if a Partner should leave due to force majeure.

Article 3 - Scope of application and definitions

§1. UT is the Coordinating Institution of the Partnership of 4 HEI (Higher education institutions), who have agreed to organise the Erasmus Mundus Joint Master (EMJM) Programme entitled Insects as Solutions for a Sustainable Future (ISSF), approved and financed by the EACEA within the scope of the Framework Programme Erasmus Mundus.

§2. The Partnership ISSF comprises 4 European partners: UT, UORL, KUL and UNL.

§3. The activities to be developed by the Partnership and approved by the EACEA are fully described in the ISSF Proposal in Annexe 1. All the Partners have approved their respective contribution to the realisation of the described activities in accordance with the rules and policies of the Erasmus Mundus Programme. Any divergence from this Proposal must be approved by all the Partners and, if needed, by the EACEA.

§4. All the responsibilities for the management of the grant attributed to the Partnership by the European commission are formalised in a contract between the EACEA and the Coordinating Institution, namely the Grant Agreement (Annexe 1).

§5. This Partnership Agreement describes the financial rules, other than those specified in the Article 3 §4, approved by the Partners and the Coordinating Institution, and it summarises the responsibilities of each Partner in the Programme.

§6. The ISSF programme shall welcome graduate students from European countries (EU) and from third countries (TC), in accordance with the Grant Agreement (Annexe 1). These categories are defined as follows:

- **Graduate students from a third country** refer to students from a third country other than the member states of the European Economic Area (EEA), the European Free Trade Association (EFTA) and candidate countries applying for membership of the European Union; who have already obtained a first higher education degree; who have not been accepted or who are not already enrolled in another Erasmus Mundus training programme.
- **European graduate students** refer to students from an EEA/EFTA country or a candidate country applying for membership of the European Union; who have already obtained a higher education degree; and who have not been accepted or are not already enrolled in another Erasmus Mundus training programme.

Article 4 - Description of the ISSF programme

§1. The ISSF European Master Programme is designed to provide the understanding, the knowledge and the skills in the fields of **insect sciences** enabling to address **insect management strategies** as well as **insect-based technologies and solutions** that can (1) significantly advance progress toward a sustainable future, (2) meet the United Nations Sustainable Development Goals (SDGs), (3) build resilience in communities worldwide, together with contributing to environmental issues, agriculture, industry, and research within the European Green Deal strategy.

The goals of the ISSF EMJM are to train students that can tackle major issues on:

(1) how insects, through their biodiversity and ecological services, are key to fostering sustainability in both agrosystems and natural ecosystems, making them essential for a resilient and sustainable future.

(2) how insects can help create a more sustainable world through their use for waste management, as feed or food, and to produce other biobased products.

(3) how insects can contribute to a safer environment for humans, animals and plants by developing strategies for managing their beneficial and harmful effects.

ISSF thus offers an invaluable opportunity to prepare a new generation of experts capable of tackling issues like biodiversity loss, food security and public health. Students are enrolled in the ISSF trans-sectorial training programme helping them to address these interconnected societal challenges and arming them with the flexibility to thrive in diverse labour markets and unlock a wide range of career opportunities.

§2. The ISSF Master is an integrated master designed by 4 Higher education institutions (HEIs) recognised in teaching of:

- Insect biology and physiology (UT, UORL, KUL, UNL)
- Insect biodiversity, ecology and conservation (UT, UORL)
- Insects as pests or parasites of plants, animals and humans (UT, UORL, UNL)
- Insects as vectors of plant, animal and human diseases (UT, UORL, UNL)
- Insect pest management, challenges and innovation (UT, UORL, KUL, UNL)
- Insects in bioindustry and as sources of bioinspired products (UT, KUL)
- Innovation and entrepreneurship (KUL)
- Epidemiology of vector-borne diseases (UNL)

§3. Study programme and student mobility pathway

The ISSF Master Programme, designed to propose a comprehensive and innovative programme in insect sciences and how insects can address major global challenges to achieve sustainable development goals, is organised as a **2-year-long programme** (of **4 semesters**, offering **120 ECTS**, delivered by **4 HEIs** in **3 European countries**, with a **unique mobility path per cohort** (see Annexe 1). By combining the excellence and expertise of 4 HEIs and associated partners a curriculum allowing transdisciplinary training of students is proposed, with the first three semesters corresponding to specialisations in each of the major issues involving insect sciences and solutions to global issues and the fourth semester corresponding to a Master thesis internship in institutions worldwide. Insects and environmental and heritage issues addressed during the first semester (30 ECTS) entitled “Insects in agro- and ecosystems” at the University of Tours (UT) and the University of Orléans (UORL) in France. Insects and industrial, technical and innovation issues are the focus of the second semester (30 ECTS) entitled “Insects in industry” at KU Leuven (KUL) in Belgium. Finally, Insects as vectors of animal and human diseases and global health issues are the theme of the third semester (30 ECTS) entitled “Insects and eco-health” at University NOVA of Lisbon (UNL) in Portugal. The fourth semester is dedicated to a 6-month Master thesis project that students can perform worldwide, in the specialty of their interest, in the public and private sectors.

A common semestrial framework has been set up for each semester (see Figure 1):

- **Module 1** corresponds to broad knowledge on insect biology with HEIs addressing different aspects of insect taxonomy, morphology and physiology in a sequential manner.
- **Module 2** corresponds to fundamental skills that will provide the students with the tools and skills relevant to the master programme.
- **Module 3** corresponds to immersive project work, where students develop their own project in the field, in laboratories or in an industrial context thanks to state-of-the-art specialised infrastructures available at each HEI. Students can therefore be trained to the standards that are expected when designing and developing field expeditions, laboratory experiments or industrial research and development applications.
- **Modules 4 to 6** correspond to in-depth modules that are deemed required for the specialty in question.
- **Module 7** corresponds to language courses and discovery of the cultures of each country.

The teaching language for scientific and technical courses is English only. Language courses in French, Dutch and Portuguese are delivered in Modules 7 for the initiation to each language and culture of the relevant country.

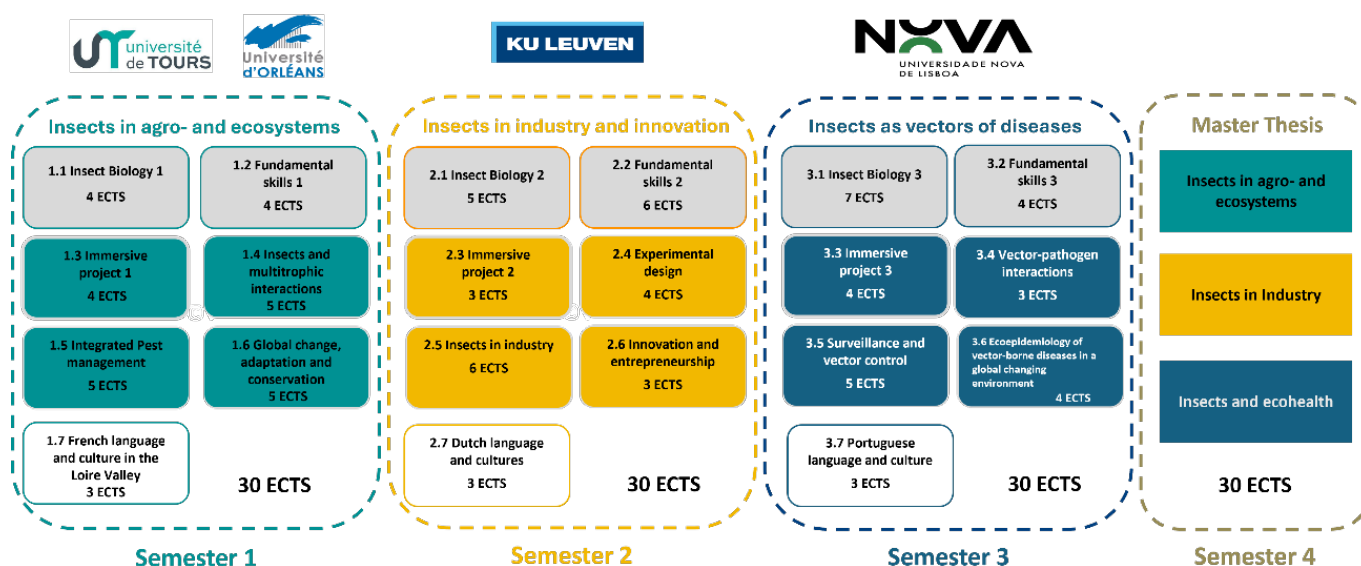


Figure 1: Common semestrial framework

§4 Student selection and enrolment

The selection of students is organised jointly by the ISSF partners. The Selection Committee, comprising the four local coordinators and staff members involved in the selection process from UT, UORL, UNL and KUL, jointly selects the candidates and oversees

the entire selection process, thereby ensuring a fair and impartial selection based on predetermined criteria. The application, selection and admission procedures follow the stages described in detail in section 6 below. In accordance with the General Data Protection Regulation, the processing of personal data shall be conducted in a transparent and lawful manner.

The joint application process and selection and admission procedures shall be publicly available on the ISSF website. All applications must be submitted via the KUL Admission Platform (<https://www.kuleuven.be/english/apply>). The KUL admissions team shall assess all submitted applications to ascertain whether they meet the predetermined admission criteria, which will result in a shortlist of eligible candidates. In the subsequent phase a blind evaluation process shall be employed, wherein the members of the Selection Committee are unable to access the evaluation scores provided by their colleagues. The selection board members are responsible for evaluating each of the two criteria and assigning a score in accordance with the criteria outlined in section 6 below. After the conclusion of the student interviews conducted by the full selection board, a final ranking shall be established during the final Selection Committee meeting. All members of the Selection Committee shall have access to all evaluation data. The distribution of selections (scholarships, selections, reserve lists, exclusions and rejections) is determined by ranking and country of origin of the applicants.

After formal notification of the results, students having confirmed their acceptance into the ISSF programme shall be assisted for VISA application, online registration and enrolment by the respective administrative offices of each HEI.

§5. Evaluation of language proficiency and required scores for certified language exams

The Programme targets graduate students having obtained a first higher education degree (equivalent of 180 ECTS) specialising in life sciences, biology, biochemistry, biotechnology, bioengineering, biosciences or related disciplines. The curriculum must include a sufficient number of credits in the following subjects: mathematics, statistics, biology, microbiology, general chemistry, organic chemistry and physics, with a B2 proficiency in the English language level (according to the Common European Framework of Reference for Languages / CEFR).

All applicants who have not obtained a previous diploma in a programme taught in English in an Anglo-Saxon country must have passed tests, proving their proficiency in English.

The English proficiency test scores accepted are:

- TOEFL: We only accept the TOEFL iBT test (including the Home Edition and Paper Edition). The minimum overall score is 79. We do not accept MyBest™ scores.
- IELTS: We only accept the IELTS Academic test (including the paper, computer and online test). The minimum overall score is 6.5. We do not accept IELTS One Skill Retake™ scores.
- Cambridge English: We only accept the following tests: Cambridge English: Advanced (CAE) (C1) and Cambridge English: Proficiency (CPE) (C2)
- ITACE for students: We only accept the ITACE C1 or the ITACE C2 certificate. Please be aware that these tests can only be taken in Belgium.

Applicants who do not demonstrate the requisite English language skills will not be considered for further evaluation.

§6. Student admission and selection process, establishment of study contracts

The joint application process and selection and admission procedures and requirements shall be publicly available on the ISSF website where they will be explained in detail. The application, selection and admission procedures follow the stages described in the ISSF Proposal (Annexe 1) and are detailed below in accordance with the General Data Protection Regulation. The processing of personal data shall be carried out in a transparent and lawful manner.

Online application (Oct - Feb): The following documents are required:

1. Personal data including nationality and residence history;
2. The preceding programme of study, including the transcripts of the aforementioned programme(s), must be provided in order to substantiate the undergraduate and postgraduate studies undertaken, along with the credits and grades achieved in each individual subject. Bachelor's degrees providing access to the programme include: life sciences, biology, biochemistry, biotechnology, bio-engineering, biosciences or related disciplines. The curriculum must include a sufficient number of credits in the following subjects: mathematics, statistics, biology, microbiology, general chemistry, organic chemistry and physics;
3. University ranking: QS World or THE;
4. Certificate of language proficiency in English: All applicants who have not obtained a previous diploma in a programme taught in English must have passed one of the following tests, proving their proficiency in English: TOEFL iBT test, IELTS Academic

test, Cambridge English or ITACE for students. More details are provided at the KU Leuven Admissions Platform. Applicants who do not demonstrate the requisite English language skills will shall not be considered for further evaluation;

5. CV with reference to relevant experience like internships, projects, papers, international mobility. Using the Europass CV is encouraged;

6. A motivation letter based on responses to a series of personalised questions. Applicants are expected to give a comprehensive summary of their current status, the justification for their application, their interest in our programme, their views on studying in Europe, and their career progression plan;

7. Recommendation letters: minimal one and maximal three letters including author contact details.

Students who are able to complete their Bachelor's studies during the current academic year shall also be permitted to apply. Upon selection, the Bachelor's degree shall be requested. As English is the language of the ISSF programme, all documents must be written in English. Exceptions to this rule are copies of official documents, which must be accompanied by a certified English translation.

Eligibility check (Feb): The KU Leuven admissions team shall evaluate all submitted dossiers for compliance with the requisite criteria for admission. In the event that a dossier is deemed incomplete, the student shall be informed. The KU Leuven admissions team shall then present a shortlist of eligible candidates to the coordinator of the joint ISSF Selection Committee, which is constituted by staff from the UT, UORL, UNL, and KUL.

Pre-evaluation and preliminary ranking (Oct – Feb): The Selection Committee members each assess two criteria and assign a score from 0 to 5 (0: insufficient, 1: sufficient, 2: satisfactory, 3: good, 4: very good, 5: excellent) for each of them. To ensure impartiality, a blind evaluation process shall be applied, whereby board members do not have access to the evaluation scores provided by other members. Averages are calculated for each score. The average scores are then added together, taking into account their weighting factor. The selection criteria and their weighting factor are: 1) Academic record (40%): Candidates must demonstrate excellence at BSc level; 2) CV with reference to relevant experience (20%); 3) Motivation letter (20%); iii) Recommendation letters (10%); 4) University ranking (10%). A preliminary ranking is made based on the total score, with up to 80 students being invited for an online interview;

Interviews and final ranking (first half of March): The interviews shall be conducted jointly by the members of the Selection Committee to further assess the candidates' language skills, CV and motivation. A score is assigned at the end of the interview. The average of this score and the preliminary score shall give the total score which determines the final ranking. Scholarships (taking into account regions of origin) and admission to the programme shall be awarded on the basis of this ranking.

Notification of the applicants (second half of March/beginning of April): Students shall be notified of their selection (scholarship, selected, reserve list, not selected, not admitted) by the coordinator (UT) and given two weeks to confirm or decline their application. Depending on the number of confirmations, students on the reserve list may still be admitted to the programme. After the results are announced, candidates have the opportunity to challenge their non-selection to the External Quality Committee.

The coordinator UT shall inform the EACEA of the selection results.

Student agreements are set up indicating the rights and duties of students during the ISSF programme.

§7. Student assessment, examinations, ECTS credit transfer and equivalences

For each module and throughout all semesters in each partner institution, the assessment methods are clearly indicated in the module descriptions and they are explained to students at the same time as the syllabus at the beginning of each module. For each module, assessments deemed appropriate to verify that the intended learning outcomes are achieved are implemented. Second-chance assessments are systematically proposed for all modules. These assessments can take the form of work submission, situational assessment, project evaluation, final exams in an oral or written form. Students validating module credits and 30 ECTS at each semester shall have achieved the intended learning outcomes.

Common guidelines have been established concerning student evaluation. Local grading systems is used for each course semester. For each semester, a transcript shall be issued giving the list of validated modules with the local grades and the number of associated ECTS credits. To validate a semester, students must achieve over 50% overall (over 10/20) in each module. In case of failure at a module, second-chance examinations shall be organised. If necessary, the HEI of the next mobility period shall be involved in the resit of exams by providing examination rooms and staff for surveillance. In case second-chance examinations must be organised during internship periods, oral examinations by visio-conference or written examinations under visio-surveillance shall be organised. In case of failure of the second-chance examination the student must abandon the programme. However, in case of exceptional circumstances, the Coordinating Office shall report to the Steering Committee who shall decide on a case-by-case basis whether an alternative method of assessment should be implemented or whether the student can validate the academic year in question. For the master thesis semester (30 ECTS), a specific grading system

has been set up. Upon obtaining 120 ECTS credits, students receive a transcript of records with all four universities following the ECTS grading scheme presented in the ISSF Proposal (Annexe 1). A temporary certificate acknowledging credit recognition and bearing the official seal of each HEI shall be delivered until the students are awarded a unique joint diploma and a Europass Diploma Supplement. Language certificates shall be used to document the student's language skills as modules in the languages and cultures are provided at each semester at each Partner HEI. The use of the Europass CV is encouraged. The ISSF degree is recognised as a master's degree enabling students to apply for PhD fellowships and for decision-making positions in the private and public sectors.

§8. Upon completion of the Programme, the graduate students obtain a joint accredited degree entitled "Erasmus Mundus Joint Master in Insects as Solutions for a Sustainable Future" delivered by the 4 HEIs together with a joint diploma supplement, enabling master degree holders to apply for PhD positions or decision-making positions in the public and private sectors.

§9 The Joint Degree to be awarded by the Partners will be issued by UT, as the Coordinating Institution, on the paper of the French National printing house (Imprimerie Nationale Française) along with a Diploma supplement. The Joint Degree certificate will be designed according to the template given in the French Official Bulletin n°16 (16th April 2015). The Joint Degree Certificate will then be sent for successive signature to UORL, KUL and UNL. At the end, UT will ask the rector from the "Orleans-Tours" academy to sign. Finally, the Joint Degree Certificate will be sent to the students and replace the provisional certificate delivered just after the awarding. A draft of the joint degree diploma and of the diploma supplement is presented in Annex 3.

Article 5 - Responsibilities of the Coordinator

§1. The Coordinating Institution (UT) is responsible for the financial management of the Programme.

§2. The Coordinator is the representative of the Coordinating Institution. The Coordinator shall organise the collaboration between the Partners in compliance with the Grant Agreement and the ISSF Proposal (Annexe 1). The coordinator is the link between the EACEA and the Partners and shall see to the effective application of the Proposal.

§3. The Coordinating Institution shall provide the EACEA with all the required reports, regarding the evolution of the project and its good financial management, according to the Grant Agreement.

§4. In particular, the Coordinating Institution shall manage the following activities:

- the overall coordination and management of the programme, including the programme promotion and services to students,
- the financial management of the programme,
- the distribution of the funds among the Partners, according to the rules set by the Consortium, and
- the monthly payments of scholarships to beneficiary students.

Article 6 - Responsibilities of the Partners (including the Coordinating Institution)

§1. The Partners shall be fully responsible for their share of the ISSF programme's activities, as stated in the Proposal (Annexe 1), in compliance with the principles stated in the Grant Agreement (Annexe 1). Each Partner shall carry out the work in such a way that no act or omission in relation thereto shall constitute, cause, or contribute to any breach or non-compliance by the Coordinating Institution or by any other Partner of any of their respective obligations mentioned in the Grant Agreement.

§2. The Partners shall provide the Coordinator in due time with the information necessary to prepare the reports requested by the EACEA (Annexe 1). The Partners shall be aware that the funds allocated to each Partner are subjected to the timely submission of the financial reports by the Partners to the Coordinating Institution, and then by the Coordinating Institution to the EACEA. First EACEA payments are pre-financing payments, up to 90% of the total funds (Annexe 1). Final payment is within 90 days following the submission of the financial report – if the latter is approved by the EACEA (Annexe 1).

§3. Each Partner shall organise and execute the ISSF programme activities in their own institution, as stated in the ISSF Proposal (Annexe 1).

§4. For each Partner, a local Coordinator, designated in the ISSF Proposal (Annexe 1), shall organise and coordinate with their collaborator(s) the activities and the organisation of the ISSF programme in the Partner institution. They are the link between the Partner institution and the Coordinator.

§5. The Partners are assigned specific tasks, as specified in the ISSF Proposal (Annexe 1), that they have to manage and supervise in compliance with the decision of the Consortium.

Article 7 – Management of the programme

§1. The management of the ISSF programme shall be based on a shared and multi-level organisation comprising a Coordination Office (CO), a Steering Committee (StrCo), a Selection Committee (SelCo), Local Committees (LoCo) involved in Internal Evaluation and an External Quality Committee (EQCo). The responsibilities of these committees are explained below.

§2. In addition, the ISSF programme is implemented through the following 2 Work-Packages (WP):

- **WP1:** management and implementation of the master programme (including coordination, curriculum implementation, promotion, impact, sustainability at social, financial and environmental levels, and dissemination), coordinated by UT,
- **WP2:** Selection of students, attribution of scholarships, selection and attribution of internships, student supervision, coordinated by KUL.

§3. The Coordination Office (CO)

The Coordination Office (CO), headed by UT and UORL, includes the four Local Programme Coordinators and the Local Administrative Managers. The CO is both the daily decision-making committee and the executive body, responsible for managing and running the ISSF programme with the appropriate human resources, finances, equipment, and infrastructure. The CO shall report annually to the External Quality Committee on the global running of the programme (academic, social and environmental report, management, financial management and activity plan for the upcoming year), and on data concerning student performance and employability. The CO shall report to the StrCo strategic decisions such as the inclusion of new partners, sustainability or curriculum set up. The CO shall convene regularly, at least every 4 months through online or face to face meetings, but additional sessions shall be organised if needed on any matter related to training, research, administration, finance or student-related issues.

§4. The Steering Committee (StrCo)

The Steering Committee (StrCo) shall oversee the overall strategy, policies and financial management of the programme. It shall gather decisions from all the other committees and ensure correct implementation of procedures and corrective actions. It is headed by UT and composed of the coordinators of each university, two student representatives (one per cohort) and two representatives of the associated partners (from the public and private sector). The StrCo shall meet at least once a year and an annual progress report will be drawn up. Supplemental meetings can be organised upon member request, especially for quality follow-up and corrective actions.

§5. The Selection Committee (SelCo)

The Selection Committee (SelCo) handles applicant screening, ranking, selection and scholarship allocation (WP2). It is headed by KUL and composed of at least two members per full partner along with 4 academic associates. The committee shall meet annually for the selection process and for applicant interviews. Results of the selection process and scholarship awards are addressed to the CO. The SelCo reports to the EQCo for evaluation of the process.

The SelCo shall also be involved in the process of gathering and selecting suitable master thesis projects and allocating master thesis projects to students after a selection process. The process and results of the allocation of master thesis projects to students are addressed to the LoCos and reported to the EQCo.

§6. The Local Committees (LoCo)

Three Local committees (LoCo) are formed for the local organisation of each semester (semester 1: UT-UORL; semester 2: KUL and semester 3: UNL). They are headed by the Local Programme Coordinators and are composed of the Local Administrative Managers and local staff (heads of modules). These committees are involved in the day-to-day running of the semesters. They shall convene at least twice during the semester. Local Committees are also involved in the evaluation by students and professors of each module and semester, resulting in the production by the head of each LoCo of a semestrial quality report that is transmitted to the EQCo. Each LoCo can address the CO for any remarks and questions.

The LoCo shall also ensure the follow-up of students during the 6-month master thesis period (semester 4) by nominating for each HEI a master thesis internship coordinator, who shall in turn nominate for each student under his/her supervision a

promoter from the corresponding HEI. The Master thesis internship coordinator shall head the evaluation by students of the master thesis period and of the global 2-year programme survey. The results of the survey concerning master thesis periods are addressed to the SelCo and reported to the EQCo together with the global 2-year programme survey.

§7. The External Quality Committee (EQCo)

The External Quality Committee (EQCo) chaired by UNL, comprises four student delegates (two per cohort), four consortium members from each HEI and four external experts representing different sectors (academia, industry, government bodies, non-governmental organisations, citizen associations, etc.). The EQCo is responsible for assessment of all processes in the ISSF programme including student selection procedures and master thesis project selection and attribution (reported by the SelCo), semestrial and global programme evaluations, student performance and employability (reported by the LoCos). The EQCo shall evaluate the academic, social and environmental report, management and financial management and activity plan addressed by the CO. The EQCo shall therefore evaluate the quality of the entire ISSF programme, promote good practices and propose evolution if needed. The EQCo shall meet once a year and address a report to the CO and report to the StrCo.

Article 8 - Distribution and use of funds

§1. The EACEA, which acts under delegated authority from the European Commission, funds the Consortium annually. The funding referenced in the Grant Agreement (Annexe 1) is paid to UT, as the Coordinating Institution in three tranches in accordance with the terms of the Grant Agreement. UT, as the Coordinating Institution, shall inform each Partner as soon as possible of the information required in order to prepare the technical and financial reports. These reports need to be sent to the EACEA in accordance with the Grant Agreement in order to request each financing instalment from the EACEA.

§2. UORL, KUL and UNL shall provide UT, as the Coordinating Institution, with reasonable financial reports and evidence of expenditure incurred in each payment period in order to allow UT to submit the relevant pre-financing progress reports to the EACEA in accordance with the Grant Agreement.

§3. The students enrolled in the ISSF programme that are not scholarship holders shall pay the tuition fees. The annual rate is determined for the duration of the Partnership Agreement as 9000 euros for TC students and 4500 euros for EU students.

§4. The tuition fees shall be paid to the Coordinating Institution.

§5. If an enrolled scholarship holder does not participate in all or part of the programme and is not replaced by another student, the Coordinating Institution shall return all or part of the scholarship to the EACEA. If requested by the EACEA, the Partners shall forfeit funds due, and/or shall return funds to the Coordinating Institution, including those corresponding to the tuition fees if the enrolled student never comes to the Partner institution.

§6. The funds and the tuition fees shall be used to cover the expenses for the organisation and the logistics of the ISSF programme. They shall be distributed among the Partners, including the Coordinating Institution, according to the initial budget presented in Tables 1-4.

The ISSF consortium is committed to implementing effective monitoring and management of the financial elements. Financial management is centralised at UT and the budget shall be redistributed to the other members based on the costs presented in Tables 1-3. All subsequent decisions regarding the budget shall be discussed by the Coordinating Office and implemented following the Steering Committee annual meeting.

The budget plan, that considers the first edition of the ISSF programme and sustainability of a following edition, has been collectively designed by the consortium to ensure an ambitious cost-effective ISSF programme and to envisage the sustainability of the Programme in case the following edition is no longer supported by EU funding.

Income (Table 1)

As indicated in the following table there are two sources of income for the first edition of the ISSF Programme:

Income from EU funding (3 576 000 euros)

- EU contribution for 60 scholarships.
- EU funding for institutional contribution: we will select 20 students / cohort (80 students in total).
- EU funding for individual needs: we are dedicated to foster inclusion for special needs students.

Income from paying students (297 000 euros)

In the first edition the consortium shall apply for 50 scholarships and 10 extra scholarships from targeted regions to foster inclusion and diversity. The remaining 20 students shall be paying students.

The following strategy has been developed for paying students:

- (1) The consortium proposes to have a higher number of scholarships the first year (18 out of 20) to enhance attractivity during the launching of ISSF.
- (2) The number of scholarships shall be progressively reduced to 12 in the 4th. edition, accompanied by strategies to develop self-funding to evaluate programme sustainability.
- (3) The consortium proposes lower tuition fees for EU students (4500 euros/year) to attract these students thereby ensuring intercultural balance with non-EU students. The target is to attract one third of EU paying students. Non-EU students shall pay 9000 euros/year.

The total income from EU funding and paying students shall therefore be of 3 873 000 euros.

INCOME from EU funding							
	euros/month/student	euros/year/student	euros for 1 cohort	euros for 4 cohorts.			
EU contribution for scholarships (60 students)	1400	16800	504 000	2 016 000			
EU Institutional contribution (80 students)	750	9 000	360 000	1 440 000			
EU Contribution for individual needs				120 000			
Total 4 intakes				3 576 000			
INCOME from paying students							
Strategy: (1) First cohort = 18 scholarships for attractivity; (2) Last cohort = 8 paying students for sustainability; (3) Fees lower for EU students = for intercultural balance							
Income (€) Scenario with 1/3 EU; 2/3 Non EU							
Scenario with : EU 1/3; NON EU 2/3	Scholarships	Extra scholarships from targeted regions	Total scholarships	Paying students	EU (4500 euro/year)	no n-EU (9000 euro/year)	Total
Cohort 1 - 20	16,00	2,00	18,00	2,00	9 000	18 000	27 000
Cohort 2 - 20	14,00	2,00	16,00	4,00	9 000	54 000	63 000
Cohort 3 - 20	11,00	3,00	14,00	6,00	18 000	72 000	90 000
Cohort 4 - 20	9,00	3,00	12,00	8,00	27 000	90 000	117 000
All cohorts - 80	50,00	10,00	60,00	20,00	63 000	234 000	297 000
TOTAL INCOME EU + Paying students			3 873 000				

Table 1: Total income from 4 cohorts from EU funding and paying students

Fees (Table 2)

As indicated in the following table there shall be the following costs for the ISSF programme:

Total institutional course costs:

- Tuition fees: Of note, because UT and UORL shall be sharing the organisation of S1, the two HEIs shall share tuition fees. Considering staff implication and that most courses are based at UT, UT shall pay tuition fees for 3 cohorts and UORL for one cohort.
- Teaching costs: cover staff costs, field trips, laboratory practical classes, invited scholars...etc...
- Overhead costs: can cover extra language classes costs, extra costs for immersive projects...etc...
- Administration and selection costs: UT shall employ a full-time administrative manager to assist in global management and supervision of students. KUL shall employ a part-time administrator. The use of the KUL application platform and eligibility checks have a cost of 90 euros per submitted application. The consortium shall interview up to 80 students. UORL and UNL can rely on local administrators provided by their HEI.
- Welcome days: Costs have been calculated for each semester at UT, KUL and UNL.
- Travel costs: have been estimated for the travel of staff for teaching or meetings attendance.

Total consortium costs:

- Selection committee meeting costs: staff travel for the interviews of students.
- Insurance costs for students (estimated at 1090 euros/ student).
- Master thesis internship costs: correspond to "bench fees" that can be required by organisms. The consortium estimated that 5 students per cohort (3000 euro/student) could be confronted with this cost (based on associated partner feedback).
- Invited guests for external quality committee: Travel and organisational costs.
- Promotion: costs for promotional material and attendance to international education fairs.

Costs for scholarships and special needs

- Scholarship costs for 60 students (2016000 euros)
- Additional needs costs for inclusion of students with disabilities (120000 euros).

Total costs are evaluated at 3 832 641 euros

COSTS - 20 students - 4 cohorts					
	UT	UORL	UNL	KUL	Consortium
Institutional costs					
Tuition fees	48000	16000	225000	75816	364816
Courses	231008	65000	186300	246000	728308
Overhead	28000	4000	32000	32000	96000
Administration	171000			44800	215800
Welcome days	12000		6000	4000	22000
Travel costs	16000	4000	18900	12000	50900
Subtotal	506008	89000	468200	414616	1477824
Consortium costs					
Meeting for final student selection				16000	16000
Insurance (€ 1090 20 x 4)	87200				87200
Master thesis costs (= € 3000 x 5 x 4)				60000	60000
External evaluators			5000		5000
Leaflets, Programme promotion	4000				4000
Subtotal	91200	0	5000	76000	172200
Total Institution + Consortium costs	597208	89000	473200	490616	1650024
Inflation	17916	2670	14196	14718	49501
Total institution + Consortium costs with inflation	615124	91670	487396	505334	1699525
Scholarships (60 students)	2016000				2016000
Additional costs for individual needs	50000	10000	30000	30000	120000
All costs	2681124	101670	517396	535334	3835525

Table 2: Total costs for 4 cohorts.

Distribution of contributions and Balance (Table 3)

With a total income of 3 873 000 euros and total costs evaluated at 3 835 525 euros, the balance is positive with 37475 euros (coming from the paying students). The consortium's strategy is to reinvest this sum in a following edition by providing 2 scholarships (2x 18000 euros).

Distribution of income to institutions and Balance					
	UT	UORL	UNL	KUL	Consortium
Distribution of EU contribution to institutions	521192	77672	412968	428168	1440000
Distribution of income from paying students	107496	16020	85175	88310	297000
Distribution of scholarships	2016000				2016000
Distribution of special needs	50000	10000	30000	30000	120000
Total distribution	2694688	103691	528143	546477	3873000

Balance Total income - Total costs	13564	2021	10747	11143	37475
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Table 3: Distribution of income to institutions and Balance of the first edition of the ISSF Programme.

§8. UT as the Coordinating Institution shall distribute the allocated funds to the Partners in three tranches. The maximum funds allocated per each Partner and the payment plan are defined below (**Article 8 §9-11**) as well as in **Annexe 3**.

The maximum allocated funds for each Partner are calculated based on the provisional numbers of scholarship holders and paying students for the duration of the programme, as indicated in the **Income Table 1 (Article 8 §7)**. The funds collected from tuition fees may vary depending on the actual number of paying students recruited for each cohort.

§9. As indicated in the Budget, a maximum amount of **103 692 euros (the "UORL Funds")** shall be payable by UT to UORL, corresponding to 87 672 euros from the EU funding and 16 020 euros maximum collected in tuition fees from paying students. This shall be payable in three tranches as follows:

Tranche 1: 2025-2029 - Funds in this tranche will correspond to 50% of total UORL EU funding and 1st cohort and 1st half of the 2nd cohort funds from paying students.

- The maximal sum of **46 991,45 euros** is allocated to UORL as the 2025-2029 UORL Funds, corresponding to 43 836 euros from the Pre-financing payment by EACEA and a maximum of 3 155,45 euros from paying students.
- A first pre-financing payment of **35 068,80 euros**, equivalent to 80% of the portion of the 2025-2029 UORL Funds from the EU funding, shall be made by UT to UORL in **April 2026**.
- A second pre-financing payment of **11 922,65 euros** corresponding to 20% of the 2025-2029 UORL Funds from the EU funding (8 767,20 euros) and from tuition fees (1st cohort and 1st half of the 2nd cohort) (3 155,45 euros) shall be paid by UT within 30 days after UT has received the relevant formal pre-financing request submitted by UORL (subject to UORL having used at least 70% of the previous pre-financing instalment and the balance of the previous pre-financing instalment paid by UT to UORL).
- The second payment shall not be made by UT to UORL before **July 2028**.
- Each pre-financing payment request submitted by UORL shall be accompanied with financial reports, justifying the payment being requested and with the certification by the UORL accounting agency.
- UORL shall provide UT with all financial reports and evidence of expenditure incurred in this period (Tranche 1) by **June**

2029 in order to allow UT to submit the pre-financing progress report to the EACEA in accordance with the Grant Agreement.

Tranche 2: 2029-2031 - Funds in this tranche will correspond to 40% of total UORL EU funding and the 2nd half of the 2nd cohort funds and 3rd and 4th cohort funds from paying students.

- The maximal sum of **47 933,35 euros** is allocated to UORL as the 2029-2031 UORL Funds, corresponding to 35 068,80 euros from the Additional pre-financing payment by EACEA and a maximum of 12 864,55 euros from paying students.
- A third pre-financing payment of **25 167,64 euros** equivalent to 60% of the portion of the 2029-2031 UORL Funds from the Additional pre-financing payment by EACEA (21 041,28 euros) and from tuition fees (2nd half of the 2nd cohort and 1st half of the 3rd cohort) (4 126,36 euros).
- Funds shall be paid by UT to UORL within 30 days after UT has received the relevant formal pre-financing payment request submitted by UORL (subject to UORL having used at least 70% of the previous pre-financing instalment and the balance of any earlier pre-financing instalment paid by UT to UORL).
- The third pre-financing payment shall not be made by UT to UORL before **January 2030**.
- A fourth pre-financing payment of **22 765,70 euros** equivalent to 40% of the portion of the 2029-2031 UORL Funds from the Additional pre-financing payment by EACEA (14 027,52 euros) and from tuition fees (2nd half of the 3rd cohort and the 4th cohort) (8 738,18 euros).
- Funds shall be paid by UT to UORL within 30 days after UT has received the relevant formal pre-financing payment request submitted by UORL (subject to UORL having used at least 70% of the previous pre-financing instalment and the balance of any earlier pre-financing instalment paid by UT to UORL).
- The fourth pre-financing payment shall not be made by UT to UORL before **January 2031**.
- **Each** pre-financing payment request submitted by UORL shall be accompanied with financial reports, justifying the payment being requested and with the certification by the UORL accounting agency.
- UORL shall provide UT with all financial reports and evidence of expenditure incurred in this period (Tranche 2) by **15 September 2031** in order to allow UT to submit the final report to the EACEA in accordance with the Grant Agreement.

Tranche 3: 2032 - Funds in this tranche will correspond to 10% of total UORL EU Funding

- Final payment of **8 767,20 euros**, corresponding to 10% of the UORL funds from the EU funding, shall be made by UT to UORL after the validation of final report by the EACEA.
- The final payment shall not be made by UT to UORL before **March 2032**.

§10. As indicated in the Budget, a maximum amount of **528 143 euros (the "UNL Funds")** shall be payable by UT to UNL, corresponding to 442 968 euros from the EU funding and 85 175 euros maximum collected in tuition fees from paying students. This shall be payable in three tranches as follows:

Tranche 1: 2025-2029 - Funds in this tranche will correspond to 50% of total UNL EU funding and 1st cohort and 1st half of the 2nd cohort funds from paying students.

- The maximal sum of **238 260,89 euros** is allocated to UNL as the 2025-2029 UNL Funds, corresponding to 221 484 euros from the Pre-financing payment by EACEA and a maximum of 16 776,89 euros from paying students.
- A first pre-financing payment of **99 667,80 euros**, equivalent to 45% of the portion of the 2025-2029 UNL Funds from the EU funding, shall be made by UT to UNL in **April 2026**.
- A second pre-financing payment of **138 593,09 euros** corresponding to 55% of the 2025-2029 UNL Funds from the EU funding (121 816,20 euros) and from tuition fees (1st cohort and 1st half of the 2nd cohort) (16 776,89 euros) shall be paid by UT within 30 days after UT has received the relevant formal pre-financing request submitted by UNL (subject to UNL having used at least 70% of the previous pre-financing instalment and the balance of the previous pre-financing instalment paid by UT to UNL).
- The second payment shall not be made by UT to UNL before **July 2028**.
- Each pre-financing payment request submitted by UNL shall be accompanied with financial reports, justifying the payment being requested and with the certification by the UNL accounting agency.
- UNL shall provide UT with all financial reports and evidence of expenditure incurred in this period (Tranche 1) by **June 2029** in order to allow UT to submit the pre-financing progress report to the EACEA in accordance with the Grant Agreement.

Tranche 2: 2029-2031 - Funds in this tranche will correspond to 40% of total UNL EU funding and the 2nd half of the 2nd cohort funds and 3rd and 4th cohort funds from paying students.

- The maximal sum of **245 585,31 euros** is allocated to UNL as the 2029-2031 UNL Funds, corresponding to 177 187,20 euros from the Additional pre-financing payment by EACEA and a maximum of 68 398,11 euros from paying students.
- A third pre-financing payment of **128 251,34 euros** equivalent to 60% of the portion of the 2029-2031 UNL Funds from the Additional pre-financing payment by EACEA (106 312,32 euros) and from tuition fees (2nd half of the 2nd cohort and 1st half of the 3rd cohort) (21 939,02 euros).
- Funds shall be paid by UT to UNL within 30 days after UT has received the relevant formal pre-financing payment request submitted by UNL (subject to UNL having used at least 70% of the previous pre-financing instalment and the balance of any earlier pre-financing instalment paid by UT to UNL).
- The third pre-financing payment shall not be made by UT to UNL before **January 2030**.
- A fourth pre-financing payment of **117 333,97 euros** equivalent to 40% of the portion of the 2029-2031 UNL Funds from the Additional pre-financing payment by EACEA (70 874,88 euros) and from tuition fees (2nd half of the 3rd cohort and the 4th cohort) (46 459,09 euros).
- Funds shall be paid by UT to UNL within 30 days after UT has received the relevant formal pre-financing payment request submitted by UNL (subject to UNL having used at least 70% of the previous pre-financing instalment and the balance of any earlier pre-financing instalment paid by UT to UNL).
- The fourth pre-financing payment shall not be made by UT to UNL before **January 2031**.
- Each pre-financing payment request submitted by UNL shall be accompanied with financial reports, justifying the payment being requested and with the certification by the UNL accounting agency.
- UNL shall provide UT with all financial reports and evidence of expenditure incurred in this period (Tranche 2) by **15 September 2031** in order to allow UT to submit the final report to the EACEA in accordance with the Grant Agreement.

Tranche 3: 2032 - Funds in this tranche will correspond to 10% of total UNL EU Funding

- Final payment of **44 296,80 euros**, corresponding to 10% of the UNL funds from the EU funding, shall be made by UT to UNL after the validation of final report by the EACEA.
- The final payment shall not be made by UT to UNL before **March 2032**.

§11. As indicated in the Budget, a maximum amount of **546 478 euros (the "KUL Funds")** shall be payable by UT to KUL, corresponding to 458 168 euros from the EU funding and 88 310 euros maximum collected in tuition fees from paying students. This shall be payable in three tranches as follows:

Tranche 1: 2025-2029 - Funds in this tranche will correspond to 50% of total KUL EU funding and 1st cohort and 1st half of the 2nd cohort funds from paying students.

- The maximal sum of **246 478,39 euros** is allocated to KUL as the 2025-2029 KUL Funds, corresponding to 229 084 euros from the Pre-financing payment by EACEA and a maximum of 17 394,39 euros from paying students.
- A first pre-financing payment of **183 267,20 euros**, equivalent to 80% of the portion of the 2025-2029 KUL Funds from the EU funding, shall be made by UT to KUL in **April 2026**.
- A second pre-financing payment of **63 211,19 euros** corresponding to 20% of the 2025-2029 KUL Funds from the EU funding (45 816,80 euros) and from tuition fees (1st cohort and 1st half of the 2nd cohort) (17 394,39 euros) shall be paid by UT within 30 days after UT has received the relevant formal pre-financing request submitted by KUL (subject to KUL having used at least 70% of the previous pre-financing instalment and the balance of the previous pre-financing instalment paid by UT to KUL).
- The second payment shall not be made by UT to KUL before **July 2028**.
- Each pre-financing payment request submitted by KUL shall be accompanied with financial reports, justifying the payment being requested and with the certification by the KUL accounting agency.
- KUL shall provide UT with all financial reports and evidence of expenditure incurred in this period (Tranche 1) by **June 2029** in order to allow UT to submit the pre-financing progress report to the EACEA in accordance with the Grant Agreement.

Tranche 2: 2029-2031 - Funds in this tranche will correspond to 40% of total KUL EU funding and the 2nd half of the 2nd cohort funds and 3rd and 4th cohort funds from paying students.

- The maximal sum of **254 182,81 euros** is allocated to KUL as the 2029-2031 KUL Funds, corresponding to 183 267,20 euros from the Additional pre-financing payment by EACEA and a maximum of 70 915,61 euros from paying students.
- A third pre-financing payment of **132 706,84 euros** equivalent to 60% of the portion of the 2029-2031 KUL Funds from the Additional pre-financing payment by EACEA (109 960,32 euros) and from tuition fees (2nd half of the 2nd cohort and 1st half of the 3rd cohort) (22 746,52 euros).
- Funds shall be paid by UT to KUL within 30 days after UT has received the relevant formal pre-financing payment request submitted by KUL (subject to KUL having used at least 70% of the previous pre-financing instalment and the balance of any earlier pre-financing instalment paid by UT to KUL).
- The third pre-financing payment shall not be made by UT to KUL before **January 2030**.
- A fourth pre-financing payment of **121 475,97 euros** equivalent to 40% of the portion of the 2029-2031 KUL Funds from the Additional pre-financing payment by EACEA (73 306,88 euros) and from tuition fees (2nd half of the 3rd cohort and the 4th cohort) (48 169,09 euros).
- Funds shall be paid by UT to KUL within 30 days after UT has received the relevant formal pre-financing payment request submitted by KUL (subject to KUL having used at least 70% of the previous pre-financing instalment and the balance of any earlier pre-financing instalment paid by UT to KUL).
- The fourth pre-financing payment shall not be made by UT to KUL before **January 2031**.
- Each pre-financing payment request submitted by KUL shall be accompanied with financial reports, justifying the payment being requested and with the certification by the KUL accounting agency.
- KUL shall provide UT with all financial reports and evidence of expenditure incurred in this period (Tranche 2) by **15 September 2031** in order to allow UT to submit the final report to the EACEA in accordance with the Grant Agreement.

Tranche 3: 2032 - Funds in this tranche will correspond to 10% of total KUL EU Funding

- Final payment of **45 816,80 euros**, corresponding to 10% of the KUL funds from the EU funding, shall be made by UT to KUL after the validation of final report by the EACEA.
- The final payment shall not be made by UT to KUL before **March 2032**.

§12. UT, as the Coordinating Institution, shall transfer the allocated funds to KUL, KUL and UNL to the relevant bank accounts as specified in Annexe 4, or to another bank account as per any subsequent Partner request.

Article 9 - Liability

§1. Each Partner shall be fully liable toward the other Partners and to third parties for any loss, destruction, damage or injury resulting from its own actions in the execution of this Partnership Agreement. Notwithstanding the foregoing, a Partner shall not be liable for more than once its share (of the total project budget), except in the case of wilful misconduct or gross negligence.

§2. Each Partner shall be liable exclusively to the Coordinating Institution for any breach or non-compliance as described in Article 6 of this Partnership Agreement. If the Coordinating Institution must pay damages or penalties to the EACEA for a breach or non-compliance by a Partner, the Coordinating Institution shall be entitled to full reimbursement from the said Partner.

§3. Each Partner shall be fully responsible for the execution of any relevant part of the Partnership Agreement, as well as for the Insurance and Social Security of its staff involved in the master's programme.

Article 10 - Legal Provisions and Privacy Policy

§1 The Partnership Agreement must fully comply with the rules defined in the Grant Agreement (Annexe 1). In the event of a dispute concerning the interpretation and application of this agreement, the parties will endeavour to reach an amicable agreement by direct conciliation. They may decide to have recourse to legal conciliation in the country of the defendant institution in order to reach an agreement. Any dispute relating to this agreement between the Partners shall be subject to the jurisdiction of the country of the defendant.

§2. **Data protection:** The collection, processing and transfer of the data are subject to the European Regulation 2016/679, known as the General Data Protection Regulation, on the protection of individuals with regard to the processing of personal data and on the free movement of such data (hereinafter "GDPR"). Any transfer of personal data may only occur after the conclusion of a

specific personal data transfer agreement signed between the parties, based on the standard data protection clauses adopted by the European Commission.

Individuals whose personal data is collected have the right to access, rectify and delete information concerning them for legitimate reasons. These rights can be exercised by sending a letter or an e-mail to:

For UT:

Direction des affaires juridiques et du patrimoine
60, rue du Plat d'Étain, 37020 Tours Cedex 1, France
dpo@univ-tours.fr

For UORL:

Déléguée à la protection des données
Julienne NEUHAUS
Château de la Source, Avenue du Parc Floral, BP 6749 - 45067 Orléans Cedex 2 - France
dpo@univ-orleans.fr

For KUL:

Data Protection Officer for General Processing of Personal Data
Valérie VERBIST
Legal Department
Krakenstraat 3 - box 5516, 3000 Leuven, Belgium
valerie.verbist@kuleuven.be

For UNL:

Data Protection Office
Campolide Campus, 1099-085 Lisbon, Portugal
dpo@unl.pt

Individuals also have the right to lodge a complaint with the French Data Protection Authority (Commission Nationale de l'Informatique et des Libertés - CNIL) in France, with the Belgian Data Protection Authority (Autorité de protection des données/ Gegevensbeschermingsautoriteit) in Belgium or with the Portuguese supervisory authority (Comissão Nacional de Proteção de Dados) in Portugal.

§3. Termination: The present agreement shall be legally binding following the signature by the partners and the approval by the competent authorities. It is valid for a period of 6 years, unless terminated by either party giving a six months' written notice. In any event, it may not be terminated before the end of an academic year. In the event of renewal, it shall be submitted for approval to the competent authorities, in accordance with current legislation.

Any modification of the present text, decided by the contracting parties, shall be the subject of an amendment signed by the parties and must be submitted for approval by the competent authorities, where applicable.

Article 11 – Bank details

§1. The Coordinating Institution shall transfer the funds to the bank accounts specified in Annexe 4.



The following **Annexes** form part of the present Partnership Agreement:

Annexe 1: Grant Agreement and ISSF Proposal

Annexe 2: Joint diploma certificate and Diploma Supplement

Annexe 3: Distribution of allocated funds

Annexe 4: Financial identification forms for partner institutions

Signatures and Stamps

Done in 4 originals in English.

For Université de Tours (UT),

Date, stamp, and signature of the legal representative, Prof. Philippe ROINGEARD, President of the Université de Tours

For Université d'Orléans (UORL),

Date, stamp, and signature of the legal representative, Prof. Eric Blond, President,

For KU Leuven (KUL),

Date, stamp, and signature of the legal representative, Prof. Dr. Séverine Vermeire, Rector,

For Universidade NOVA de Lisboa (UNL),

Date, stamp, and signature of the legal representative, Prof. Dr. Filomeno Fortes, Director of the NOVA Institute of Hygiene and Tropical Medicine





MASTER

Délivré en partenariat international par l'Université de Tours avec l'Université d'Orléans, KU Leuven et Universidade NOVA de Lisboa

MASTER

Délivré en partenariat international par l'Université d'Orléans avec l'Université de Tours, KU Leuven et Universidade NOVA de Lisboa

MASTER

Awarded jointly in the context of an international partnership between Université de Tours, Université d'Orléans, KU Leuven and Universidade NOVA de Lisboa

CARTA de CURSO

Elaborada em parceria internacional pela Universidade NOVA de Lisboa no contexto de um curso em associação com a Université de Tours, a Université d'Orléans,e a KU Leuven

RÉPUBLIQUE FRANÇAISE

MINISTÈRE DE L'ENSEIGNEMENT SUPÉRIEUR ET DE LA RECHERCHE

Vu le code de l'éducation, notamment ses articles L. 613-1;
Vu les textes réglementaires autorisant l'Université de Tours, l'Université d'Orléans, KU Leuven et Universidade NOVA de Lisboa
à délivrer le diplôme ;
Vu l'arrêté du 3 mai 2024 relatif à l'accréditation de l'Université de Tours l'habilitant à délivrer des diplômes nationaux ;
Vu les pièces justificatives produites par

RÉPUBLIQUE FRANÇAISE

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à délivrer le diplôme ;
Vu l'arrêté du 21 mars 2024 relatif à l'accréditation de l'Université d'Orléans l'habilitant à délivrer des diplômes nationaux ;
Vu les pièces justificatives produites par

BELGIUM - BELGIË

KU LEUVEN

We, Rector of KU Leuven,
upon the nomination of the relevant Board of
Examiners
hereby declare that

Wij, rector van de KU Leuven, verklaren,
op advies van de bevoegde
examencommissie, dat

REPÚBLICA PORTUGUESA

UNIVERSIDADE NOVA DE LISBOA

EU, João de Deus Santos Sáágua,
REITOR DA UNIVERSIDADE NOVA
DE LISBOA:

Faço saber que

Ms/Mr First name SURNAME, born on DATE OF BIRTH (day month year) in City, Country

En vue de son inscription en master ;
Vu les procès-verbaux du jury attestant que l'intéressé(e) a satisfait au contrôle des connaissances et des aptitudes prévu par les textes réglementaires ;

Vu le parcours type **Erasmus Mundus Joint Master « Insects as Solution for a Sustainable Future »**,

Le diplôme de **MASTER de Sciences, Technologies, Santé, Mention Biodiversité, écologie et évolution** est délivré à **M./Mme Prénom NOM**

au titre de l'année universitaire **202X-202X** et **confère le grade de Master**, mention **Assez Bien/Bien/Très Bien** pour en jouir avec les droits et prérogatives qui y sont attachés.

Fait à Tours, le XX "Month" 202X,

Le Président,
Prof. Philippe Roingeard

En vue de son inscription en master ;
Vu les procès-verbaux du jury attestant que l'intéressé(e) a satisfait au contrôle des connaissances et des aptitudes prévu par les textes réglementaires ;

Vu le parcours type **Erasmus Mundus Joint Master « Insects as Solution for a Sustainable Future »**,

Le diplôme de **MASTER de Sciences, Technologies, Santé, Mention Agrosiences, environnement, territoires, paysage, forêt** est délivré à **M./Mme Prénom NOM**

au titre de l'année universitaire **202X-202X** et **confère le grade de Master**, mention **Assez Bien/Bien/Très Bien** pour en jouir avec les droits et prérogatives qui y sont attachés.

Fait à Orléans, le XX "Month" 202X,

Le Président,
Prof. Éric Blond

has been awarded the degree of **Erasmus Mundus Joint Master in Insects as Solutions for a Sustainable Future**

Master of Science

GRADE OF DISTINCTION

This degree is situated in the field of biotechnology, with a weight of 120 credits and complies with the accreditation and recognition regulations stipulated by the Code Higher Education, coordinated on 11 October 2013.

The awarded qualification is situated on level 7 according to the Flemish Qualification Structure (VKS), as stipulated in the decree of 30 April 2009.

In testimony thereof we have awarded this degree in accordance with the requirements of the above-mentioned Code.

Geel, XX/XX/20XX

Prof. Dr. Séverine Vermeire, Rector

de graad heeft behaald van **Erasmus Mundus Joint Master in Insects as Solutions for a Sustainable Future**

Master of Science

GRAAD VAN VERDIENSTE

Deze opleiding situeert zich in het studiegebied biotechniek, heeft een studiemvang van 120 studiepunten en voldoet aan de accreditatie- en erkenningsvoorschriften zoals bepaald in de Codex Hoger Onderwijs, gecodificeerd op 11 oktober 2013.

De toegekende kwalificatie situeert zich op niveau 7 volgens de Vlaamse Kwalificatiestructuur (VKS), zoals vermeld in het decreet van 30 april 2009. Derhalve kennen wij dit diploma toe, conform de hierboven vermelde Codex.

Geel, XX/XX/20XX

tendo frequentado no Instituto de Higiene e Medicina Tropical da Universidade NOVA de Lisboa, o **Erasmus Mundus Joint Master « Insects as Solution for a Sustainable Future »**, e defendido a respetiva dissertação, foi-lhe concedido em **202X-XX-XX**, o grau de Mestre em **AREA of DEGREE XXX** com a classificação de **XXX** valores.

Pelo que, em conformidade com as disposições em vigor, lhe mandei passar a presente carta.

UNIVERSIDADE NOVA DE LISBOA,
EM **202X-XX-XX**.

Prof. Dr. João Sáágua, Reitor

Le recteur d'académie,
Chancelier des universités,

M. Jean-Philippe Agresti

DIPLOMA SUPPLEMENT

Erasmus Mundus Joint Master in Insects as Solutions for a Sustainable Future

The purpose of the Diploma Supplement is to provide sufficient independent data to improve the international 'transparency' and fair academic and professional recognition of qualifications (diplomas, degrees, certificates etc.). It is designed to provide a description of the nature, level, context, content and status of the studies that were pursued and successfully completed by the individual named on the original qualification to which this supplement is appended. It is free from any value judgements, equivalence statements or suggestions about recognition. This Diploma Supplement model was developed by the European Commission, Council of Europe and UNESCO.

1. Information identifying the holder of the qualification

1.1 Last name(s) 1.2 First name(s)	1.3 Date of birth (dd/mm/yyyy) 1.4 Student identification number or code
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2. Information identifying the qualification

2.1 Name of qualification and (if applicable) title conferred Erasmus Mundus Joint Master Insects as Solutions for a Sustainable Future 2.3 Name and status of awarding institution(s) (in original language) Université de Tours (France) Université d'Orléans (France) KU Leuven (Belgium) Universidade Nova de Lisboa (Portugal) 2.4 Name and status of institution (if different from 2.3) administering studies (in original language) See 2.3	2.2 Main field(s) of study for the qualification Life sciences, biology, biochemistry, biotechnology, bioengineering, biosciences. 2.5 Language(s) of instruction/examination English
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3. Information on the level of the qualification

3.1 Level of qualification Master Level 7 - European Qualifications Framework (EQF)	3.2 Official length of programme 2 years (120 ECTS - European Credit Transfer System) 4 semesters (30 ECTS each) The workload for students, comprising face-to-face teaching and personal work, corresponds to 1 ECTS = 25 to 30h.
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Access requirements(s)

3.3

Application procedure

All applications (Oct-Feb) must be submitted via the KU Leuven Admission Platform (<https://www.kuleuven.be/english/apply>) that provides a step-by-step guide for applicants.

The following documents are required:

1. Personal data including nationality;
2. The preceding programme of study, including the transcripts of the aforementioned programme(s), must be provided in order to substantiate the undergraduate and postgraduate studies undertaken, along with the credits and grades achieved in each individual subject. Bachelor's degrees providing access to the programme include: life sciences, biology, biochemistry, biotechnology, bioengineering, biosciences or related disciplines. The curriculum must include a sufficient number of credits in the following subjects: mathematics, statistics, biology, microbiology, general chemistry, organic chemistry and physics;
3. University ranking: QS World or THE;
4. Certificate of language proficiency in English: all applicants who have not obtained a previous diploma in a programme taught in English in an Anglo-Saxon country must have succeeded one of the following tests, proving their proficiency in English: TOEFL iBT test (including the Home Edition and Paper Edition) min. overall score 79 (MyBest™ scores are not accepted), IELTS Academic test ((including the paper, computer and online test) min. overall score 6.5 (IELTS One Skill Retake™ scores are not accepted), Cambridge English Advanced (CAE) C1, Cambridge English: Proficiency (CPE) C2, or ITACE for students C1 or C2 (ITACE tests can only be taken in Belgium). More details are provided at the KU Leuven Admissions Platform. Applicants who do not demonstrate the requisite English language skills (B2 proficiency in the English language level (according to the Common European Framework of Reference for Languages / CEFR) will not be considered for further evaluation.
5. CV with reference to relevant experience like internships, projects, papers, international mobility...
6. A motivation letter based on responses to a series of personalised questions. Applicants are expected to give a comprehensive summary of their current status, the justification for their application, their interest in our programme, their views on studying in Europe, and their career progression plan;
7. Recommendation letters: minimal one and maximal three letters including author contact details.

Students who are able to complete their Bachelor's studies during the current academic year will also be permitted to apply. Upon selection, the Bachelor's degree will be requested. As English is the language of the ISSF programme, all documents must be written in English. Exceptions to this rule are copies of official documents, which must be accompanied by a certified English translation.

Selection procedure

Eligibility check (Feb): The KU Leuven admissions team will evaluate all submitted dossiers for compliance with the requisite criteria for admission. In the event that a dossier is deemed incomplete, the student will be informed. The KU Leuven admissions team will then present a shortlist of eligible candidates to the coordinator of the joint ISSF Selection Committee, which is constituted by staff from the UT, UORL, UNL, and KUL.

Pre-evaluation and preliminary ranking (Oct – Feb): The Selection Committee members each assess two criteria and assign a score from 0 to 5 (0: insufficient, 1: sufficient, 2: satisfactory, 3: good, 4: very good, 5: excellent) for each of them. To ensure impartiality, a blind evaluation process will be applied, whereby board members will not have access to the evaluation scores provided by other members. Averages are calculated for each score. The average scores are then added together, taking into account their weighting factor. The selection criteria and their weighting factor are: 1) Academic record (40%): Candidates must demonstrate excellence at BSc level; 2) CV with reference to relevant experience (20%); 3) Motivation letter (20%); iii) Recommendation letters (10%); 4) University ranking (10%). A preliminary ranking is made based on the total score, with up to the first 80 students being invited for an online interview.

Interviews and final ranking (first half of March): The interviews will be conducted jointly by the members of the Selection Committee to further assess the candidates' language skills, CV and motivation. A score will be assigned at the end of the interview. The average of this score and the preliminary score will give the total score which will determine the final ranking. Scholarships (taking into account regions of origin) and admission to the programme will be awarded on the basis of this ranking.

Notification of the applicants (second half of March/beginning of April): Students will be notified of their selection (scholarship, selected, reserve list, not selected, not admitted) and given two weeks to confirm or decline their application. Depending on the number of confirmations, students on the reserve list may still be admitted to the program.

4. Information on the contents and results gained

Mode of study

Programme requirements

4.1

Full time

4.2

This EMJM programme « Insects as solutions for a sustainable future » (ISSF) will train students at the master level able to tackle questions such as:

1. how insects, through their ecological services, are key to fostering sustainability in both agrosystems and natural ecosystems, making them essential for a resilient and sustainable future.
2. how insects can help create a more sustainable world through their use for waste management, as feed or food, and for the production of other biobased products.
3. how insects can contribute to a safer environment for humans, animals and plants by developing strategies for managing their beneficial and harmful effects.

ISSF will thus prepare a new generation of experts capable of tackling issues like biodiversity loss, food security and public health. Students will be enrolled in the ISSF trans-sectoral training programme helping them to address these interconnected societal challenges and arming them with the flexibility to thrive in diverse labour markets and unlock a wide range of career opportunities.

The ISSF second cycle qualifications will be awarded to students who can:

- Mobilise and produce specialised knowledge

After a first cycle degree in life sciences or related fields students will be able to mobilise specialised knowledge in insect sciences, some of which is at the forefront of knowledge, and which can serve as the basis for original thinking. Critical thinking skills will be developed to be able to conduct reflective and distanced analysis of issues pertaining to insect sciences. Students will be able apply their knowledge and understanding, and problem-solving abilities in different environments within broad contexts related to insect sciences.

- Implement advanced and specialised uses of scientific tools

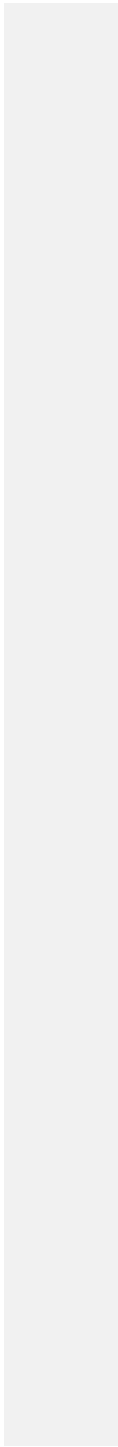
Students will be trained to use digital and statistical tools, together with specialised tools in the field of insect biology.

• Contribute to project work related to professional contexts

Students will have the ability, within a professional context, to integrate knowledge, conduct a project and manage complex, unpredictable professional or study contexts, while maintaining scientific integrity and rigour and respecting social, deontological and ethical issues related to the different domains of application in insect sciences. Students will have the learning skills to allow them to be employable or to continue to study (at PhD level) in a largely autonomous manner.

• Implement specialised communication for knowledge transfer

Students will learn to critically select and analyse a variety of specialised resources to document a topic and synthesise that data for use. They will be able to communicate clearly, orally and in writing, on the scientific context to specialist and non-specialist audiences.



4.3 Programme details (e.g. modules or units studied), and the individual grades/marks/credits obtained.

The ISSF programme is organised as a four-semester course (see Figure 1, Table 1), delivering 120 ECTS with a unique mobility path per cohort. The **first semester** will take place at the University of Tours (UT) in close collaboration with the geographically- and thematically close University of Orléans (UORL). Both universities are located only 100-km apart in the same region "Centre-Val de Loire" in France. Most courses will be physically located at UT; however, students will take part in an intensive one/two-week laboratory project organised at UORL. This first semester, dedicated to **the study of insects in eco- and agrosystems** will allow students to obtain 30 ECTS credits. The **second semester** will take place at KU Leuven (KUL) in Belgium, allowing students to **study the role of insects in industry and innovation** (30 ECTS). The students will then travel to the University NOVA of Lisbon (UNL) in Portugal for the **third semester** dedicated to **insects as vectors of animal and human diseases** (30 ECTS). The **fourth semester** (30 ECTS) will be dedicated to a **6-month master thesis project** which can be conducted worldwide in the public or private sector and in the specialization of choice of each student.

The first three semesters (30 ECTS each) have been designed with a common semestrial framework (see Figure 1, Table 1) in which, at each semester:

- **Module 1** corresponds to broad knowledge on insect biology with HEIs addressing different aspects of insect taxonomy, morphology and physiology in a sequential manner.
- **Module 2** corresponds to fundamental skills that will provide the students with the tools and skills relevant to the master programme.
- **Module 3** corresponds to immersive project work, where students develop their own project in the field, in laboratories or in an industrial context thanks to state-of-the-art specialised infrastructures available at each HEI (see below). Students can therefore be trained to the standards that are expected when designing and developing field expeditions, laboratory experiments or industrial research and development applications.
- **Modules 4 to 6** correspond to in-depth modules that are deemed required for the specialty in question. Concerning the first semester these modules will address (1) insect multitrophic interactions, in particular insect-plant interactions, in different environments; (2) Integrated pest management including biological control; (3) the impact of climate change on insect biodiversity and how conservation measures can be developed. For the second semester these modules correspond to (1) strengthening statistical skills applied to experimental design; (2) gaining knowledge and practical outlook on the emerging industrial insect value chain; (3) training students in different topics related to innovation and entrepreneurship. During the third semester the modules will be focused on (1) the variety of factors that influence the dynamics of vector-borne diseases; (2) surveillance and vector control; (3) the epidemiology of vector-borne diseases, notably in the context of climate change.
- **Module 7** corresponds to language courses and discovery of the cultures of each country, allowing to promote multilingualism, intercultural awareness and to facilitate integration of students. Language and cultural issues can also play an important role in transmitting European values and in forging trans-national solidarity, which in the future should facilitate worldwide collaborations with the European Research and Higher Education Area.

The **fourth semester** (30 ECTS) will be dedicated to a **6-month master thesis project** which can be conducted worldwide in the public or private sector and in the specialisation of choice of each student. The **master thesis module** has been jointly designed. A joint list of Master thesis projects emanating from the member HEIs and associated partners will be approved and presented to the students. Supervision of each student during the Master thesis project will be ensured by the co-promoter (from the institution/company proposing the project) and by a nominated promoter (staff from the ISSF consortium) relevant to the master thesis subject. Evaluation of master thesis written reports and oral defenses will be performed jointly with representatives of all HEIs present at the coordinator's campus (UT).

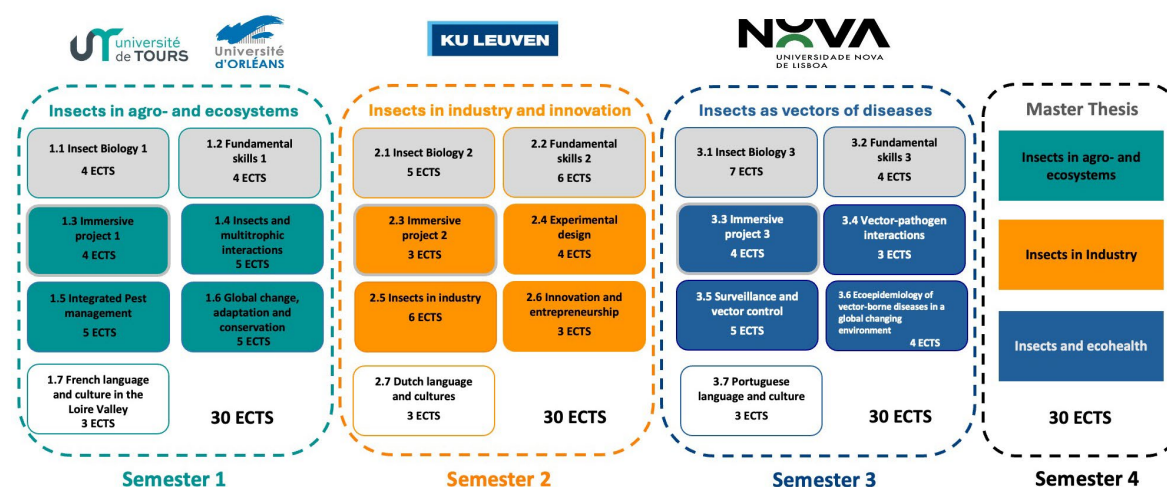


Figure 1: Global overview of the ISSF Erasmus Mundus Joint Master programme with a unique mobility path

Large rectangles indicate modules of the first three semesters: In grey: Modules 1 and 2 on Insect Biology and Fundamental skills; in colour with grey border: Module 3, Immersive project work in the field, industry or laboratory; in colour: Modules 4 to 6 specific to each specialty; in white: Module 7 language and cultural courses.

The fourth semester is dedicated to a Master Thesis project of 6 months in the specialty and institution and country of choice of the students.

Semester 1 : University of Tours and University of Orléans						Jointness	
Module	Course name	Hours	Face-to-face hours	Lecture (L) Tutorial (T) Practical (P)	ECTS	Jointness with modules in preceding/following semesters	Staff teaching mobility
M1.1	Insect Biology 1	112 h	48 h	24 L 24 P	4	All the master program 2.1 Insect Biology 2 2.5 Insects in Industry 3.1 Insect Biology 3 3.2 Fundamental skills 3	UORL KUL UNL
M1.2	Fundamental skills 1	112 h	48 h	38 L 10 T	4	2.2 Fundamental skills 2 2.3 Project work on Insect production 3.2 Fundamental skills 3 3.3 Experimental field or lab project	UORL
M1.3	Immersive project 1 – Field project	112 h	48 h	18 L 30 P	4	All the master program for experimental design 2.4 Experimental Design 3.2 Fundamental skills 2 3.3 Experimental field or lab project	UORL
M1.4	Insects and multitrophic interactions	140 h	48 h	33 L 15 T	5	2.5 Insects in Industry 3.4 Vector-pathogen interactions	UORL
M1.5	Integrated Pest management	140 h	48 h	28 L 4 T 16P	5	2.5 Insects in Industry 3.5 Surveillance and vector control	UORL UT
M1.6	Global change, adaptation, and conservation	140 h	48 h	30 L 6 T 12 P	5	3.6 Ecoepidemiology of vector-borne diseases in a global changing environment	UORL
M1.7	French Language and Culture in Loire Valley	84 h	24 h	12 L 12 T	3	all the master program for intercultural awareness	
		840 h	312 h	183L 47T 82P	30		
Semester 2 : KU Leuven						Jointness	
Module	Course name	Hours	Face-to-face hours	Lectures (L) Tutorial (T) Practicals (P)	ECTS	Jointness with courses in preceding/following semesters	Staff teaching mobility
M2.1	Insect Biology 2	130 h	38 h	26 L 12 P	5	1.1 Insect Biology 1 3.1 Insect Biology 3	
M2.2	Fundamental Skills 2	156 h	52 h	52 L	6	1.2 Fundamental skills 1	
M2.3	Immersive Project 2 - Project Work in Insect Production	84 h	48 h	3 T 45 P	3	1.2 Fundamental skills 1 3.5 Surveillance and vector control	
M2.4	Experimental Design	84 h	28 h	28 L	4	1.3 Field project 3.2 Fundamental skills 3 3.3 Experimental field or lab project	
M2.5	Insects in Industry	168 h	59 h	42 L 2 T 15 P	6	1.4 Insects and multitrophic interactions 1.5 Integrated pest management 3.5 Surveillance and vector control	UT
M2.6	Innovation and Entrepreneurship	84 h	28 h	26 L 2T	3	all the master program for entrepreneurship culture	
M2.7	Dutch Language and Cultures	84 h	40 h	40 T	3	all the master program for intercultural awareness	
		790 h	293 h	174L 47T 72P	30		
Semester 3 : NOVA University of Lisbon						Jointness	
Module	Course name	Hours	Face-to-face hours	Lectures (L) Tutorial (T) Practicals (P)	ECTS	Jointness with courses in preceding/following semesters	Staff teaching mobility
M3.1	Insect Biology 3	196 h	66 h	31 L 11 T 24 P	7	1.1 Insect Biology 1 2.1 Insect Biology 2	
M3.2	Fundamental skills 3	112 h	76 h	12 L 12 T 52 P	4	1.2 Fundamental skills 1 1.3 Field project	
M3.3	Immersive Project 3 -- Medical Entomology Techniques	112 h	44 h	6 L 8 T 30 P	4	1.2 Fundamental skills 1 1.3 Field project	
M3.4	Vector-pathogen interactions	84 h	29 h	15 L 8 T 6 P	3	1.4 Insects and multitrophic interactions 2.1 Insect Biology 2	
M3.5	Surveillance and vector control	140 h	48 h	32 L 4 T 12 P	5	1.5 Integrated pest management 2.5 Insects in industry	UT- UORL
M3.6	Ecoepidemiology of vector-borne diseases in a global changing environment	112 h	38 h	14 L 6 T 18 P	4	1.6 Global change, adaptation and conservation	
M1.7	Portuguese language and culture	84 h	28 h	18 L 4 T 6 P	3	all the master program for intercultural awareness	
		840h	329h	128L 53T 148P	30		
Semester 4 : University of Tours, University of Orléans, KU Leuven, NOVA University of Lisbon							
Module	Course name	Duration		ECTS		Jointness	Staff mobility
Master Thesis	Master thesis	6 months		30		Common list of master thesis projects and evaluation	UT UORL KUL UNL

Table 1: Global overview of the ISSF programme and the way courses are related to each other.

4.4 Grading scheme and, if available, grade distribution guidance

Common guidelines have been established concerning student evaluation. Local grading systems will be used for each course semester. For each semester, a transcript will be issued giving the list of validated modules with the local grades and the number of associated ECTS credits. To validate a semester, students must achieve over 50% overall (over 10/20) in each module. For the master thesis semester (30 ECTS), a specific grading system has been set-up (see below).

Upon obtaining 120 ECTS credits, students will receive a transcript of records with all four universities following the ECTS grading scheme presented in **Table 2**.

Grade equivalent	Level	France /20	Belgium /20	Portugal /20
A best 10%	Excellent: outstanding performance with only minor errors	>16	>16	18-20
B next 25%	Very Good: above the average standard, but with some errors	14-15,9	15-16	16-17
C next 30%	Good: generally sound work with a number of notable errors	12-13,9	13-14	14-15
D next 25%	Satisfactory: fair but with significant shortcomings	11-12	11-12	10-13
E next 10%	Sufficient: performance meets the minimal criteria	10-11	10	
F	Fail: considerable further work is required	<10	<10	<10

Table 2 : Grade equivalents in the HEIs of the three countries.

The master thesis will last 6 months and can be performed worldwide in the public and private sectors in any full or associate partner institution.

The master thesis will be written and defended in English.

The following evaluation matrix will be applied.

PROCESS

Name student:

TOTAL

outstanding	very good	good	satisfactory	sufficient	insufficient	weak	very weak
-------------	-----------	------	--------------	------------	--------------	------	-----------

Approach and planning (research attitude, scientific approach, planning, work accurately, ...)								
Initiative and autonomy (independent study attitude, self-reliance, solving problems, transition from independent synthesis toward a final result, ...)								
Communication (interim reporting, internal team communication, ...)								
Team spirit (social relations, consultation, responsibility, attention to context, handling of discussions and criticism, ...)								
Commitment and motivation (attitude, work ethic, perseverance, ...)								

Process - work ethics

Mark

Assignment analysis (focused analysis and limitation of the subject matter, adequate research questions, ...)								
Information acquisition and processing (research efficiency, scientific approach to the process and interpretation, evaluating quality of sources, ...)								
Attention for broader context (sustainability, social, ethical, economic aspects, security, ...)								
Quality of the working methods (planning, design decisions and research methods, optimising and adjusting design/test methods, ...)								
End result quality (achievement of the objectives, is the job well-done, ...)								
Critical analysis (correct interpretation of the work and results, reflection on methods used, justification of choices and assumptions, ...)								

Clear and correct formulation of the problem and research questions, of the approach and working methods employed, and of the conclusions								
Insight and mastery of the subject matter (quality of the proposed work, accuracy and factual nature of the answers given during the defence, ...)								
Maturity and resilience at the defence (control of his/her level of nervousness, reacting appropriately and constructively to questions, ...)								
Critical analysis (accurate quality assessment of their own work and results, reflection on their chosen methods and models, ...)								

Presentation & defence - content & product

Mark

The final marks for form and content & product are not necessarily the weighted average of the assessment of the above indicators

Remarks evaluator

20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	
Greatest distinction			Great distinction		Distinction		Satisfactory				Insufficient		Very insufficient (not compensable)			
At least some indicators are of outstanding quality and the others are very good.			Most indicators are of outstanding quality or very good and the others are good.		Most indicators are good, very good or of outstanding quality and the others are at least sufficient.		Some indicators are good, very good or of outstanding quality and the others are at least sufficient.		Most indicators are at least sufficient, the gaps in the others are not fundamental.		Most indicators are at least sufficient, the gaps in the others are fundamental but can be compensated when the total result suffices.		Most indicators are insufficient, weak or very weak, there are fundamental gaps in various areas that cannot be compensated.		Most indicators are evaluated as very weak. The few positive elements are coincidental.	

The marks in the above table are a guideline for the evaluators.
The total results for work ethic/form and for methodology & results/content & product are not necessarily the (weighted) average of the evaluation of the different indicators.

4.5 Overall classification of the qualification (in original language)

Classification of degree:

- (a) "With honours" is written, when the candidate has a global average grade equivalent of A
- (b) "With distinction" is written, when the candidate has a global average grade equivalent of B
- (c) "With credit" is written, when the candidate has a global average grade equivalent of C
- (d) "With pass" is written, when the candidate has a global average grade equivalent of E

5. Information on the function of the qualification

5.1 Access to further study

Doctoral studies

5.2 Professional status

Not applicable

6. Additional information

6.1 Additional information

Additional information on the jointly organised study programme :

Link to ISSF website : <https://issf-master.eu/>

6.2 Further information sources

Further information on Université of Tours:

<https://www.univ-tours.fr/>

Further information on Université d'Orléans:

<https://www.univ-orleans.fr/fr>

Further information on KULeuven

<https://www.kuleuven.be/english/kuleuven/>

Further Information on Universidade Nova de Lisboa :

<https://www.unl.pt/>

7. Certification of the supplement

7.1 Date

7.2 Signature

7.3 Capacity

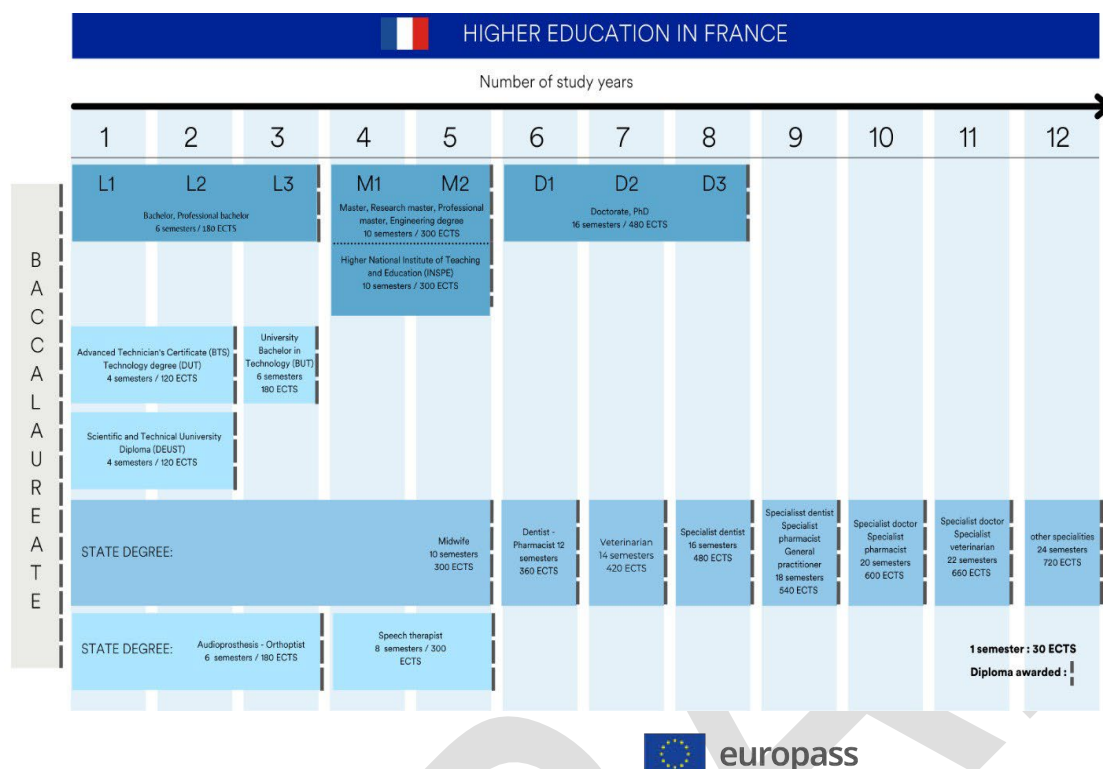
7.4 Official stamp or seal

Example UT



8. Information on the national higher education system

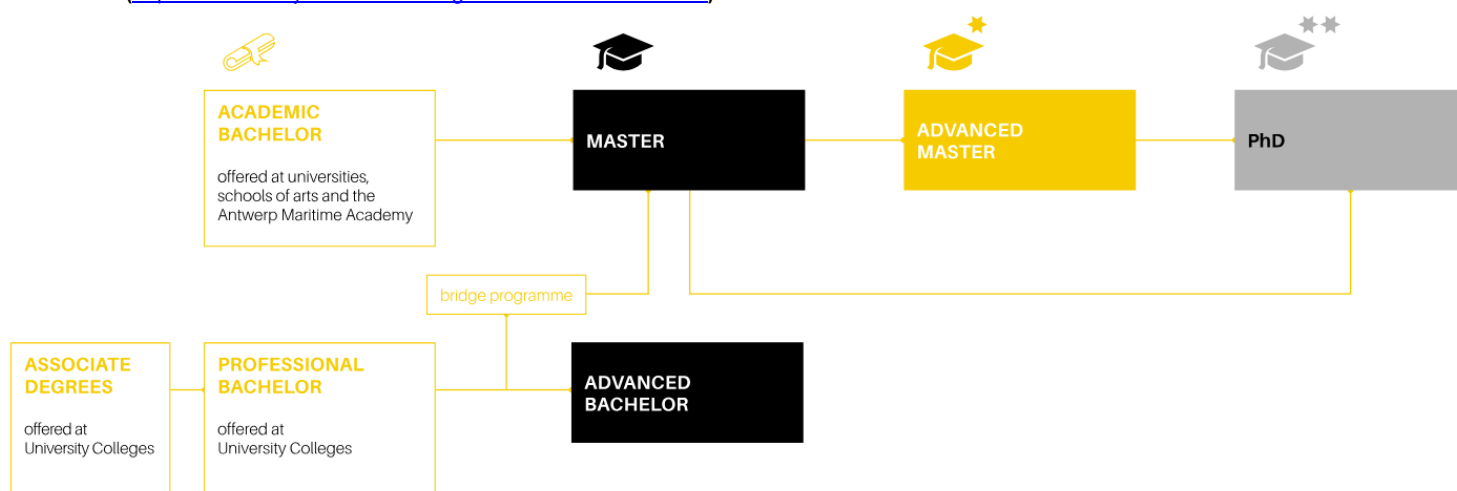
In France :



ISCED	TERTIARY EDUCATION
ISCED 5	Short-cycle tertiary: Programmes are more complex than those in ISCED 3 and 4, and typically shorter than those in ISCED 6. They are designed to deepen knowledge by imparting new techniques, concepts and ideas not generally covered in upper secondary education. By comparison, ISCED level 4 programmes serve to broaden knowledge and are typically not significantly more advanced than programmes at ISCED level 3.
ISCED 6	Bachelor's or equivalent level: Designed to provide participants with intermediate academic and/or professional knowledge, skills and competencies, leading to a first degree or equivalent qualification. They are typically offered by universities and equivalent tertiary educational institutions.
ISCED 7	Master's or equivalent level: Programmes designed to provide participants with advanced academic and/or professional knowledge, skills and competencies, leading to a second degree or equivalent qualification. They may have a substantial research component, but do not yet lead to a doctoral qualification. The cumulative duration of studies at the tertiary level is usually five to eight years or even longer and can be provided entirely within ISCED 7. Access to this level may be possible, in some cases, directly from ISCED 3 and 4.
ISCED 8	Doctoral or equivalent level: Programmes that lead directly to the award of an advanced research qualification, e.g. Ph.D. The theoretical duration of these programmes is three years, full-time, in most countries, although the actual enrolment time is typically longer. Programmes are devoted to advanced study and original research. Doctoral programmes exist in both academic and professional fields.

The International Standard Classification of Education (ISCED) classification is based on ISCED 2011. The first ISCED classification was developed by UNESCO in the mid-1970s, and revised in 1997, then in 2011 to reflect changes in education and learning systems. ISCED 2011 is an instrument for compiling statistics on education internationally and distinguishes among 8 levels of education as described in the sequence.

In Flanders (<https://www.studyinlanders.be/higher-education-in-flanders>):



Flemish higher education system

The Flemish higher education system is a binary system, consisting of 18 publicly funded higher education institutions: five universities, of which the oldest dates back to 1425, and 13 small and medium sized university colleges, also known as universities of applied sciences (and arts). There are also 3 other higher education institutions which provide post-initial higher education.

- **Universities** are research intensive universities, offering academic bachelor's degrees, master's degrees, advanced master's degrees, PhD's and postgraduate certificates.
- **Universities of applied sciences (and arts)** are higher education institutions with a strong practice-based focus, offering associate degrees, professional bachelor's degrees, advanced bachelor's degrees and postgraduate certificates.
 - The *schools of arts* are integrated in the universities of applied sciences and arts. Beside professional bachelor's degrees, schools of arts also offer academic bachelor's degrees, master's degrees, advanced master's degrees and PhDs.
 - The Antwerp Maritime Academy offers professional as well as academic bachelor's degrees, master's degrees and PhDs.
- **Other higher education institutions** are institutions which are recognized by the Flemish Codex of Higher Education as a public higher education institution for tertiary education.

All institutions offer higher education according to the principles of the European Higher Education Area. Their degree programmes are accredited (i.e. officially recognised) by the Accreditation Organisation of the Netherlands and Flanders (NVAO).

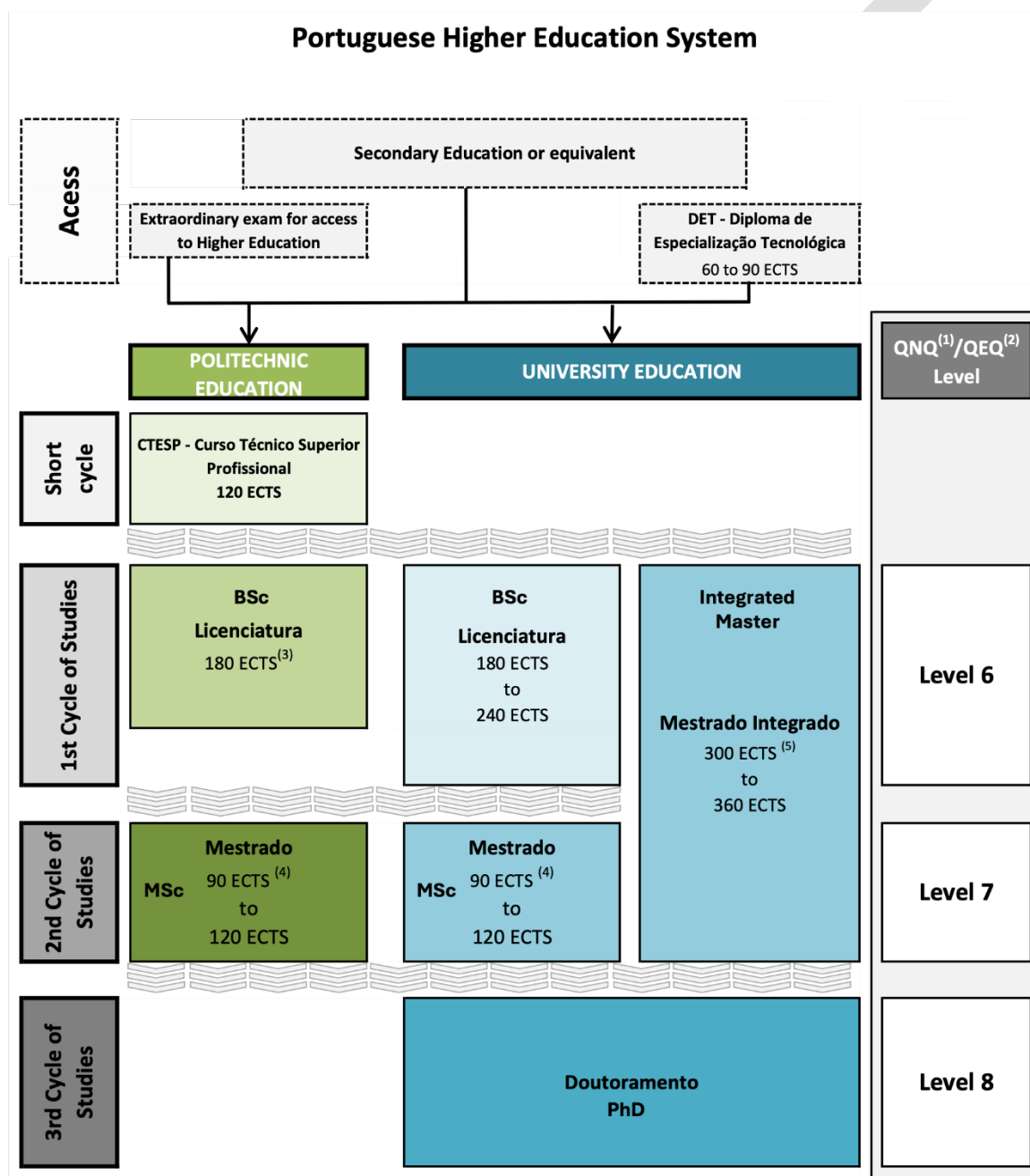
The language of instruction of most study programmes is Dutch. You will find English taught programmes at bachelor's level and more extensively at master's and PhD level. Overall you will find 14% of international students enrolled in Flemish higher education institutions.

The Flemish Higher Education system is part of the European Higher Education Area, where we use the ECTS credit system. ECTS stands for European Credit Transfer System. A year of full-time studies at university or university of applied sciences level is generally worth 60 ECTS credits, and defined as equal to 1,500 - 1,800 hours of study work. This means 1 ECTS is equal to between 25 to 30 hours.

Degree programmes

- **An associate degree (90-120 ECTS)** is a practice-based programme between secondary education and a professional bachelor's degree (European Qualification Framework level 5). Workplace learning accounts for at least a third of the study load and it prepares you in two years for the labour market or for a professional bachelor's programme. Flemish universities of applied sciences (and arts) offer associate degrees only in Dutch.
- **A professional bachelor's degree (180 ECTS)** is a bachelor's degree combining general knowledge with practical competences, including compulsory internships. It prepares you for the labour market in three years. Exception: a bachelor's degree in nursing takes four years (240 ECTS). If you want to proceed studying for a master's degree at a Flemish university, a bridging programme will be required.
- **An academic bachelor's degree (180 ECTS)** is a bachelor's degree offered at a university, a school of arts or the Antwerp Maritime Academy. It has a strong theoretical focus and prepares you for master's studies.
- **An advanced bachelor's degree (60 ECTS)** is a bachelor's degree offered at a university of applied sciences. It provides you with wider and more specialised knowledge and competences in your field of study.
- **A master's degree (60-120 ECTS)** has a strong focus on advanced scientific or artistic knowledge and research competences. Most English taught programmes in Flemish higher education are at master's level.
- **An advanced master's degree (60-120 ECTS)** offers specialised training, often linked to top research areas of the home university and is aimed at students who already earned an initial master's degree.
- **A PhD** is a doctoral degree, awarded to students who complete a research thesis offering a new contribution to knowledge in their subject. Each Flemish university has several doctoral schools offering PhD programmes preparing PhD graduates for a career in both academia and beyond. For PhD programmes please contact the university of your choice directly.

In Portugal:



⁽¹⁾ QNQ - National Qualifications Framework.

⁽²⁾ QEQ - European Qualifications Framework.

⁽³⁾ Except when in order to exercise a certain professional activity requiring education and training ranging between 210 and 240 ECTS.

⁽⁴⁾ In exceptional circumstances, a cycle of studies leading to a Mestre degree in a specialized field may have 60 credits, resulting from a stable and consolidated practice in that specific field at international level.

⁽⁵⁾ A Mestre degree may also be awarded following an integrated cycle of studies, for access to a professional activity, if the length: a) is established by European Union regulations; b) results from a regular and consolidated practice within the European Union; in such cases, a Licenciado degree is awarded to students having obtained 180 ECTS (3 years, 6 semesters).

Portuguese Higher Education Structure

Portuguese higher education includes university and polytechnic education. University education is provided by public and private university institutions while polytechnic education is provided by public and private non-university institutions.

Private higher education institutions are subject to prior recognition by the competent Ministry.

Admission to higher education institutions is subject to numerus clausus.

National and foreign students wishing to apply to the 1st cycle of studies leading to the bachelor's degree through the general regime must have successfully completed a secondary education course or a national or foreign qualification legally equivalent; have taken the entrance exams required for the programme the student wishes to attend with a mark equal or higher than the minimum required (there are higher education institutions that accept foreign tests or exams); have fulfilled the prerequisites (when applicable) of the programme the student wishes to attend. An annual competition is held by the Directorate-General for Higher Education for admission to public higher education through the general regime.

Degree programmes:

- **CTeSP – Professional technical superior courses** (Cursos Técnicos Superiores Profissionais) - This diploma is awarded upon completion of a non-degree higher education cycle of studies entitled curso técnico superior profissional (CTeSP). It corresponds to a short cycle of studies within the cycle of studies leading to the bachelor's degree. The CTeSP are provided by polytechnic higher education institutions as well as polytechnic organic units integrated in universities. The CTeSP have 120 ECTS credits and normally last four curricular semesters including general, scientific and technical subjects, as well as a training period at the workplace.
- **Bachelor's degree, BSc** (Licenciatura) - Both university and polytechnic education institutions award the bachelor's degree. In polytechnic education, the cycle of studies leading to the bachelor's degree normally lasts six curricular semesters corresponding to 180 ECTS credits. In exceptional cases covered by national or European Union legislation, it may last up to seven or eight curricular semesters with up to 240 ECTS credits of student work. In university education, the cycle of studies leading to the bachelor's degree ranges from 180 to 240 ECTS credits, and normally lasts from six to eight curricular semesters. In the 1st cycle of studies the bachelor's degree is awarded to those who pass all the course units of the bachelor study programme, therefore obtaining the required number of credits. The bachelor's degree corresponds to the level 6 of the QNQ and EQF.
- **Master's degree, MSc** (Mestrado) - Both university and polytechnic education institutions award the degree of master. The cycle of studies leading to the degree of master ranges from 90 to 120 credits, and normally lasts from three to four curricular semesters. In exceptional circumstances resulting from a stable and consolidated practice in that specific field at international level, it may amount to 60 ECTS credits and last two semesters. In polytechnic education, the cycle of studies leading to the master's degree must ensure predominantly that the student acquires a professional specialization. In university education, the cycle of studies leading to the master's degree must ensure mainly that the student acquires an academic specialization through research, innovation or development of professional competences.
- **Integrated Master** (Mestrado Integrado) - In university education, the master degree may also be awarded upon completion of an integrated cycle of studies, ranging from 300 to 360 ECTS credits and usually lasting 10 to 12 curricular semesters, in cases where the access to the practice of a certain professional activity depends on that length of time in accordance with European Union legal standards or results from a regular practice consolidated within the European Union. Within this cycle of studies, the bachelor's degree is awarded to those who have obtained 180 ECTS credits corresponding to the first six curricular semesters. In the 2nd cycle of studies, the degree of master is awarded to those who have passed all the course units of the master study programme, and who have publicly defended an original dissertation, project work or traineeship report, therefore obtaining the required number of credits. The master's degree corresponds to the level 7 of the QNQ and EQF.
- **Doctoral degree, PhD** (Doutoramento) - The Doctoral degree is awarded by universities and university institutes to those who have passed all the course units of the Doctoral programme, when applicable, and who have publicly defended an original thesis. It may also be awarded on account of a coherent and relevant set of research works or, in the field of the arts, on a work or a set of works or achievements. The doctoral degree corresponds to the level 8 of the QNQ and EQF.

Other Higher education diplomas may also be awarded following the partial completion of a cycle of studies. In such cases, the chosen title must differ from the title of the final award of the applicable degree. Diplomas may also be awarded for non-degree courses, some of which are regulated, e.g. postgraduate specialization courses in Nursing or supplementary courses in Nursing or Teaching.

ANNEXE 3: DISTRIBUTION OF ALLOCATED FUNDS

Tranche	Income source	Income amount	UT Funds	UORL Funds	UNL Funds	KUL Funds	Payments UT to Partners	Period	Payment amount					
									UORL	%	UNL	%	KUL	%
Tranche 1 2025-2029	EU pre-financing payment (50%)	1 788 000,00 €	1 293 596,00 €	43 836,00 €	221 484,00 €	229 084,00 €	1st pre-payment	APRIL 2026	35 068,80 €	80%	99 667,80 €	45%	183 267,20 €	80%
	Tuiton fees estimation 1st half 1st cohort 2026-2027	13 500,00 €	4 886,18 €	728,18 €	3 871,59 €	4 014,09 €								
	Tuiton fees estimation 2nd half 1st cohort 2027-2028	13 500,00 €	4 886,18 €	728,18 €	3 871,59 €	4 014,09 €								
	Tuiton fees estimation 1st half 2nd cohort 2027-2028	31 500,00 €	11 401,09 €	1 699,09 €	9 033,71 €	9 366,21 €	2nd pre-payment	JULY 2028	11 922,65 €	20%	138 593,09 €	55%	63 211,19 €	20%
	SUB- TOTAL	1 846 500,00 €	1 314 769,45 €	46 991,45 €	238 260,89 €	246 478,39 €			46 991,45 €		238 260,89 €		246 478,39 €	
Tranche 2 2029-2031	Additional EU pre-financing payment (40%)	1 430 400,00 €	1 034 876,80 €	35 068,80 €	177 187,20 €	183 267,20 €								
	Tuiton fees estimation 2nd half 2nd cohort 2028-2029	31 500,00 €	11 401,09 €	1 699,09 €	9 033,71 €	9 366,21 €								
	Tuiton fees estimation 1st half 3rd cohort 2028-2029	45 000,00 €	16 287,27 €	2 427,27 €	12 905,30 €	13 380,30 €	3rd pre-payment	JANUARY 2030	25 167,64 €	60%	128 251,34 €	60%	132 706,84 €	60%
	Tuiton fees estimation 2nd half 3rd cohort 2029-2030	45 000,00 €	16 287,27 €	2 427,27 €	12 905,30 €	13 380,30 €								
	Tuiton fees estimation 1st half 4th cohort 2029-2030	58 500,00 €	21 173,45 €	3 155,45 €	16 776,89 €	17 394,39 €								
	Tuiton fees estimation 2nd half 4th cohort 2030-2031	58 500,00 €	21 173,45 €	3 155,45 €	16 776,89 €	17 394,39 €	4th pre-payment	JANUARY 2031	22 765,70 €	40%	117 333,97 €	40%	121 475,97 €	40%
	SUB-TOTAL	1 668 900,00 €	1 121 199,35 €	47 933,35 €	245 585,31 €	254 182,81 €			47 933,35 €		245 585,31 €		254 182,81 €	
Tranche 3 2032	EU final payment (10%)	357 600,00 €	258 719,20 €	8 767,20 €	44 296,80 €	45 816,80 €	Final payment	MARCH 2032	8 767,20 €	10%	44 296,80 €	10%	45 816,80 €	10%
	TOTAL	3 873 000,00 €	2 694 688,00 €	103 692,00 €	528 143,00 €	546 478,00 €			103 692,00 €		528 143,00 €		546 478,00 €	