Course guides
230309 - MATLAB - A Practical Introduction to Matlab

Last modified: 06/05/2019

Unit in charge: Barcelona School of Telecommunications Engineering
Teaching unit: 710 - EEL - Department of Electronic Engineering.

Degree: BACHELOR'S DEGREE IN TELECOMMUNICATIONS SCIENCE AND TECHNOLOGY (Syllabus 2010). (Optional subject).
BACHELOR'S DEGREE IN AUDIOVISUAL SYSTEMS ENGINEERING (Syllabus 2009). (Optional subject).
BACHELOR'S DEGREE IN ELECTRONIC SYSTEMS ENGINEERING (Syllabus 2009). (Optional subject).
BACHELOR'S DEGREE IN TELECOMMUNICATIONS SYSTEMS ENGINEERING (Syllabus 2010). (Optional subject).
BACHELOR'S DEGREE IN NETWORK ENGINEERING (Syllabus 2010). (Optional subject).
BACHELOR'S DEGREE IN TELECOMMUNICATIONS TECHNOLOGIES AND SERVICES ENGINEERING (Syllabus 2015). (Optional subject).
BACHELOR'S DEGREE IN ELECTRONIC ENGINEERING AND TELECOMMUNICATION (Syllabus 2018). (Optional subject).

Academic year: 2019 **ECTS Credits:** 2.0 **Languages:** Catalan, Spanish

LECTURER

Coordinating lecturer: Antoni Gasull.

Others: Antoni Gasull.
Juan Fernández.

PRIOR SKILLS

None: This seminar is recommended for first year students or students with very limited MATLAB knowledge.

REQUIREMENTS

None.

TEACHING METHODOLOGY

The seminar follows a practical approach and is organized in 10 sessions of 2 hours each. During the first part of the course, the teacher will introduce new MATLAB programming elements at the beginning of each lesson. Students will learn them by working, both in the classroom and outside the classroom, on a series of programming exercises given by the teacher. In the second part of the course, students will work on a short project of their choice. The work can be related to their studies or not. Some projects presented in previous courses include but are not limited to interactive games (memory, Tic Tac Toe, Sudoku), illustration of physics concepts (animation of Foucault's Pendulum, parabolic shot), image signal processing (Photoshop), audio signal processing (electronic piano, guitar tuner), etc. During the last day of the seminar the students will present their work to the classroom.
No previous knowledge of MATLAB is required. However, at the end of the seminar the students will have a fairly extensive knowledge of the capabilities of MATLAB and they will be able to design complex programs.

LEARNING OBJECTIVES OF THE SUBJECT

The main objective of the seminar is to provide an introduction to MATLAB as a useful tool in the study and resolution of engineering problems. MATLAB is widely used in many subjects taught at the ETSETB. Through the seminar the students will acquire the necessary skills to be fluent in MATLAB programming. Therefore, MATLAB will not represent an additional difficulty in subsequent courses of the ETSETB but a useful tool.

STUDY LOAD

Type	Hours	Percentage
Self study	30,0	60.00
Hours small group	20,0	40.00

Total learning time: 50 h

CONTENTS

title english

Description:
- Matlab basics: constants, variables, vectors and matrices, operators, functions, and audio functions.
- .m files: scripts and user defined functions.
- Flow control (if, switch, for, while) and relational expressions.
- Graphics with MATLAB.
- Graphical User Interfaces (GUIs).
- Problem solving.

Specific objectives:

GRADING SYSTEM

The grading is mainly based on the quality of the programming exercises and the short project. However, timely attendance and student participation in class will also count towards the student's overall grade. Attendance to the sessions is a requirement to be evaluated.