

COURSE OUTLINE

GENERAL

SCHOOL	School of Science		
ACADEMIC UNIT	Department of Mathematics		
LEVEL OF STUDIES	Undergraduate course		
COURSE CODE	MAY223	SEMESTER	2
COURSE TITLE	Analytic Geometry		
INDEPENDENT TEACHING ACTIVITIES <i>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</i>	WEEKLY TEACHING HOURS	CREDITS	
	5	7.5	
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i>			
COURSE TYPE <i>general background, special background, specialised general knowledge, skills development</i>	General background		
PREREQUISITE COURSES:	Linear Algebra, Euclidean Geometry		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes (in English)		
COURSE WEBSITE (URL)			

LEARNING OUTCOMES

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*

It is an introductory course on geometry. The aim is to study problems in geometry using rectangular coordinates and tools based on Linear Algebra.

On completion of the course the student should be familiar with basic notions in geometry

like the one of isometry. Furthermore, the student should have a background to allow him to attain more advanced courses on geometry, calculus of several variables and others.

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

- 1) Work autonomously.
- 2) Work in teams.
- 3) Develop critical thinking skills.

SYLLABUS

Axioms of Euclidean geometry (plane and space) and proofs of basic propositions. Cartesian model, vectors, linear independence, bases, coordinates and applications. Inner product, cross product, area, volume and determinants. Lines and planes. Geometric transformations (parallel transports, rotations, reflections), isometries and the notion of congruence. Transformation of area and volume under linear transformations. Curves and surfaces of 2nd degree and their classification. Curves, surfaces and parametrizations.

TEACHING and LEARNING METHODS - EVALUATION

<p>DELIVERY <i>Face-to-face, Distance learning, etc.</i></p>	Direct	
<p>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i></p>		
<p>TEACHING METHODS <i>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.</i></p> <p><i>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</i></p>	<p style="text-align: center;">Activity</p>	<p style="text-align: center;">Semester workload</p>
	Lectures	65
	Autonomous study	127.5

ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

- Related academic journals:

Thomas F. Banchoff και John Wermer, Η Γραμμική Άλγεβρα μέσω Γεωμετρίας, Εκδόσεις Leader Books, Σειρά Πανεπιστημιακά Μαθηματικά Κείμενα, Αθήνα, 2009