**COURSE OUTLINE “NEUROBIOLOGY OF AGING”**

1. **GENERAL**

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| **SCHOOL** | HEALTH SCIENCES | | | | |
| **DEPARTMENT** | DEPARTMENT OF BIOLOGICAL APPLICATIONS AND TECHNOLOGY | | | | |
| **LEVEL OF STUDIES** | undergraduate | | | | |
| **COURSE CODE** | **ΒΕΕ831** | **SEMESTER** | | **8TH AND/OR 10th** | |
| **COURSE TITLE** | NEUROTRANSMITTERS AND BEHAVIOUR | | | | |
| **INDEPENDENT TEACHING ACTIVITIES** *In the case of credits being awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the entire course, give the weekly teaching hours and the total credits* | | | **WEEKLY TEACHING HOURS** | | **CREDITS** |
| *Lectures* | | | 2 | | 4 |
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| *Add rows if necessary. The teaching organization and the teaching methods used are described in detail in (d).* | | |  | |  |
| **COURSE TYPE**  *general background,*  *specialized background, specialised*  *general knowledge, skills development* | Specialized background  Skills development | | | | |
| **PREREQUISITE COURSES:** | Animal Physiology Ι\*, Neurotransmitters & Behavior (Elective in our Program)  \*Any Animal or Human Physiology course that includes CNS | | | | |
| **LANGUAGE OF INSTRUCTION and EXAMINATIONS:** | Greek | | | | |
| **IS THE COURSE OFFERED TO ERASMUS STUDENTS** | Yes (in English) | | | | |
| **COURSE WEBSITE (URL)** | https://ecourse.uoi.gr/course/view.php?id=3562 | | | | |

1. **LEARNING OUTCOMES**

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| **Learning Outcomes** | |
| *The learning outcomes of the course are described, the specific knowledge, skills and competences of an appropriate level that students will acquire after successfully completing the course.*  *Consult Appendix A*   * *Description of the Level of Learning Outcomes for each course of study according to the European Higher Education Area Qualifications Framework* * *Descriptive Indicators of Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning & Appendix B* * *Guidelines for Learning Outcomes writing* | |
| The elective course «Neurobiology of Aging» examines current knowledge about **mechanisms of aging of neurons and Central Nervous System in general**. Senescence can be described as a gradual decline in the capacity of maintenance and repair of neural tissue. Senescence causes a decline of cognitive and other bodily functions, thus decreasing the quality of life. The research of the implicated cellular mechanisms aims to delay, as much as possible, its onset improving the quality of life of elderly society members. Senescence basic and applied research is one of the most prominent research fields today as the numbers of elderly citizens increase, posing societal and financial challenges related to their support.  The students learn how to combine information originating from basic (*in vitro, in vivo*) and clinical research, to compare and evaluate scientific findings, and as a consequence to be able to conclude about their validity. Furthermore, they familiarize with the design of scientific research through the selection of an appropriate topic for a bibliographic research project based on questions that were raised during the lectures or originated from the students themselves. The process of assignment selection is the outcome of a one-to-one, personalized interaction of the student with the teacher. Through the implementation of this assignment, students acquire experience in written and/or oral presentations. | |
| **General Competences** | |
| *Considering the general competencies that the graduate must have acquired (as listed in the Diploma Supplement and listed below), at which one (s) 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 diversity and multiculturalism*  *Respect for the natural environment*  *Demonstration of 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 * Decision making * Working independently * Working in an international environment (all material used is in English) * Working in an interdisciplinary environment * Production of new research ideas * Evaluation and self-evaluation | |

1. **COURSE SYLLABUS**

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| Course contents are broadly the following  Contents 1. Mechanisms of aging (Biophysical Principles, role of mutations, evolutions & senescence etc)  2. Cellular and network mechanisms of aging (gene expression, mitochondria and neurodegeneration, molecular repair and aging, molecular damage from APP etc)  3. Ontogenesis and evolution and the parallels with aging  4. Cellular and tissue changes in aging and in aging-associated neurodegenerative diseases (AD, PD, glial cells, PNS, blood vessels etc)  The course “Neurobiology of aging” requires a background knowledge of CNS structure & function. |

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

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| **DELIVERY**  Face-to-face, Distance learning, etc. | Face-to-face (**student presence in lectures is obligatory**) |
| **USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY** *Use of ICT in teaching, laboratory education, communication with students* | Use of PowerPoint software  Course information available on the electronic platform e-course  Announcements on the course website  Communication through e-mail correspondence |
| **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, projects, report writing, artistic creativity, etc.*  *The student's study hours for each learning activity are given as well as the hours of non-guided study according to the ECTS principles.* | |  |  | | --- | --- | | ***Activity*** | ***Semester workload (study hours)*** | | Lectures, Bibliographic information preparation | 26 | | Preparation of an individual bibliographic study (project) | 50 | | Study hours after lectures | 26 | |  |  | | Course total | 102 | |
| **STUDENT PERFORMANCE EVALUATION**  *Description of the evaluation procedure*  *Language of evaluation, methods of evaluation, summative or formative, 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, artistic interpretation, other.*  *Specifically-defined evaluation criteria are stated, and if and where those are accessible to students.* | Ι. Evaluation of active participation in course lectures and discussion (60%)  ΙΙ. Preparation and presentation of an individual bibliographic study (40%)  Evaluation criteria: They are reported annually at the first lecture of the course and repeated during the course if necessary. They are also posted on the course page (e-course). |

1. **SUGGESTED BIBLIOGRAPHY**

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| *- Suggested Bibliography:*  *- Related scientific journals:*  Lectures and Discussion thereof will be based on Research and/or Review articles that will be posted on the courses site below 1 to 2 weeks before the relevant subject lecture.  Educational Websites https://ecourse.uoi.gr/course/view.php?id=3562  Review papers available through the web and/or the University of Ioannina Library. |

**Max number of participants: 20. If applicants are more, final selection will be decided by the Professor, based on applicants’ excellence.**