COURSE OUTLINE

1. GENERAL

SCHOOL			
DEPARTMENT	DEPARTMENT OF PHYSICS		
LEVEL OF STUDIES	ISCED level 6 – Bachelor's or equivalent level		
COURSE CODE	Y205-2023	**SEMESTER**	2nd Semester
COURSE TITLE	Fourier Transforms and Analysis		

TEACHING ACTIVITIES If the ECTS Credits are distributed in distinct parts of the course e.g. lectures, labs etc. If the ECTS Credits are awarded to the whole course, then please indicate the teaching hours per week and the corresponding ECTS Credits.	**TEACHING HOURS PER WEEK**	**ECTS CREDITS**
	4	6.0

COURSETYPE Background, General Knowledge, Scientific Area, Skill Development	Scientific Area
PREREQUISITES	
TEACHING & EXAMINATION LANGUAGE:	Greek
COURSE OFFERED TO ERASMUS STUDENTS:	YES
COURSE URL:	https://eclass.emt.duth.gr/courses/PHYSICS160/

2. LEARNING OUTCOMES

Learning Outcomes Please describe the learning outcomes of the course: Knowledge, skills and abilities acquired after the successful completion of the course.
To learn the theory of series and Fourier transforms, as well as Laplace transforms, and to be able to apply them to solve physics problems.

General Skills	
Name the desirable general skills upon successful completion of the module	
Search, analysis and synthesis of data and information, ICT Use,Adaptation to new situations, Decision making, Autonomous work, Teamwork, Working in an international environment, Working in an interdisciplinary environment, Production of new research ideas	Project design and management Equity and Inclusion Respect for the natural environment Sustainability Demonstration of social, professional and moral responsibility and sensitivity to gender issues Critical thinking Promoting free, creative and inductive reasoning
Decision making Critical thinking	

3. COURSE CONTENT

Periodic functions. Fourier series. Fourier transforms. Cauchy integral formula. Laurent series. Integral residues and methods of calculating them. Applications of integral residues. Analytic continuity. Fourier integrals. Elements of generalized functions, the distribution δ(x). Laplace transform.

4. LEARNING & TEACHING METHODS - EVALUATION

TEACHING METHOD Face to face, Distance learning, etc.	Face to face
USE OF INFORMATION & COMMUNICATIONS TECHNOLOGY (ICT) Use of ICT in Teaching, in Laboratory Education, in Communication with students	Use of ICT in Teaching Use of ICT in Communication with students
TEACHING ORGANIZATION The ways and methods of teaching are described in detail. Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliographic research& analysis, Tutoring, Internship (Placement), Clinical Exercise, Art Workshop, Interactive learning, Study visits, Study / creation, project, creation, project. Etc. The supervised and unsupervised workload per activity is indicated here, so that total workload per semester complies to ECTS standards	
STUDENT EVALUATION Description of the evaluation process Assessment Language, Assessment Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Essay / Report, Oral Exam, Presentation in audience, Laboratory Report, Clinical examination of a patient, Artistic interpretation, Other/Others	**Student evaluation languages** Greek English **Method (Formative or Concluding)** Summative **Student evaluation methods** — **Rate** Written Exam with Problem Solving — 100

Activity	Workload/semester
Lectures	52
Tutoring	13
Bibliographic research & analysis	85
Total	**150**

Please indicate all relevant information about the course assessment and how students are informed	

5. Suggested Bibliography

1. Μαθηματικές Μέθοδοι για Φυσικούς, George B. Arfken, Hans J. Weber, Frank E. Harris, εκδόσεις Οδυσσέας, 2024.
2. Διαφορικές Εξισώσεις Μετασχηματισμοί και μιγαδικές συναρτήσεις, Νίκος Μυλωνάς, Χρήστος Σχοινάς, εκδόσεις Τζιόλα, 2024.

Eudoxus

Διαφορικές Εξισώσεις, Μετασχηματισμοί και Μιγαδικές Συναρτήσεις
Κωδικός Βιβλίου στον Εύδοξο: 50655955
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