**COURSE OUTLINE**

1. **GENERAL**

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| **SCHOOL** | Human Sciences | | | | |
| **ACADEMIC UNIT** | Department of Mediterranean Studies | | | | |
| **LEVEL OF STUDIES** | Undergraduate | | | | |
| **COURSE CODE** | **ΑYΕ-36** | **SEMESTER** | | **8th** | |
| **COURSE TITLE** | SELECTIVE ISSUES OF ARCHAEOMETRIC APPLICATIONS | | | | |
| **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 | | 5 |
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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 | | | | |
| **PREREQUISITE COURSES:** | None | | | | |
| **LANGUAGE OF INSTRUCTION and EXAMINATIONS:** | Greek | | | | |
| **IS THE COURSE OFFERED TO ERASMUS STUDENTS** |  | | | | |
| **COURSE WEBSITE (URL)** | https://eclass.aegean.gr/courses/TMS237/ | | | | |

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* | |
| With the successful completion of the course students should be able:  - to recognize and compare applications of natural sciences in cultural heritage  - to synthesize a case study or special applications that consist of various techniques and plan a future project  - to differentiate and classify archaeological results that are made from the use of specialized methods and techniques  - to be able to understand on a theoretical basis the rationale of physical methods applied to solve archaeological problems of e.g. dating, location, provenance, analysis, technology etc  - to understand a variety of methodological approaches of new technologies and physical sciences applied to particular cultural heritage issues  - to know the ways one particular archaeological problem can be solved (which method, which technique, under what conditions, care during the sampling, useful information extracted from ancient remains, and know the ways of solving an archaeological problem and evaluate its material, temporal and spatial evolution. | |
| **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 * Decision-making * Working in an interdisciplinary environment | |

1. **SYLLABUS**

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| Case studies issues of applications are described. The problematics per each case is analysed. Combined knowledge from geoenvironment, archaeology, history and physical sciences is presented pinpointing the proper use of materials and methodology applied. Choice of appropriate materials for dating and provenance is discussed. Selected case studies of particular interest are chosen for further elaboration on a theoretical and applied level. Emphasis is given to understanding the procedures and for the promotion of knowledge via interactive methods of teaching. Detailed reporting of results from the application of physical methods in solving archaeological problems.  In particular:  1) Minoan culture & Santorini volcano eruption  2) BioArchaeology (DNA, stable isotopes, radioisotopes, Ice Man, ancient diet studies, etc)  3) Rock carvings/ rock art  4) Turin shroud  5) Examples of dating palaeolithic period (Olduvai gorge, caves at Petralona, Theopetra, Youra, Sarakinos, French caves)  6) Obsidian transportation in the Mediterranean (analyses, dating)  7) Ceramics analysis (provenance, trade)  8) The case of pyramidals in argolid (an interdisciplinary approach)  9) Archaeometrical applications in a standard archaeological excavation  10) Analysis in works of art prior to conservation (Raman & IR spectroscopy, Microscopy, XRF, chromatography etc.)  11) Scanning Electron Microscope & Polarised Light Microscope in archaeology  12) Authenticity in archaeology  13) The Antikithira Mechanism  14) Dating the fall of a meteorite in S. Germany  15) Trojan War: myth or reality? Dating the fact with archaeoastronomy  16) The archaeology of agriculture  17) Paleoclimatology and Astronomy  18) The contribution of archaeometry to the support of cultural tourism  19) mtDNA, oil and wine in Prehistory |

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* | **PowerPoint presentations** |
| **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 |  | |  |  | |  |  | |  |  | |  |  | |  |  | |  |  | |  |  | |  |  | | Course total |  | |
| **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.* | Written or oral exams at the end of the semester |

1. **ATTACHED BIBLIOGRAPHY**

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| *- Suggested bibliography:*  *a) Basic Textbooks:*  *Liritzis, I. (2007) Natural Sciences in Archaeology. Tipothito – G. Dardanos publ., Athens, 2nd ed.*  *Liritzis, I. (1994) The mystery of the greek pyramidals: A new scientific approach, Academy of Delphic Studies, Athens. (available from Kardamitsa Publ.)*  *b) Additional References:*  *Renfrew, C & Bahn, P (2001) Archaeology. Theories, Methods and Practice (Greek tansl. I. Karali-Giannakopoulou, Kardamitsa publ., Athens)*  *- Related academic journals:* |