ΜΟΔΙΠ
ΜΟΝΑΔΑ ΔΙΑΣΦΑΛΙΣΗΣ ΠΟΙΟΤΗΤΑΣ Α.Π.Θ.

Bio organic materials

1. GENERAL			
SCHOOL	Faculty of Sciences in collaboration with Faculty of Engineering, Aristotle University of Thessaloniki		
DEPARTMENT	Materials Science and Engineering		
LEVEL OF STUDIES	ISCED level 7 (5-year Integrated Master's programme) ISCED level 6 (4-year BSc programme)		
COURSE CODE	**MSEN 731**	**SEMESTER**	7h Semester
COURSE TITLE	**Bioorganic Materials**		
TEACHING ACTIVITIES Lectures, tutorials/problem sessions, laboratory/computer exercises (where applicable), case studies and guided self-study.		**TEACHING HOURS PER WEEK**	**ECTS CREDITS**
		4	6
COURSE TYPE	Scientific Area		
PREREQUISITES	No prerequisites		
TEACHING AND EXAMINATION METHODS	English		
COURSE OFFERED TO ERASMUS STUDENTS			
COURSE URL	https://elearning.auth.gr/course/view.php?id=xxxxx		

2. LEARNING OUTCOMES	
Learning Outcomes	By the end of this course, students will be able to: 1. Understand the organic chemistry of biomolecules. 2. Realize how bioorganic materials interact with cells, tissues, and biomolecules 3. Realize the noncovalent interactions and how they drive self-assembly 4. Apply principles of organic chemistry and bioconjugation. 5. Gain knowledge of bioorganic materials for drug delivery systems 6. Understand the importance of biocompatibility and biodegradation 7. Understand, and evaluate how biomaterials are built from organic and biological molecules 8. Gain knowledge of applications of bioorganic materials in pharmaceuticals, materials science, and medical engineering
General Skills	• Searching, analyzing and synthesizing data and information, using the necessary technologies • Decision-making • Independent work

	• Teamwork • Generate new research ideas • Project planning and management emphasizing on the materials science • Promoting free, creative and inductive thinking • Modeling and solving real-world problems • Working in a multidisciplinary environment

3. COURSE CONTENT
1. Convergence of organic chemistry, biology, and materials science 2. Biomaterials and biological building blocks: 2.1. Peptide and Protein-Based Materials and their applications 2.2. DNA and Nucleic Acid based materials 2.3. Carbohydrates and biomaterials based on polysaccharides 2.4. Lipids and their derivatives 3. Organic synthesis for biomaterials or probes 4. Bioorganic materials for Diagnostics and Biosensors 5. Bioorganic materials for Drug Delivery Systems 6. Sustainable and biodegradable materials

4. LEARNING & TEACHING METHODS - EVALUATION

Teaching method	Face-to-face.
Use of ICT	Use of ICT in Course Teaching, Use of ICT in Communication with Students Description: Use of Information and Communication Technologies (ICT) in teaching the course with tools of modern distance learning (ZOOM) and asynchronous education (eclass). Use of learning aids based on ICT: Excel, Word, PowerPoint Use of ICT in student assessment: Electronic grading (eclass, universis). • Use of ICT in communication with students: eclass, email, ZOOM.
Teaching organization	The supervised and unsupervised workload per activity is indicated below (total workload complies with ECTS standards).

Activity	Workload/semester (hours)
Lectures	52
Tutorials / problem sessions	13
Bibliographic Research and analusis	69
Writing of assignments	13
Final written exam	3
Total	**150**

Student evaluation	Assessment Language: English Assessment Methods: • Short Answer Questions,

	• Multiple Choice Test • Essay Development Questions, • Problem Solving, • Written exams

5. SUGGESTED BIBLIOGRAPHY
Course Bibliography
Introduction to Bioorganic Chemistry and Chemical Biology by David Van Vranken, Gregory A Weiss, Garland Science, Publication Date 2012 ISBN-13: 978-0815342144
Additional bibliography for study
Teaching material slides