230206 - MAE - Matlab i les Seves Aplicacions en Enginyeria

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.

Responsable: Jorge Villar

Idiomes docència: Anglès

Objectius d'aprenentatge de l'assignatura

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Hores totals de dedicació de l’estudiantat

<table>
<thead>
<tr>
<th>Dedicació total: 150h</th>
<th>Hores grup gran: 13h</th>
<th>8.67%</th>
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<tr>
<td></td>
<td>Hores grup petit: 39h</td>
<td>26.00%</td>
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<tr>
<td></td>
<td>Hores aprenentatge autònom: 98h</td>
<td>65.33%</td>
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### Continguts

<table>
<thead>
<tr>
<th>Unit</th>
<th>Descripció</th>
<th>Dedicació</th>
<th>Activitats dirigides</th>
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<tbody>
<tr>
<td><strong>Unit 1. Matlab Fundamentals and Graphics</strong></td>
<td>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.</td>
<td>30h</td>
<td>30h</td>
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<tr>
<td><strong>Unit 2. M-files Programming</strong></td>
<td>Learn structured MATLAB programming, including command files and function files. Learn how to write efficient MATLAB programs.</td>
<td>30h</td>
<td>30h</td>
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<tr>
<td><strong>Unit 3. Toolboxes</strong></td>
<td>Familiarize with the main MATLAB toolboxes.</td>
<td>24h</td>
<td>24h</td>
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<tr>
<td><strong>Unit 4. Graphics User Interface</strong></td>
<td>Learn how to build a GUI application in MATLAB.</td>
<td>24h</td>
<td>24h</td>
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<tr>
<td><strong>Final Work</strong></td>
<td>Develop an entire MATLAB application</td>
<td>42h</td>
<td>42h</td>
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Final grade is computed according the following weights:
Part I (exercises): 30% of final grade
Part II (final work): 70% of final grade

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.

Bàsica:
   Mathworks. Matlab toolboxes. Mathworks,