CEREAL PRODUCTS TECHNOLOGY AND QUALITY CONTROL
COURSE OUTLINE

GENERAL

SCHOOL	AGRICULTURAL SCIENCES		
DEPARTMENT	FOOD SCIENCE AND NUTRITION		
LEVEL COURSE	The undergraduate Food Science and Nutrition curriculum		
CODE COURSE	ME811	**SEMESTER STUDIES**	H'
COURSE TITLE	Cereal Products Technology and Quality control (KEY) RESPONSIBLE: THEOFANIS GEORGOPOULOS		

INDEPENDENT TEACHING ACTIVITIES in case the credits are awarded in separate parts of the course e.g. Lectures, Laboratory Exercises, etc. If credits are awarded single for the entire course please enter the weekly credits teaching hours and total number of credits	**WEEKLY HOURS**	**ECTS UNITS**
TEACHING	3	5
LABORATORY EXERCISES	3	

COURSE TYPE Background, General Knowledge, Scientific Area, Development Skills	GENERAL KNOWLEDGE
PREREQUISITE COURSES:	
ΓΛΩΣΣΑ ΔΙΔΑΣΚΑΛΙΑΣ και ΕΞΕΤΑΣΕΩΝ:	GREEK AND ENGLISH
ΤΟ ΜΑΘΗΜΑ ΠΡΟΣΦΕΡΕΤΑΙ ΣΕ ΦΟΙΤΗΤΕΣ ERASMUS	YES
INTERNET COURSE	

LEARNING OUTCOMES

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Upon completion of the course, the student is expected to be able to:

1 .To appreciate the importance of cereals as food as well as their nutritional value.
2. Choose the appropriate handling methods and conditions for storing cereals.
3. To recognize the botanical, physical and chemical criteria of the quality of wheat and apply them for the selection of the appropriate treatment.
4. To know the individual components of cereals in terms of their content and their functional role in cereal foods as well as their methods of analysis.
5. Understand the processes of dry milling of soft and durum wheat, as well as the processes of peeling and boiling rice.
6. Understand the wet milling stages of cereals
7.Understand and interpret biochemical, chemical and technological processes in bakery, and identify the parameters involved in assessing the quality of the finished product
8.Application of the above knowledge and analytical skills on a laboratory and industrial scale

General abilities

The general competences that the student should have acquired and which the course aims at are:
· Search, analysis and synthesis of data and information, using the necessary technologies
· Decision making
· Group Task
· Production of new research ideas
· Project design and management
· Criticism and self-criticism
· Promotion of free, creative and inductive thinking

COURSE CONTENT

1. Cereals: Generally, importance and storage. Generally about cereals. Importance of cereals for nutrition. Storage of cereals.
2. Structure and composition of granules. Structure of cereal grains. Ingredients of cereals: content, chemical, biochemical and mechanical properties and their importance.
3. Dry milling of cereals. Dry milling of wheat: Cleaning, sifting (species and importance of each), general grinding arrangement in flour mills, principles of operation of basic machinery. Types of wheat flour. Fine milling, air separation of flour. Dry milling and flours of other cereals
4. Peeling of cereals. Rice: Milling and parboiling: Brief description of cleaning and milling stages. Hygrothermal treatment (parboiling): the purpose of the treatment, its stages and the importance of each, properties of parboiling rice. Grinding oats. Peeling (bleaching) of barley.
5. Wet milling of cereals. Description of wet milling of maize and the importance of each stage of milling. Peculiarities of wet milling of wheat. Products of wet milling, amylosyrups.
6. Various types of cereal food. Whole or broken grains and ground cereal foods. Products that have been swollen abruptly, products that do not swell, pasta.
7. Preparations of wheat flour; Organic Swelling-
Bakery Yeast Baking: Necessary materials and process. Stages of baking, physical, chemical and enzymatic actions that occur in them. Swelling of preparations by chemical means (baking powder) or by air and steam. Common mistakes when making products that swell with yeast or other ways.
8. Bakery materials. Role of different ingredients in pastries. Characteristics of the flours for various uses. Improvement of the properties of the flours (curing, mixing of flours, various improvers).
Importance of various additives in stale baked pastries. Preservatives of bakery products.
Titles of Laboratory Exercises:
1. Sampling, qualitative examination, weight of hectoliters, determination of the weight of one thousand grains, determination of foreign matter
2. Experimental Soft Wheat Milling: Precipitation value test.
3. Determination of liquid gluten and its qualitative assessment.
4. Test Hagberg.
5. Amylography.- amylases in flour.
6. Development Farinography (Brabender Farinographer).
7. Extensiography
8. Identification - Detection of improvers
9. and 10. Experimental baking, quick baking method for flour type 70%, 85% and 55%, quality bread assessment. Staling

TEACHING AND LEARNING METHODS - EVALUATION

METHOD LECTURE	Face to face
APPLICATION OF INFORMATION TECHNOLOGY AND COMMUNICATION	Use H/Y, Internet, PowerPoint, e-mail, search engines (googlechrome, googlescholar), e-class e-education, e-rating, use of audiovisual media, thematic Videos from foreign university bases, photos, animations, chatroom for exchange students' views
STRUCTURE OF LECTURE	

ACTIVITY	***PORTION OF WORK SEMESTER***
Lectures	39
Bibliography &Analysis	30
Task Writing	45

	Course Set (25 hours workload per credit)	***125***
STUDENT EVALUATION	Students take part in the Final Written Examination The total grade is derived from A) Written final examination (70%) B) Work (20%) C) Participation in theoretical lectures (10%)	

SUGGESTED BIBLIOGRAPHY

A. Lazou, E. Lazou, Science and technology of grain, Papazisis publications, 2016. Kefalas P., Food from Cereals, Gartagani Publications, Thessaloniki, 2009
H.-
D. Belitz, W. Grosch, P. Schieberle., Food Chemistry, 3rd Edition, Translation: Tziola Publications, Thessaloniki, 2006 –
Literature in English: The ICC handbook of Cereals, Flour, Dough; & Product Testing. , DEStech Publications, Inc. 2009 Principles of Cereal Science and Technology, AACC 1986---
International Association For; Cereal Chemistry, ICC-Standards –
Relevant scientific journals: Cereal Chemistry; Cereal Foods World; Journal of Cereal Science