**COURSE OUTLINE**

1. **GENERAL**

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| **SCHOOL** | HEALTH OF SCIENCES | | | | |
| **ACADEMIC UNIT** | BIOLOGICAL APPLICATIONS AND TECHNOLOGY | | | | |
| **LEVEL OF STUDIES** | UNDERGRADUATE | | | | |
| **COURSE CODE** | BEY208 | SEMESTER | | 2 | |
| **COURSE TITLE** | ORGANIC CHEMISTRY OF BIOMOLECULES | | | | |
| INDEPENDENT TEACHING ACTIVITIES  if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits | | | WEEKLY TEACHING HOURS | | CREDITS |
| LECTURES | | | 4 | | 6 |
|  | | |  | |  |
|  | | |  | |  |
| Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d). | | |  | |  |
| **COURSE TYPE**  *general background,  special background, specialised general knowledge, skills development* | GENERAL BACKGROUND | | | | |
| **PREREQUISITE COURSES:** |  | | | | |
| **LANGUAGE OF INSTRUCTION and EXAMINATIONS:** | GREEK | | | | |
| **IS THE COURSE OFFERED TO ERASMUS STUDENTS** | NO | | | | |
| **COURSE WEBSITE (URL)** |  | | | | |

1. **LEARNING OUTCOMES**

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| **Learning outcomes** | |
| *The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.*  *Consult Appendix A*   * *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area* * *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B* * *Guidelines for writing Learning Outcomes* | |
| Upon completion of the course students will be able to know the basic reactions of carbohydrates, and carbonyl and heterocyclic compounds. In addition will need to understand the way in which the subsequently reconstructed biomolecules and degradation mechanisms. The student must practice solutions strategy exercises. | |
| **General Competences** | |
| *Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?* | |
| *Search for, analysis and synthesis of data and information, with the use of the necessary technology*  *Adapting to new situations*  *Decision-making*  *Working independently*  *Team work*  *Working in an international environment*  *Working in an interdisciplinary environment*  *Production of new research ideas* | *Project planning and management*  *Respect for difference and multiculturalism*  *Respect for the natural environment*  *Showing social, professional and ethical responsibility and sensitivity to gender issues*  *Criticism and self-criticism*  *Production of free, creative and inductive thinking*  *……*  *Others…*  *…….* |
| Most biomolecules have as their basic structural characteristic of the carbonyl group, carbohydrates and derivatives of phosphoric acid (nucleosides, peptides, nucleotides and polymer such compounds). The student must understand the chemistry of these compounds, in order to have the necessary knowledge for the understanding of biological processes that constitute the material of the course below | |

1. **SYLLABUS**

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| * Carbonyl group, aldehydes, ketones, carboxylic acids and carboxylic acids derivatives (carboxylic anhydrits, alkanoyl halides, amides, esters) * Nucleophilic addition in carbonyl group * Cannizzaro and Grignard reactions * Reactions of carboxylic acids (esterification,etc) * Nitrosation of amines to diazonium ions. Organic colours * Aminoacides, chemical and physical properties, synthesis of peptides, mechanisms * Carbohydrates (monosaccharides, disaccharides, cyclic forms of sugars, conformations of sugars. Reactions of carbohydrates and polysaccharides * Heterocycles (hetercyclopentadienes, heterocyclohexadienes). Nucleic acids * DNA and RNA structures Examples of biochemical metabolic procedures. |

1. **TEACHING and LEARNING METHODS - EVALUATION**

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| **DELIVERY** *Face-to-face, Distance learning, etc.* | Face to face learning |
| **USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY** *Use of ICT in teaching, laboratory education, communication with students* | Communication with students |
| **TEACHING METHODS**  *The manner and methods of teaching are described in detail.*  *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.*  *The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS* | |  |  | | --- | --- | | ***Activity*** | ***Semester workload*** | | Lectures | 52 | | Independently study | 156 | |  |  | |  |  | |  |  | |  |  | |  |  | |  |  | |  |  | | Course total | 208 | |
| **STUDENT PERFORMANCE EVALUATION**  *Description of the evaluation procedure*  *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other*  *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.* | The service module is assessed by final exams |

1. **ATTACHED BIBLIOGRAPHY**

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| *- Suggested bibliography:*  *- Related academic journals:*  Organic Chemistry, John McMurry, Crete University Press  Organic Chemistry, Morrison and Boyd, Ioannina University Press |