

Earth Observation Data Processing

Academic Year: (2019 / 2020)

Review date: 21-05-2019

Department assigned to the subject:

Coordinating teacher: SOTO SANTIAGO, LUCIA

Type: Electives ECTS Credits : 3.0

Year : 2 Semester : 1

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

There are no specific requirements, besides those needed for admission to the Programme.

OBJECTIVES

Basic skills:

CB6 - To possess and understand knowledge that provides a basis or opportunity to be original in the development and / or application of ideas, often in a research context.

CB9 - Students must know how to communicate their conclusions and the knowledge and ultimate reasons that sustain them to specialised and non- specialised audiences in a clear and unambiguous way.

General skills:

CG5 - Ability to handle the English, technical and colloquial language.

Specific skills:

- Ability to understand, visualise, process and analyse data generated by Earth observation satellites.

DESCRIPTION OF CONTENTS: PROGRAMME

1. Earth observation missions
2. Remote sensing
3. Data types & collection
4. Data processing tools
5. Project

LEARNING ACTIVITIES AND METHODOLOGY

Two teaching activities are proposed: lectures and practical sessions.

LECTURES AND EXAMPLES (2 ECTS)

Lectures will be delivered using the blackboard, with slides or by any other means to illustrate the concepts to be learnt. In these classes the explanation will be completed with examples. In these sessions the student will acquire the basic concepts of the course. It is important to highlight that these classes require the initiative and the personal and group involvement of the students (there will be concepts that the student himself should develop).

PRACTICAL SESSIONS (1 ECTS)

The practical classes will solve practical cases as well as laboratory sessions in which real and synthetic data sets will be analysed.

Basic concepts learnt during the course are applied in the laboratory and by means of simulation. The student should participate actively the exercise implementation; the level of the student involvement in this work grows from the first exercise to the last one where the student will be encouraged to propose and solve the problem.

ASSESSMENT SYSTEM

The continuous assessment will determine the full grade for this course.

1. After the theoretical part of the course (lectures and examples), the students will take a written assessment (multiple choice or short questions) which will determine 25% of the final grade.

2. After the practical sessions, the students will deliver a laboratory project report, which will determine 75% of the final grade.

% end-of-term-examination:	0
% of continuous assessment (assignments, laboratory, practicals...):	100

BASIC BIBLIOGRAPHY

- C. Solomon, T. Breckon Fundamentals of digital image processing: a practical approach with examples in Matlab, John Wiley & Sons, 2011
- R. J. Doviak, D. S. Zrnic Doppler radar and weather observations, Academic Press, 1993
- W. L. Wolfe Introduction to spectrometers, Bellingham, 1997

BASIC ELECTRONIC RESOURCES

- European Space Agency . ESA Earth Observation Data: <http://earth.esa.int>