

SUBJECT DESCRIPTION

1. Information on the study programme

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| 1.1 Academic institution | UNIVERSITY OF ORADEA |
| 1.2 Faculty | FACULTY OF ENVIRONMENTAL PROTECTION |
| 1.3 Department | ENGINEERING OF FOOD PRODUCTS |
| 1.4 Field of study | CONTROL AND EXPERTISE OF FOOD PRODUCTS |
| 1.5 Cycle of study | BACHELOR |
| 1.6 Study programme/Qualification | TECHNOLOGY OF AGRICULTURAL PRODUCTS PROCESSING/ENGINEER |

2. Information on the discipline

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|---------------------------------------|---------------------------------------|--------------|---|------------------------|---|--------------------------|---|
| 2.1 Name of discipline | BIOCHEMISTRY | | | | | | |
| 2.2 Course holder | Associate prof. dr. Purcărea Cornelia | | | | | | |
| 2.3 Seminar/Laboratory/Project holder | Associate prof. dr. Purcărea Cornelia | | | | | | |
| 2.4 Year of study | I | 2.5 Semester | 2 | 2.6 Type of evaluation | E | 2.7 Regime of discipline | C |

(C) Compulsory; (O) Optional; (E) Elective

3. Total estimate time (hours per semester of didactic activities)

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|---|------------|-----------------------------|----|--|-------|
| 3.1 Number of hours per week | 4 | out of which: 3.2 course | 2 | out of which 3.3 seminar/laboratory/project | 2 |
| 3.4 Total hours in the curriculum | 56 | out of which: 3.5 course | 28 | out of which 3.6 seminar/laboratory/project | 28 |
| Time allotment | | | | | hours |
| Study assisted by manual, course support, bibliography and notes | | | | | 30 |
| Additional documentation in the library/ on specialised electronic platforms and in the field | | | | | 20 |
| Preparation of seminars/laboratories/ topics/reports, portfolios and essays | | | | | 10 |
| Tutorship | | | | | 7 |
| Examinations | | | | | 2 |
| Other activities..... | | | | | |
| 3.7 Total hours of individual study | 44 | | | | |
| 3.9 Total hours per semester | 100 | | | | |
| 3.10 Number of credits | 4 | | | | |

4. Prerequisites (where appropriate)

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| 4.1 curriculum | Notions of organic chemistry and structural biochemistry |
| 4.2 competences | |

5. Conditions (where appropriate)

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| 5.1. related to course | Classroom 122 | Faculty for Environmental Protection |
| 5.2. related to seminar/laboratory/ project | Laboratory 009 | Faculty for Environmental Protection |

| 6. Specific competences acquired | |
|----------------------------------|---|
| Professional competences | <p>C1. Analysis, interpretation, supervision and coordination of specific issues concerning the processing of food raw materials; C.1.1. Description of the scientific foundations and acquired methods for the disciplines of chemistry (inorganic, analytical, organic and physical chemistry), biochemistry, instrumental analysis, in order to get a correct management of a technological process in the food industry</p> <p>C2. Coordination of activities and processes based on technical specifications C2.1 Defining the food composition based on knowledge gained from agricultural raw materials (livestock and non-livestock) and complying with the principles of food preservation based on knowledge gained from subjects such as: freezing, canned products, meat technology, dairy technology, bakery.</p> <p>C5. Cooperation with the authorities responsible for food safety and quality C.5.1. . Identification of specialized terminology on the quality, standards and food hygiene in order to collaborate and cooperate with the authorities responsible for food safety and quality</p> |

7. Objectives of discipline (coming from the specific competences acquired)

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| 7.1 General objective | provides students knowledge of the main component of living matter in general and food and agricultural products in particular, knowledge of the main transformations of food during processing, storage, and transport and their metabolism in the body. |
| 7.2 Specific objectives | knowledge of how to organize an agro biochemistry laboratory, finding common solutions, knowledge of qualitative and quantitative analysis of the main components of food products. |

8. Content*/

| 8.1 Course | Methods of teaching | No. of hours/Remarks |
|--|---------------------|----------------------|
| 1-2. Nutrients in food composition | ppt presentation | 4 |
| 3.Enzymes and their role in organism. Clasification. Mecanisme Factors influencing enzyme activities. Enzymes in food technology | ppt presentation | 2 |
| 4.Vitamines: nomenclature, clasification. Vitamines in food | ppt presentation | 2 |
| 5.Hormones. Phytohormones. Pigments.. Food Coloring (dye) Byproducts of metabolism in food | ppt presentation | 2 |
| 6. Metabolic processes. Anabolism. Catabolism. Carbohydrates anabolism . Chemosynthesis. Photosynthesis. | ppt presentation | 2. |
| 7.Carbohydrates catabolism.. Glicolizis. Krebs cycle. Pentose phosphate pathway. | ppt presentation | 2. |
| 8. Aerobic and anaerobic fermentations | ppt presentation | 2. |
| 9. Biochemical changes of carbohydrates during storage and food production | ppt presentation | 2 |
| 10. Lipides metabolism . | ppt presentation | 2 |
| 11 Biochemical changes of lipids during storage and food production | ppt presentation | 2 |
| 12. Proteins and aminoacids metabolism. Metabolic interrelations. | ppt presentation | 2 |
| 13. Biochemical changes of protein, enenzymes and vitamins during storage and food production, depozitării și transportului | ppt presentation | 2. |
| 14. Chemical composition of the main food groups -1 | ppt presentation | 2. |

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| 1.I.F.Dumitru - Biochimie - Editura Didactică și Pedagogică, București 1980. 2.I.F.Dumitru,Dana Iordăchescu – Introducere în enzimologie- Editura Medicală, București , 1981. 3.G.Neamțu - Biochimie alimentară- Ed.Ceres, București, 1997 4.C.Purcărea – Biochimie agroalimentară. Edit.Univ. Oradea, 2005. 5.C.Socaciu - Chimie alimentelor- Ed.Academic.Press, Cluj-Napoca, 2003. | | |
| 8.2 Seminar | Methods of teaching | No. of hours/ Remarks |
| 8.3 Laboratory | | |
| 1. General laboratory safety rules and regulations for biochemistry laboratories. How to organize an agro biochemistry laboratory | Signed the tabel for labor protection | 2 |
| 2.Qualitative and quantitative analyses in food biochemistry | Aplication. experiments, ppt | 2 |
| 3. Quantitative determination of carbohidrates in food. Schrool method | Aplication. experiments, p | 2 |
| 4.Lactose determination from milk.Refractometric determination of total sugar from honey | Aplicații, experimente | 2 |
| 5. Lipids. Determining of various indices characteristics for lipids | Aplication. experiments, | 2 |
| 6. Gerber and Soxhlet methods methods for fat determination | Video, | 2 |
| 7. Obtaining the proteic extracts. Identification of aminoacids by TLC | Aplication. experiments, | 2 |
| 8. Determination of protein in milk – Sorensen methods. Determination of casein in milk | Aplication. experiments, | 2 |
| 9. Spectrophotometric determination of protein in milk – Biuret method. Determination of protein-Kjelhal method. | Aplication. experiments, | 2 |
| 10. Highlighting enzymes. Influence of pH and temperature on catalase activity | Aplicații, experimente, | 2 |
| 11. Vitamine. Identification of some vitamine. Determination of vitamine C in milk | Aplication. experiments, | 2 |
| 12. Vitamine. Determination of vitamine C in juice, fruits and vegetables | Aplication. experiments, | 2 |
| 13. Identification of chlorrophilien pigments by TLC. Spectrofotometric determination of chlorrophilien pigments. | Aplication. experiments, | 2 |
| 14. Knowledge verification | Determination and calculation of some parameters | 2 |
| 8.4 Project | | |
| Bibliography Dana Iordăchescu, I.F.Dumitru-Biochimie practică – Tipografia Universității, București, 1980. 2.G.Neamțu - Lucrări Practice de biochimie alimentară- Tipo Agronomia, Cluj-Napoca, 1997 3.N.Popescu, S.Meica - Noțiuni și elemente practice de chimie analitică sanitar veterinară, Ed.Diacon Coresi, București, 1993. 4.Cornelia Purcărea - Biochimie alimentară practică, Ed.Univ.Oradea,2003. 5..C.Socaciu, O.Bobiș - Caiet de lucrări practice, Chimia alimentelor, Ed. Academic Press, Cluj-Napoca, 2003. | | |

* The content, respectively the number of hours allocated to each course / seminar / laboratory / project will be detailed during the 14 weeks of each semester of the academic year.

9. Corroboration of discipline content with the expectations of the epistemic community, professional associations and representative employers from the field corresponding to the study programme

- The discipline provides the specialists for the food control laboratories, on the technological flow or in accredited laboratories for the food control, but also for the control bodies - DSV, DSP, OPC

10. Evaluation

| Type of activity | 10.1 Evaluation criteria | 10.2 Evaluation methods | 10.3 Share in the final grade |
|---|---|--|-------------------------------|
| 10.4 Course | For grade 5 – knowledge of the material 50% For grade 10 – knowledge of the material in 100% (the student presented the evidence of studied references) | Presentation of a topic from agrifood biochemistry Summative Evaluation - Final exam - written or oral | 10% 70% |
| 10.5 Seminar | - | - | - |
| 10.6 Laboratory | Test with 5 questions at the end of every laboratory activity | Continuous assessment Evaluation of laboratory | 10% 10% |
| 10.7 Project | - | - | - |
| 10.8 Minimum standard of performance | | | |
| <ul style="list-style-type: none"> • Knowledge of the main component of food and agricultural products, knowledge of the main biochemical transformations in food during processing, storage, and transport . To know the Chemical composition of the main food groups • Prepare usual solutions, to know the qualitative and quantitative analysis technique, for the main components of foods | | | |

Date of completion

Signature of course holder**

Signature of seminar
laboratory/project holder **

01.02.2019.

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Date of approval in the department

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** - Name, first name, academic degree and contact details (e-mail, web page, etc) will be specified.

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