**COURSE OUTLINE**

1. **GENERAL**

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| **SCHOOL** | Health Sciences | | | | |
| **ACADEMIC UNIT** | Department of Biological Applications & Technology | | | | |
| **LEVEL OF STUDIES** | Undergraduate | | | | |
| **COURSE CODE** | BEE819 | **SEMESTER** | | 8th | |
| **COURSE TITLE** | RNA WORLD | | | | |
| **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** |
|  | | | 3 | | 3 |
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| *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* | Specialised general knowledge  Skills Development | | | | |
| **PREREQUISITE COURSES:** |  | | | | |
| **LANGUAGE OF INSTRUCTION and EXAMINATIONS:** | Greek | | | | |
| **IS THE COURSE OFFERED TO ERASMUS STUDENTS** |  | | | | |
| **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* | |
| The topics of the course aim to advance:  (a) the comprehension of RNA-mediated molecular mechanisms controlling cellular processes,  (b) the knowledge concerning the regulatory role of the different classes of RNA, with emphasis on the regulation of gene expression, and  (c) the familiarity with cutting-edge experimental approaches and discoveries in the area of RNA biology. | |
| **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…*  *…….* |
| Search for, analysis and synthesis of data and information, with the use of the necessary technology.  Team work.  Working in an international environment.  Working in an interdisciplinary environment.  Production of new research ideas. | |

1. **SYLLABUS**

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| In all organisms, RNA is the primary product of genome. The view concerning the role of RNA on the flow of genetic information has been significantly revised in the post-genomic era. Research progress based on “-omics” approaches (Genomics, Proteomics, Systems biology and Bioinformatics) revealed the regulatory role of RNA, acting as final gene product, in different cellular processes. The course aims to cover and introduce cutting-edge discoveries in the area of RNA biology.  The course consists of the following topics:  **1.** RNA: historical overview and introduction of the concept of Ribotype.  **2.** RNA classes − Basic principles of RNA biology (transcription, splicing, translation, RNA decay, RNA editing, RNA modifications and Epitranscriptome).  **3.** Post-transcriptional regulatory networks: from the central dogma of Biology to ribozymes, riboswitches and non-coding RNAs.  **4.** Ribozymes and riboswitches.  **5.** RNA-binding proteins.  **6.** Regulatory functions of non-coding RNAs.  **7.** Non-coding RNA in disease.  **8.** RNA-based experimental approaches: Microarray, miRNAs, RNAi, RNA-Seq and CRISPR functional screens. |

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

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| **DELIVERY** *Face-to-face, Distance learning, etc.* | Face-to-face |
| **USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY** *Use of ICT in teaching, laboratory education, communication with students* | Use of Powerpoint presentations  Posts for the course in E-course  Announcements at the Department’s website  Direct communication with students through e-mail |
| **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 | 75 | | Seminars | 25 | |  |  | |  |  | |  |  | | Course total | 100 | |
| **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.* | Method of evaluation:  I. Written test (75%)  - multiple choice questionnaires  - open-ended questions  II. Public presentation (25%) |

1. **ATTACHED BIBLIOGRAPHY**

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| *- Suggested bibliography:*  *- Related academic journals:*  1. Book: Molecular Biology of Gene. J. Watson, T. Baker, S. Bell, A. Gann, M. Levine, R. Losick. (\*also suggested for the course of Molecular Biology).    2. Research papers and Reviews available on the internet.  3. Formation of educational website. |