

Guia docent

230206 - MAE - Matlab i les Seves Aplicacions en Enginyeria

Última modificació: 24/05/2024

Unitat responsable: Escola Tècnica Superior d'Enginyeria de Telecomunicació de Barcelona
Unitat que imparteix: 739 - TSC - Departament de Teoria del Senyal i Comunicacions.
749 - MAT - Departament de Matemàtiques.

Titulació: GRAU EN ENGINYERIA DE TECNOLOGIES I SERVEIS DE TELECOMUNICACIÓ (Pla 2015). (Assignatura optativa).
GRAU EN CIÈNCIA I ENGINYERIA DE DADES (Pla 2017). (Assignatura optativa).
GRAU EN ENGINYERIA ELECTRÒNICA DE TELECOMUNICACIÓ (Pla 2018). (Assignatura optativa).

Curs: 2024 **Crèdits ECTS:** 6.0 **Idiomes:** Anglès

PROFESSORAT

Professorat responsable: JORGE LUIS VILLAR SANTOS

Altres: Primer quadrimestre:
M. MERITXELL LAMARCA OROZCO - 11
JAVIER RODRIGUEZ FONOLLOSA - 11
JORGE LUIS VILLAR SANTOS - 11

Segon quadrimestre:
JAVIER RODRIGUEZ FONOLLOSA - 11
JORGE LUIS VILLAR SANTOS - 11

CAPACITATS PRÈVIES

Standard mathematical background, Basic programming, Signal Processing

METODOLOGIES DOCENTS

In the first part of the course, lecture notes and collection of exercises are handed out to the students. Communication between students and with the teachers is performed by means of a forum for questions and answers. The second part of the course consists of developing a final work on the student's choice.

OBJECTIUS D'APRENENTATGE DE L'ASSIGNATURA

Part I. Fundamentals.

1. Learn MATLAB programming language. Learn how to write efficient and reliable code in MATLAB.
2. Learn MATLAB standard libraries. Get familiar with the most commonly used MATLAB packages.

Part II. Applications.

3. Get more insight into MATLAB. Develop a whole project written in MATLAB.

HORES TOTALS DE DEDICACIÓ DE L'ESTUDIANTAT

Tipus	Hores	Percentatge
Hores grup gran	13,0	8.67
Hores grup petit	39,0	26.00
Hores aprenentatge autònom	98,0	65.33

Dedicació total: 150 h

CONTINGUTS

Unit 1. Matlab Fundamentals and Graphics

Descripció:

Understanding MATLAB programming language. Basic management of scalars, vectors and matrices. Basic 2-D and 3-D graphics. Basic mathematical functions, including linear algebra, complex numbers and polynomials.

Dedicació: 30h

Activitats dirigides: 30h

Unit 2. M-files Programming

Descripció:

Learn structured MATLAB programming, including command files and function files. Learn how to write efficient MATLAB programs.

Dedicació: 30h

Activitats dirigides: 30h

Unit 3. Toolboxes

Descripció:

Familiarize with the main MATLAB toolboxes.

Dedicació: 24h

Activitats dirigides: 24h

Unit 4. Graphics User Interface

Descripció:

Learn how to build a GUI application in MATLAB.

Dedicació: 24h

Activitats dirigides: 24h

Final Work

Descripció:

Develop an entire MATLAB application

Dedicació: 42h

Activitats dirigides: 42h

SISTEMA DE QUALIFICACIÓ

Final grade is computed according the following weights:

Part I (exercises): 30% of final grade

Part II (final work): 70% of final grade



NORMES PER A LA REALITZACIÓ DE LES PROVES.

In every unit in the first part of the course the student is asked to submit the solutions to the proposed exercises in the scheduled time.

The Final Work consists of

- (1) A 12-page report containing a brief theoretical introduction about the chosen subject, a description of the work done and a description of the achieved goals, including the functionalities of the MATLAB code developed.
- (2) The set of source MATLAB files.
- (3) A demo file showing the functionalities implemented.

BIBLIOGRAFIA

Bàsica:

- Mathworks. Matlab toolboxes. Mathworks,
- Chapman, Stephen J. MATLAB programming for engineers. 6th ed. Boston, MA: Cengage Learning, [2019]. ISBN 9780357030394.

RECURSOS

Enllaç web:

- <https://www.mathworks.com/help/matlab/getting-started-with-matlab.html>. Get Started with MATLAB