COURSE OUTLINE

(1) GENERAL

SCHOOL	Economy, Management and Informatics
ACADEMIC UNIT	Department of Informatics and Telecommunications
LEVEL OF STUDIES	Postgraduate
COURSE CODE	**SEMESTER** C
COURSE TITLE	**Satellite Positioning and Navigation**

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
Courses		
Practical exercises		
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*	Specialized general knowledge
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	English
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No
COURSE WEBSITE (URL)	TBA

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(2) 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*

This course aims at the educational needs of students that are interested in the global satellite positioning systems. The basic objective of the course if to enable understanding of basic principles and methods in order to plan and execute field measurements, process satellite positioning data and to evaluate and check the results. The final result is the computation of geodetic coordinates. In addition, the course introduces practical applications of GPS to geosciences and geodynamics.

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	*Project planning and management*
Adapting to new situations	*Respect for difference and multiculturalism*
Decision-making	*Respect for the natural environment*
Working independently	*Showing social, professional and ethical responsibility and sensitivity to gender issues*
Team work	*Criticism and self-criticism*
Working in an international environment	*Production of free, creative and inductive thinking*
Working in an interdisciplinary environment	*......*
Production of new research ideas	*Others...*
	....

- Search for, analysis and synthesis of data and information, with the use of the necessary technology.
- Team work.
- Working independently
- Working in an interdisciplinary environment
- Decision-making.

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(3) SYLLABUS

INTRODUCTION to GPS
Presentation of global satellite positioning systems – components

REFERENCE FRAMES
Introduction to local and global reference frames

POINT POSITIONING
GNSS observables – error sources – positioning models

GNSS Networks
Reference stations – telemetry – data management

GPS DATA QUALITY
Estimation of data quality – algorithms

Tectonic GEODESY
Introduction to tectonics – deformation – tensors

SEISMOGEODESY
High rate GPS – use of GPS to estimate earthquake parameters

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(4) TEACHING and LEARNING METHODS - EVALUATION

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*	- Use of ICT teaching - Communication with students
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*** 40 Lectures 10 Laboratory practice/ Tutorials/Interactive teaching 60Practical Exercises 90 Studying 200 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*	Final examination (~50%) consisting of - Problem solving questions - Open-ended questions. - Theory understanding short questions. Project examination and presentation (~50%)

given, and if and where they are accessible to students.	

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(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:
- Related academic journals:

Books:
1. GPS ΚΑΙ ΓΕΩΔΑΙΤΙΚΕΣ ΕΦΑΡΜΟΓΕΣ, ΦΩΤΙΟΥ ΑΡΙΣΤΕΙΔΗΣ, ΠΙΚΡΙΔΑΣ ΧΡΗΣΤΟΣ, εκδόσεις Ζήτη, 2η έκδοση, 479 σελίδες
2. U.S. Coast Guard Navigation Center Civilian GPS service notices, general system information, and GPS outage reporting:http://www.navcen.uscg.gov/
3. National Marine Electronics Association (NMEA) For information on the NMEA protocol specification: www.nmea.org
4. General GPS and earthquakes Information http://www.unavco.org/

Journals:
1. GPS Solutions – Springer
2. Journal of Geodesy – Springer
3. Journal of Geodetic Science - De Gruyter
4. Journal of Applied Geodesy - De Gruyter
5. Journal of Geodesy and Geoinformation
6. International Journal of Geographical Information Science, Taylor & Francis
7. Geodesy and Geodynamics - ScienceDirect.com

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