TECHNOLOGY AND QUALITY OF MEAT AND FISH PRODUCTS

COURSE OUTLINE

GENERAL

SCHOOL	AGRICULTURAL SCIENCES		
DEPARTMENT	FOOD SCINECE AND NUTRITION		
COURSE LEVEL	*Undergraduate*		
COURSE CODE	ME813	**SEMESTER**	8th
COURSE TITLE	TECHNOLOGY AND QUALITY OF MEAT AND FISH PRODUCTS Course Coordinator: M. KAKAGIANNI		

INDEPENDENT TEACHING ACTIVITIES	**WEEKLY TEACHING HOURS**	**ECTS**
Lectures	3	5
Laboratory exercises	3	

COURSE TYPE *Background, General Knowledge, Scientific Area, Skill Development*	*Scientific Area, skills development*
PREREQUISITES:	-
LANGUAGE OF TEACHING AND EXAMINATIONS:	GREEK
THE COURSE IS OFFERED TO ERASMUS STUDENTS	YES
URL	https://food.uth.gr/poiotikos-elegxos-kreatos/?lang=en

TEACHING RESULTS

Teaching Results
The course "Technology and Quality Control of Meat and Fish Products" is a specialized scientific-background and skills-development course in the technology, quality and control of animal-origin products. The course covers the structure, chemical and biochemical composition of muscle tissue, post-mortem changes, carcass and meat quality, the main processing and preservation technologies for meat and meat products, and the evaluation of physicochemical, microbiological and sensory characteristics. In parallel, the course examines the chemical composition, nutritional value, post-mortem changes, spoilage, preservation, processing and quality control of fishery products. Particular emphasis is placed on the factors affecting the quality and shelf life of meat, meat products and fishery products, preservation technologies, packaging, quality deviations, defects, safety and relevant legislative requirements. The laboratory part supports the application of basic quality-control methods and the interpretation of results for evaluating product quality and suitability. Upon successful completion of the course, students will be able to: • Describe the structure of muscle tissue, the chemical and biochemical composition of meat and the main post-mortem changes that determine quality. • Recognize basic carcass cuts and relate their anatomical and technological characteristics to their appropriate use.

• Explain the effect of slaughter, chilling, ageing, packaging and storage conditions on the quality, safety and shelf life of meat.
• Recognize basic meat quality deviations, such as PSE and DFD, and interpret the factors causing them.
• Describe the main categories of meat products, raw and auxiliary materials, additives and the key production stages of pasteurized and ripened products.
• Evaluate the quality of meat products using physicochemical, microbiological and sensory criteria and recognize common defects.
• Describe the composition, nutritional value, sensory characteristics and post-mortem changes of fishery products.
• Select appropriate preservation and processing methods for fishery products, such as chilling, freezing, drying, salting, smoking and canning.
• Apply basic laboratory quality-control methods to meat, meat products and fishery products and interpret their results.
• Recognize the main hazards and hygiene, safety, GHP/GMP and HACCP requirements related to the production and handling of meat and fishery products.
• Evaluate simple quality, spoilage or non-compliance problems and propose documented preventive or corrective measures.
• Use the scientific and technical terminology of the field correctly and collaborate effectively in laboratory exercises and case studies.

General Skills

- Application of knowledge in practice
- Search, analysis and synthesis of data and information using the necessary technologies
- Decision-making
- Autonomous work
- Teamwork
- Work in an interdisciplinary environment
- Adaptation to new situations
- Critical thinking and self-reflection
- Problem-solving skills
- Promotion of free, creative and inductive thinking

CONTENT

LECTURES

1. Introduction to the technology and quality control of meat, poultry and fishery products. Basic concepts of quality, safety, suitability and shelf life.
2. Structure of striated muscle and muscle fibre. Connective and adipose tissue, myofibrils, sarcoplasm, types of muscle fibres and relationship with quality.
3. Chemical and biochemical composition of muscle tissue. Proteins, lipids, carbohydrates, water, minerals, water-holding capacity and nutritional value.
4. Conversion of muscle to meat. Post-mortem glycolysis, rigor mortis, pH, ageing, protein changes and effects on tenderness, colour and water-holding capacity.
5. Pre- and post-slaughter handling, stunning and slaughter, chilling of carcasses and meat, animal welfare, personnel safety and effects on quality.
6. Meat quality characteristics and quality deviations. Colour, texture, tenderness, sensory characteristics, PSE, DFD, spoilage and non-compliances.
7. Technology of meat products. Raw materials, additives and auxiliary materials, salt, water, nitrites/nitrates, spices, structure and stability of meat products.
8. Pasteurized sausages and heat-treated products. Meat batter preparation, stuffing, heat treatment, cooling, packaging, storage and quality control.
9. Ripened products. Microbiological stability, fermentations, dehydration, smoking, control factors, packaging, storage and common defects.
10. Fishery products: classification, main species, anatomy, physiology, chemical composition, nutritional value and sensory characteristics.
11. Quality and spoilage of fishery products. Post-mortem sensory, biochemical and microbiological changes, freshness indicators, sampling and shelf life.

12. Preservation and processing of fishery products: chilling, freezing, drying, salting, smoking, canning and processed products. Utilization of by-products and fish of low commercial value.
13. Quality control, hygiene and safety of meat and fishery products. Physicochemical, microbiological and sensory analyses, GHP/GMP, HACCP, legislation and compliance assessment.

LABORATORY EXERCISES

1. Laboratory safety, hygiene rules, sampling and preparation of meat, meat-product and fishery-product samples.
2. Recognition of basic carcass cuts and relation to technological/culinary use.
3. Measurement of pH, colour and basic physicochemical parameters of meat.
4. Assessment of water-holding capacity, thawing/cooking losses and basic quality indicators.
5. Sensory evaluation and recognition of quality deviations in meat and meat products.
6. Preparation or study of basic meat products and interpretation of technological production parameters.
7. Quality control of pasteurized and/or ripened products: pH, moisture, salt, colour, texture and defects.
8. Microbiological control of meat/meat products and interpretation of results in relation to hygiene and safety criteria.
9. Assessment of fish freshness using sensory and physicochemical methods.
10. Quality control of fresh and processed fishery products and evaluation of spoilage indicators.
11. Case studies of spoilage, non-compliance or technological defects in meat and fishery products.
12. Interpretation of laboratory results, comparison with specifications and proposal of corrective actions.

TEACHING AND LEARNING METHODS - EVALUATION

TEACHING METHOD.	Face-to-face lectures in the auditorium/classroom and laboratory exercises in an appropriate laboratory.
USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES	Use of ICT in teaching, laboratory training and communication with students. Use of digital teaching material, bibliographic sources, spreadsheets and tools for presentation/processing of laboratory data. Course material, laboratory instructions, announcements and assessment criteria are posted on the Department e-class platform. Communication takes place through e-class and e-mail.
TEACHING STRUCTURE	

Activity Semester	***Workload***
Lectures	39
Laboratory exercises	39
Study and preparation of laboratory exercises/case studies	25
Independent study and preparation for the final examination	22
Course Total: ***(25 hours of workload per credit unit)***	**125**

EVALUATION OF STUDENTS	Assessment language: Greek. 1. Final written theory examination (70% of the final grade), including multiple-choice questions, short-answer questions, critical-thinking/development questions and short problem-solving or case-study tasks. 2. Final laboratory examination and/or assessment of laboratory exercises (30% of the final grade), including short-answer questions, interpretation of laboratory results, applied problem-solving exercises and assessment of basic laboratory skills. Feedback during laboratory exercises supports formative assessment. Assessment criteria, weighting factors and

	successful completion requirements are announced at the beginning of the semester and posted on e-class.

BIBLIOGRAPHY

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