

Module Outline FYE31

1. GENERAL

SCHOOL	OF SCIENCE AND TECHNOLOGY		
PROGRAMME	Studies in Natural Sciences		
LEVEL OF STUDIES	Level 6 of the Hellenic and European Qualifications Framework		
MODULE CODE	FYE31	YEAR	3d
MODULE TITLE	“Molecular Biology and Biochemistry of Animal Systems”		
INDEPENDENT TEACHING ACTIVITIES <i>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</i>		HOURS	CREDITS
Weekly workload: 14 hours x 32 weeks		448 (28hours/ECTS)	16 ECTS
MODULE TYPE <i>Compulsory/Elective/ Mandatory Optional</i>	Compulsory		
MODULE DESCRIPTION <i>general background, special background, specialised, general knowledge, skills development</i>	Scientific area		
PREREQUISITE MODULES	Simultaneous attendance or completion of FYE30 (organic chemistry) module is required		
LANGUAGE OF INSTRUCTION and EXAMINATIONS	Greek		
IS THE MODULE OFFERED TO ERASMUS STUDENTS	No		
MODULE WEBSITE (URL)	https://www.eap.gr/en/undergraduate/studies-in-natural-sciences/studies-in-physical-sciences-topics/#fye31 The Module has its own space in the digital learning environment of HOU (https://study.eap.gr/login/index.php) with controlled access (using a code) for students and Teaching Staff.		

2. LEARNING OUTCOMES

Learning outcomes

The learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the Module 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

LEARNING OUTCOMES

Knowledge:

Upon successful completion of the Module, students are expected to:

- Classify the cell macromolecular complexes and relate cell structures to cell functions
- Distinguish unique structures and functions of prokaryotic and eukaryotic cells
- Explain the genetic information flow in cells and describe the pre- and post-transcriptional regulatory mechanisms
- Correspond cellular functions and biochemical reactions with specific subcellular compartments
- Describe the basic catabolism and anabolism biochemical pathways
- Describe the basic mechanisms of cellular communication and signaling

- Explain concepts on animal physiology
- Describe cellular and tissue organization of mammals
- Describe tissue-specific functions

Skills:

Upon successful completion of the Module, students are expected to:

- Analyze and compare the structural and functional peculiarities of prokaryotic and eukaryotic cells
- Identify and classify macromolecular complexes based on chemical, structural and functional characteristics
- Interpret the flow of genetic information (DNA → RNA → Protein) and regulatory processes that affect it
- Analyze the biochemical pathways of catabolism and anabolism in combination and evaluate their contribution to cellular functions
- Link specific cellular functions and biochemical processes to the appropriate organelles or subcellular compartments
- Analyze basic concepts of animal physiology and correlate structures with functions at the tissue and organ level
- Interpret mechanisms of cellular communication and signaling, identifying stages and key molecules

Competences:

Upon successful completion of the Module, students are expected to:

- Develop skills in critical evaluation of scientific sources and biological experimental results
- Organize and synthesize biological information from a variety of sources (bibliography, digital material, etc.)
- Become familiar with complex biological systems
- Apply scientific principles of problem solving to biological questions

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 Module aim?

<i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i>	<i>Project planning and management</i>
<i>Adapting to new situations</i>	<i>Respect for difference and multiculturalism</i>
<i>Decision-making</i>	<i>Respect for the natural environment</i>
<i>Working independently</i>	<i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i>
<i>Team work</i>	<i>Criticism and self-criticism</i>
<i>Working in an international environment</i>	<i>Production of free, creative and inductive thinking</i>
<i>Working in an interdisciplinary environment</i>	
<i>Production of new research ideas</i>	

The general skills that the students will acquire are:

- Search for, analysis and synthesis of data and information by the use of appropriate technologies
- Adapting to new situations
- Decision-making
- Individual/Independent work
- Development of free, creative and inductive thinking

3. SYLLABUS

Purpose of Module

The integration of the fundamental knowledge subjects of Biology (Cellular/Molecular Biology, Biochemistry and Physiology) and deeper understanding of the concepts that define living organisms. The concepts presented and analyzed in this thematic unit are based, in part, on knowledge acquired in FYE12 (General and Inorganic Chemistry) and FYE22 (Physical Chemistry), while they are also complemented by knowledge acquired during the third-year study at the Faculty of Chemistry, FYE30 (Organic Chemistry).

Subjects covered

1. Cell molecular approach
2. Biochemistry-Metabolism
3. Animal Physiology

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY <i>Face-to-face, Distance learning, etc.</i>	- Distance teaching and learning. Students participate in six (6) Group Counseling Meetings (GCMs) and at least four (4) supporting GCMs of 4-hour duration during the academic year on weekends. - Personal communication and feedback (advisory role of Adjunct Faculty).														
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i>	During GCMs and teaching the following are used: - Remote meetings tools (webex, Teams), - Presentation software (PowerPoint, educational video - animations etc.), - Specialized software/databases for the subjects under study (NCBI PubMed, NCBI Blast, EndNote etc.). In addition, students use office automation tools, web browsers and e-reader for digital books. Communication with the students is supported by: - The digital platform of HOU (https://study.eap.gr/login/index.php) (course information, educational material posts, announcements, messages, examination results, user groups, discussion forums etc.). - e-mail														
TEACHING METHODS <i>The manner and methods of teaching are described in detail.</i> <i>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.</i> <i>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</i>	<table border="1"> <thead> <tr> <th>Activity</th><th>Year Workload</th></tr> </thead> <tbody> <tr> <td>6 GCMs and 4 SGCMs (x 4 hours)</td><td>40</td></tr> <tr> <td>5 Written Assignments (x 20 hours)</td><td>100</td></tr> <tr> <td>Individual Study time (~9 h x 32 weeks)</td><td>284</td></tr> <tr> <td>Self-evaluation activities</td><td>12</td></tr> <tr> <td>Final examination</td><td>12</td></tr> <tr> <td>Total Workload</td><td>448</td></tr> </tbody> </table>	Activity	Year Workload	6 GCMs and 4 SGCMs (x 4 hours)	40	5 Written Assignments (x 20 hours)	100	Individual Study time (~9 h x 32 weeks)	284	Self-evaluation activities	12	Final examination	12	Total Workload	448
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STUDENT PERFORMANCE EVALUATION <i>Description of the evaluation procedure</i> <i>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</i> <i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i>	Students' evaluation – Grade assessment of a Module: a. Five (5) Semester Assignments (A) which contribute equally to the final grade with a value of 5% each and 30% of the final grade as a total. <i>The scoring of educational activities and assignments is activated only if the student succeeds an overall score equal to or above the base (≥5) in the final or repeat exams.</i> b. Final or repeat exams (E) contributing to the final grade of the module by 70%. The Final Grade of the module, within scale 1-10 (10 is the excellent), is calculated as follows: Final Grade= (Ax0.3) + (Ex0.7) Language of evaluation: Greek														

5. ATTACHED BIBLIOGRAPHY

- Campbell Neil and Reece Jane, Biology, volumes I and III, Crete University Press
- Berg Jeremy M., Tymoczko John L., Gregory J. Jr. Gatto, Stryer Lubert, Biochemistry, Crete University Press

Additional and alternative teaching materials (webcasts) are posted on HOU websites:

- <https://apothesis.eap.gr/>
- <https://study.eap.gr/>