

Course guide 310645 - 310645 - Geoinformation Sensors and Capture Systems

 Last modified: 06/06/2024

 Unit in charge:
 Barcelona School of Building Construction

 Teaching unit:
 751 - DECA - Department of Civil and Environmental Engineering.

 Degree:
 BACHELOR'S DEGREE IN GEOINFORMATION AND GEOMATICS ENGINEERING (Syllabus 2016). (Optional subject).

 Academic year: 2024
 ECTS Credits: 4.5
 Languages: Catalan

LECTURER	
Coordinating lecturer:	Puig Polo, Carolina
Others:	Mercadé Aloy, Josep

REQUIREMENTS

It is recommended to have taken the Remote Sensing course.

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:

CE9EGG. (ENG) Coneixement, utilització i aplicació de les tècniques de tractament. Anàlisi de dades espacials. Estudi de models aplicats a l'enginyeria i arquitectura. (Mòdul común a la branca Topografia)

CE22EGG. Aptitude and capacity to develope analysis and territorial plannification and territorial sustainability to the work with interdisciplinary teams.

Transversal:

CT4. EFFECTIVE USE OF INFORMATION RESOURCES: Managing the acquisition, structuring, analysis and display of data and information in the chosen area of specialisation and critically assessing the results obtained.

CT5. FOREIGN LANGUAGE: Achieving a level of spoken and written proficiency in a foreign language, preferably English, that meets the needs of the profession and the labour market.

07 AAT. SELF-DIRECTED LEARNING. Detecting gaps in one's knowledge and overcoming them through critical self-appraisal. Choosing the best path for broadening one's knowledge.

CT2. SUSTAINABILITY AND SOCIAL COMMITMENT: Being aware of and understanding the complexity of the economic and social phenomena typical of a welfare society, and being able to relate social welfare to globalisation and sustainability and to use technique, technology, economics and sustainability in a balanced and compatible manner.

CT3. TEAMWORK: Being able to work in an interdisciplinary team, whether as a member or as a leader, with the aim of contributing to projects pragmatically and responsibly and making commitments in view of the resources that are available.

Basic:

CB4EGG. The students must know how to transmit information, ideas, problems and solutions to a specialized but also to a nonspecialized public.



TEACHING METHODOLOGY

This subject is very practical and is organized according to the learning techniques of the EHEA, in which the teacher is a tutor of the work carried out by the student.

LEARNING OBJECTIVES OF THE SUBJECT

This subject has a very different dual objective, on the one hand, the recognition of the role of sensors and geoinformation capture systems within the framework of information territories and cities and, on the other, expanding knowledge of remote sensing techniques Radar: RAR, SAR, DInSAR, GBSAR and others (thermal, Georadar).

STUDY LOAD

Туре	Hours	Percentage
Hours large group	18,0	16.00
Hours medium group	27,0	24.00
Self study	67,5	60.00

Total learning time: 112.5 h

CONTENTS

SENSORS FOR SMARCITIES

Description:

- Sensors for Smartcities: vehicle presence (parking, circulation and traffic, traffic light switching ...); for fleet control (transportation and other public services); status of recycling and waste containers; of lighting; of climatology; of environmental pollution and noise; for irrigation, etc.

- Wireless sensor networks: sensor-access point; between distributed sensors.

- Positioning of indoor and outdoor mobile items with non-topographic techniques

Specific objectives: Description and analysis of sensor networks in cities.

Full-or-part-time: 30h Theory classes: 15h Self study : 15h

Radar techniques expansion

Description: Expansion of the concepts of radar techniques worked on in the Remote Sensing subject

Full-or-part-time: 6h Theory classes: 3h Self study : 3h



SAR interferometry: image processing and interpretation

Description:

Basic concepts in the formation of interferograms. Applications and limits

Related activities: Preparation of a subsidence map from SAR images

Full-or-part-time: 6h Practical classes: 3h Self study : 3h

GRADING SYSTEM

The evaluation of the subject will be done through the delivery of different works proposed by the teaching staff of the subject, a minimum of 80% of the works will have to be released. There is no possibility of passing the subject by a re-evaluation exam since its content is practical.

EXAMINATION RULES.

Failure to deliver any of the assignments proposed by the teaching staff on the indicated date will result in a grade of 0.

BIBLIOGRAPHY

Basic:

- Woodhouse, Iain H. Introduction to microwave remote sensing [on line]. Boca Raton: Taylor & Francis, 2006 [Consultation: 24/01/2023]. Available on: <u>https://discovery.upc.edu/permalink/34CSUC_UPC/5rq1ap/alma991005083779906711</u>. ISBN 0415271231.