

Structure and detailed description of the Master

First Year (1st and 2nd semester)						
M	Teaching Unit	Teaching Unit Contents	Semester workload	Evaluation scheme (Final assessment (exam), Continuous assessment and practical work)	Teaching team	
			Total (Courses, TD, TP, Individual work, and Assessment of knowledge)			
S1	1	Food Chemistry <i>Chimie alimentaire</i>	-Chemical composition of foods. -Food flavours -Food spoilage kinetics	50h	Mixed assessment	Local Unit Coordinator: IAV Saadia Zrira IBN Abdelaziz Chaouch ENA Bouchra Tazi UMP Saalaoui Ennouamane
	2	Food Microbiology <i>Microbiologie Alimentaire</i>	- Microbial metabolism - Interactions between food and microorganisms - Microbial biotechnology	50h	Mixed assessment	Local Unit Coordinator: IAV Khadija Lamrani IBN Youness Taboz ENA Amiri Said UMP Asehraou Abdeslam
	3	Laboratory Biosafety <i>Biosécurité en laboratoire</i>	Good laboratory practice in scientific research laboratories and in agri-food companies (food quality control laboratories). - Notions of biosafety and biosecurity - Containment of human pathogens - Handling of pathogens - Methods of assessing infectious risk - Prevention and emergency measures - Control and monitoring of safety equipment - Laboratory waste management systems	50h	Mixed assessment	Local Unit Coordinator: IAV Khadija Lamrani IBN Mohamed Ebntouhami ENA Bouchra Tazi UMP Meziane Mustapha
	4	Food Analysis Methods <i>Méthodes d'analyse des aliments</i>	1- Reminder of some basic notions: Principle, retention parameters, and different types of chromatography. 2- HPLC and CPG: Areas of use, advantages and disadvantages, study of the different elements of the equipment (delivery system of the mobile phase, injectors, columns, detectors), optimisation of the separation. 3- Coupling HPLC and CPG with the mass detector (Equipment, acquisition modes, use) 4- Quantitative analysis methods (External, internal and additions).	50h	Mixed assessment	Local Unit Coordinator: IAV Saadia Zrira IBN Abdelaziz Chaouch ENA Bouchra Tazi UMP Saalaoui Ennouamane
	5	Applied Statistics <i>Statistiques appliquées</i>	Applied statistics: - Reminder of descriptive statistics. - Introduction to multivariate data analysis techniques. - Unsupervised methods. Computer Science: - Introduction to statistical software and the R programming language. - Data.	50h	Mixed assessment	Local Unit Coordinator: IAV Mohamed Dehhaoui IBN Amar Habsaoui ENA Boualam Hssaine UMP Kerkour Elmiad Aissa

S2	6	Technical English <i>Anglais Scientifique</i>	<ul style="list-style-type: none"> - Functions. - Loops. <p>English: Deepening of basic English vocabulary and familiarisation of the student with thematic and specialised vocabulary in English (agri-food and food safety fields). Oral comprehension Oral expression Written expression</p> <p>Communication techniques: Introduction to communication Introduction to bibliographic research methods Written communication techniques Oral communication techniques</p>	50h	Mixed assessment	Local Unit Coordinator: IAV Fatima Zahra Kroum IBN Youssef Aboussaleh ENA Aoudry Saadia UMP Mentak Said
	7	Food Toxicology <i>Toxicologie alimentaire</i>	<p>The main families of toxic substances in the environment: - Sources of contamination and routes of entry of xeno biotics into humans - The phases of the food poisoning process</p> <ul style="list-style-type: none"> - The exposure phase - Toxic-dynamic phase - Mechanisms of toxic action - Protection systems - Main mechanisms of toxic action - Classification of hazards and risks - Study methods in food toxicology - Toxicological tests - Protocol followed 	50h	Mixed assessment	Local Unit Coordinator: IAV Idrissi Drissia Janati IBN Rachid Bengueddour ENA Lahlali Rachid UMP Gseyra Nadia
	8	Unit Operations in Food Processing <i>Opérations unitaires en technologie alimentaire</i>	<p>The module is presented in two parts: 1: Unit operations of separation - Distillation - Liquid-liquid extraction - Solid-liquid extraction - Crystallization - Sedimentation - Filtration 2: Unitary stabilisation operations - Freezing - Drying - Evaporation - Thermal destruction of micro-organisms</p>	50h	Mixed assessment	Local Unit Coordinator: IAV Amar Kaanane IBN Karima Selmaoui ENA En Nahli Said UMP Neffa Mounsef
	9	Food Safety and Quality Management <i>Sécurité des aliments et gestion de la qualité</i>	<p>The module is presented in two parts: 1. Food Safety System IS22000 - the food safety approach - the process approach - the company's context - leadership</p>	50h	Mixed assessment	Local Unit Coordinator: IAV Amar Kaanane IBN Aouane El Mahjoub ENA En Nahli Said UMP Sbaa Mohamed

		<ul style="list-style-type: none"> - the risk approach - resources - communication - documentation - achieving safe products - performance evaluation - continuous improvement <p>2. Management system:</p> <ul style="list-style-type: none"> - Principles and structure of management systems - Process approach - Documentary engineering of the quality system - Understanding the ISO 9001/2015 quality standard - Implementation of the QMS - Management system audit 			
10	Food Safety and Hygiene <i>Hygiène et sécurité des aliments</i>	<p>Chapter 1: The importance of food hygiene</p> <p>Chapter 2: Integrating the concept of food risk when handling foodstuffs (food safety/quality assurance)</p> <p>Chapter 3: Implementing a guide to good hygiene practices</p>	50h	Mixed assessment	<p>Local Unit Coordinator: IAV Khadija Lamrani IBN Aouane El Mahjoub ENA Tahiri Abdesslam UMP Mokhtari Khalida</p>
11	Food Legislation <i>Législation alimentaire</i>	<p>The module is presented in four parts:</p> <ul style="list-style-type: none"> - Part 1: Introduction to legislation and standardisation, - Part 2: Overview of the national food control system, - Part 3: Food Legislation: Main food control laws, - Part 4: The main regulatory texts on product conformity, - Part 5: Traceability of food products. 	50h	Mixed assessment	<p>Local Unit Coordinator: IAV Idrissi Drissia Janati IBN Youssef Aboussaleh ENA Tahiri Abdesslam UMP Saalaoui Ennouamane</p>
12	Human Nutrition and Health <i>Nutrition humaine et santé</i>	<p>Part 1: Physiological basis and nutritional requirements.</p> <p>Part 2: Link between nutrition and health.</p>	50h	Mixed assessment	<p>Local Unit Coordinator: IAV Idrissi Drissia Janati IBN Rachid Bengueddour ENA Belkoura Ilham UMP Amrani Souliman</p>

For a detailed description of content of the modules and workload, in each of the HEIs, please consult the accreditation dossiers here:

[IAV Accreditation Dossier](#)

[IBN Accreditation Dossier](#)

[ENA Accreditation Dossier](#)

[UMP Accreditation Dossier](#)

Second year (3rd semester)

IAV

Specialisation: Milk and dairy products

M	Teaching Unit	Teaching Unit Contents	Semester workload	Evaluation scheme	Teaching team
			Total (Courses, TD, TP, Individual work, and Assessment of knowledge)	(Final assessment (exam), Continuous assessment and practical work)	
13	Milk and dairy products technology	I. Dairy sector in Morocco II. Composition and properties of milk III. Milk microbiology and analysis IV. Quality control of raw milk at reception V. Fluid milk technology: pasteurized and sterilized milk VI. Production of milk powder VII. Fermented milk technology VIII. Cheese technology IX. Butter and ice cream production X. Innovation and production of new products XI. Preservation and packaging	50h	Mixed assessment	Unit Coordinator: Zrira Saadia
14	Environmental Management System EMS	I. International standards in the field of environmental management II. The requirements of ISO 14001:2015 and other related standards III. Implementation of the environmental management system IV. Moroccan environmental policy and environmental management V. Moroccan legislative framework for environmental protection VII. Carrying out an environmental analysis, methodology and approach VII. Management of legal compliance and its use in the company VIII. Structure of the monitoring and evaluation of environmental performance IX. Knowledge of the certification process and EMS audit techniques	50h	Mixed assessment	Unit Coordinator: Kaanane Amar
15	Packaging & storage of milk and dairy products	Packaging & wrapping Industrial refrigeration	50h	Mixed assessment	Unit Coordinator: Kaanane Amar
16	Chemical and microbiological control of milk and dairy products	Chemical control of milk Microbiological control of milk	50h	Mixed assessment	Unit Coordinator: Zrira Saadia
17	Documentary analysis, research methods and writing of the master thesis	Techniques for writing scientific documents: -Introduction -Techniques for researching bibliographic references - Techniques and standards for writing dissertations - Techniques and standards for writing theses - Techniques for writing scientific articles - Techniques for writing bibliographical references - Techniques for writing scientific reports and projects	50h	Mixed assessment	Unit Coordinator: Ouchbani Tarik
18	Seminars and special topics	Visits to industrial units Seminars	50h	Mixed assessment	Unit Coordinator: Ouchbani Tarik

Second year (3rd semester)

IBN

Specialisation: Fruit and Vegetables

M	Teaching Unit	Teaching Unit Contents	Semester workload	Evaluation scheme	Teaching team
			Total (Courses, TD, TP, Individual work, and Assessment of knowledge)	(Final assessment (exam), Continuous assessment and practical work)	
13	Project management and entrepreneurship	Part 1: Valorisation of research results Part 2: Project cycle Case studies Tutorials	50h	Mixed assessment	Unit Coordinator: Zidane Ismail
14	Plant-based product technology	Beverage Technology Fruit and vegetable technology Canning technology for vegetables and fruit Interaction: cause of agricultural losses, source of inoculum, birth of seed pathology Canning diseases of fruit and vegetables	50h	Mixed assessment	Unit Coordinator: Taboz Youness
15	Environmental Management System EMS	- Environmental Management - Definition -General requirements - Environmental policy - Planning - Implementation and operation - Control and corrective action - Management review - Application to agricultural companies in the food industry (Fruit and Vegetables) - Audit techniques	50h	Mixed assessment	Unit Coordinator: Aouane Elmahjoub
16	Food control	- Setting up of quality control systems - Quality control systems for the fruit and vegetable processing - Methods of chemical-microbiological analysis and physical tests	50h	Mixed assessment	Unit Coordinator: Chaouch Abdelaziz
17	Methodology of documentary research and scientific writing	1: Bibliographic research tools: - Categories of research tools - Bibliographic research methodology - Monitoring tools 2: Bibliographic management tools - Management of bibliographic references with zotero - Presentation of research results by students on other bibliographic management tools Tutorial Practical Work	50h	Mixed assessment	Unit Coordinator: Chakiri Said

18	Food safety management	<p>Introduction: The standards landscape Steps to iso 22000 certification The high level structure:</p> <ol style="list-style-type: none"> 1. Scope of application 2. Normative references 3. Terms and definitions 4. Organisational context 5. Leadership 6. Planning 7. Support 8. Operation 9. Performance performance 10. Improvement <p>Application on the Food Industry (Fruit and Vegetables)</p>	50h	Mixed assessment	Unit Coordinator: Habsaoui Amar
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Second year (3rd semester)

ENA

Specialisation: Olive Tree Products

M	Teaching Unit	Teaching Unit Contents	Semester workload	Evaluation scheme	Teaching team
			Total (Courses, TD, TP, Individual work, and Assessment of knowledge)	(Final assessment (exam), Continuous assessment and practical work)	
13	Valorisation of olive by-products	Chapter 1: By-products of the olive oil industry: Environmental issues and regulations Chapter 2: Treatment methods for the by-products of the olive industry Chapter 3: Ways of valorisation of olive industry by-products in a circular economy context: the olive biorefinery Activities and practical work	50h	Mixed assessment	Unit Coordinator: EN Nahli Said
14	Seminars and special topics	- Writing techniques. - Definition of intellectual property. -Definition of plagiarism. - Presentation of the objectives and function of the bibliographical review -Acquire the methodology of bibliographic research. -Knowing how to prepare and present bibliographical references. - Presentation of the objectives and function of bibliographic references - Techniques for inserting citations. -Knowing how to write a bibliographic synthesis	50h	Mixed assessment	Unit Coordinator: BELKOURA Ilham
15	Olive growing and olive oil technology	Olive growing Chapter 1: Ecological and socio-economic interests of the olive tree Chapter 2: Biology and physiology of the olive tree Chapter 3: Production techniques in olive growing and good olive growing practices Oil technology Chapter 1: Physiological and biochemical bases of olive development and maturation of the olive Chapter 2: Olive harvesting and transport Chapter 3: Extraction processes of olive oil Chapter 3: Extraction processes of virgin olive oil Chapter 4: Good hygiene practices for the elaboration of virgin olive oil Activities and practical work Visits	50h	Mixed assessment	Unit Coordinator: BAJOUB Adil
16	Documentary analysis, research methods and writing of the master thesis	I- General considerations II- Issues III- Analysis and Synthesis IV. Results and Recommendations IV- Writing V- Methodological and practical guide to the oral presentation	50h	Mixed assessment	Unit Coordinator: Aoudry Saadia

17	Quality and safety of olive tree products	<p>Legislation and regulations Chapter 1: Quality criteria and purity and safety of olive oil. Chapter 2: Quality criteria, purity and safety of table olives. Chapter 3: Regulatory standards for the quality and safety of olive oil and table olives.</p> <p>Methods of analysis and control Chapter 1: Deterioration of the quality of olive products and risks of their contamination by phytosanitary residues. Chapter 2: Official methods of analysis of the quality and safety of olive products. Chapter 3: Recent progress in the detection and quantification of pesticide residues in olive olive products.</p> <p>Activities and practical work Visits</p>	50h	Mixed assessment	Unit Coordinator: TAZI Bouchra
18	Processing of table olives	<p>Part 1: Socio-economic interests, challenges, and prospects of the table olive production sector in the world and in Morocco Part 2: Introduction to table olive production processes Part 3: Processing and packaging of table olives Part 4: Good hygiene practices for the elaboration of table olives Activities and practical work Visits</p>	50h	Mixed assessment	Unit Coordinator: Amiri Said

Second year (3rd semester)

UMP

Specialisation: Local Agri-Food Products

M	Teaching Unit	Teaching Unit Contents	Semester workload	Evaluation scheme	Teaching team
			Total (Courses, TD, TP, Individual work, and Assessment of knowledge)	(Final assessment (exam), Continuous assessment and practical work)	
13	Project Management and Entrepreneurship	1: Valorisation of research results 2: Project cycle Case studies Tutorials	50h	Mixed assessment	Unit Coordinator: Asehraou Abdeslam
14	Quality and safety of milk and milk products	I: Milk production: composition, collection, storage, quality control of milk II: Milk processing III: Quality assurance in the milk processing industry V: Waste management in the dairy industry Tutorials Practical Work	50h	Mixed assessment	Unit Coordinator: Amrani Souliman
15	Quality and Safety of Olive Oil	I: Olive oil crushing processes: varieties, crushing techniques, olive oil storage, packaging and packaging II: Quality assurance in the olive oil processing industry III: Waste/by-product management in the olive oil processing industry. Tutorial Practical Work	50h	Mixed assessment	Unit Coordinator: Gseyra Nadia
16	Quality and safety of table olives	I: Table olive processing: varieties, processing techniques, packing and packaging II: Quality assurance in the table olive processing industry III: Waste/by-product management in the table olive processing industry Tutorial Practical Work	50h	Mixed assessment	Unit Coordinator: Asehraou Abdeslam
17	Quality and safety of citrus fruit and juice	I: The citrus industry in Morocco II: Chemical composition of citrus fruits III: Storage and packaging of citrus fruit IV: Extraction of citrus juice V: Quality assurance in the citrus juice industry VI: Valorisation of by-products Tutorial Practical Work Visits	50h	Mixed assessment	Unit Coordinator: Kharmach Ez-Zahra
18	Methodology of documentary research and scientific writing	1: Bibliographic research tools: - Categories of research tools - Bibliographic research methodology - Monitoring tools 2: Bibliographic management tools	50h	Mixed assessment	Unit Coordinator: Meziane Mustapha

		<ul style="list-style-type: none">- Management of bibliographic references with zotero- Presentation of research results by students on other bibliographic management tools <p>Tutorial Practical Work</p>			
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Second year (4th semester)			
	Semester workload	Evaluation scheme	Unit Coordinator:
<p>Internship and Report/Thesis</p> <p>The internship will be carried out in a university research laboratory or in a company, and the student's work will be monitored by a professional supervisor and an academic supervisor who is a teacher-researcher. The supervisors oversee the progress of the student's work until its completion (thesis defence).</p> <p>The student will contact the host laboratory or company at the end of the second semester to draw up a work plan and carry out bibliographical research in the field of activity of the host institution.</p> <p>The student is required to present to the person in charge of the placement (tutor) the whole of their work or activities in a document which he/she written in the form of a dissertation.</p> <p>The aim of the internship module is to put the student's acquired knowledge into practice, to introduce him/her to the worlds of scientific research and work, and to enable him/her to acquire long-term professional experience.</p> <p>This internship also allows the student to confront his or her knowledge with the constraints of the given professional sector relevant to the fields of their training.</p>	Six months – 300 hours	Report/Thesis Oral presentation	Ouchbani Tarik (IAV) Habsaoui Amar (IBN) Amiri Said (ENA) Asehraou Abdeslam (UMP)

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