

■ CE813 - Celestial Mechanics

GENERAL

SCHOOL	EXACT SCIENCES		
DEPARTMENT	MATHEMATICS		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	CE813	SEMESTER	H
COURSE TITLE	CELESTIAL MECHANICS		
INDEPENDENT TEACHING ACTIVITIES	WEEKLY TEACHING HOURS	ECTS	
Lectures	4	6	
COURSE TYPE	General Knowledge		
PREREQUISITE COURSES	-		
LANGUAGE OF TEACHING AND EXAMINATIONS	Greek/English		
THE COURSE IS OFFERED TO ERASMUS STUDENTS	YES		
COURSE WEBSITE (URL)	http://eclass.uowm.gr/		

LEARNING OUTCOMES

Learning Outcomes
<p>With the completion of the learning process, the students will be able to know:</p> <ul style="list-style-type: none"> • the relationships that govern the central motion of celestial bodies, • the relationships that govern the elliptical, parabolic and semi-parabolic orbits of celestial bodies, • Newton's Law of Universal Gravitation and Kepler's Laws, • the two-body problem, the N-body problem as well as the limited three-body problem, • the Virial Theorem.

General Competencies

- Search for, analysis and synthesis of data and information, with the use of the necessary technology.
- Decision making.
- Production of free, creative and inductive thinking.

CONTENT OF THE COURSE

The subject of this course is the physical laws on which the movements of celestial bodies and their orbits are based, examining their kinematics and dynamics.

TEACHING AND LEARNING METHODS - EVALUATION

TEACHING METHOD	In the classroom.	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY	e-Lectures. Use of e-class. Communication through face-to-face discussions and e-mails.	
TEACHING ORGANIZATION	Activity	Semester Workload
	Lectures	52 hours
	Projects	42 hours
	Individual Study	56 hours
	Course Total (25 hours per ECTS)	150 hours
STUDENT EVALUATION	Projects 10%. Progress-Exam 20%. Written final examination 70%.	

RECOMMENDED BIBLIOGRAPHY

1. Celestial Mechanics and Astrodynamics: Theory and practice, Pini Gurfil P. Kenneth Seidelmann, Springer Publications.
2. Dynamical Astronomy Courses (Notes), Th.K. Papagiannopoulos, Athens 1997. (Greek)

3. Recent Advances in Celestial and Space Mechanics, Bernard Bonnard, Monique Chyba, Springer Publications.