Module Code | CSU33081
---|---
Module Name | |
ECTS Weighting | 5 ECTS
Semester taught | Semester 2
Module Coordinator/s | Eamonn O Nuallain

### Module Learning Outcomes

On successful completion of this module, students will be able to:

LO1. To understand the computational limitations of floating point arithmetic

LO2. To be able to perform error analysis on computational methods

LO3. To be able to understand and implement in Matlab fundamental computational methods such as solving systems of equations or numerical differentiation

LO4. To be able to solve theoretical and applied mathematical problems using numerical techniques by hand

LO5. To gain an understanding of the range of applicability across disciplines of the material covered.

### Module Content

Floating point number systems; Mathematical Background, Solving Non-Linear Equations; Solving Systems of Linear Equations; Eigenvalues and Eigenvectors; Curve Fitting and Interpolation; Numerical Differentiation; Numerical Integration.

### Teaching and Learning Methods

Lectures, tutorials and in-term assignments.

### Assessment Details

<table>
<thead>
<tr>
<th>Assessment Component</th>
<th>Brief Description</th>
<th>Learning Outcomes Addressed</th>
<th>% of total</th>
<th>Week set</th>
<th>Week due</th>
</tr>
</thead>
<tbody>
<tr>
<td>Examination</td>
<td>2 hour written examination</td>
<td>LO1, LO2, LO3, LO4, LO5</td>
<td>80%</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Assignment 1</td>
<td>Matlab and Multichoice Mathematical Problems to be solved by hand</td>
<td>LO1-LO5</td>
<td>6.66%</td>
<td>2-4</td>
<td>4-6</td>
</tr>
<tr>
<td>Assignment 2</td>
<td>Matlab and Multichoice Mathematical Problems to be solved by hand</td>
<td>LO1-LO5</td>
<td>6.66%</td>
<td>4-6</td>
<td>7-9</td>
</tr>
</tbody>
</table>

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1 TEP Glossary
2 TEP Guidelines on Workload and Assessment
Assignment 3  
Matlab and Multichoice Mathematical Problems to be solved by hand  
LO1-LO5  
6.66%  
7-9  
9-11

Reassessment Details
Examination (2 hours, 100%)

Contact Hours and Indicative Student Workload

<table>
<thead>
<tr>
<th>Contact Hours (scheduled hours per student over full module), broken down by:</th>
<th>33 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>lecture</td>
<td>22 hours</td>
</tr>
<tr>
<td>laboratory</td>
<td>0 hours</td>
</tr>
<tr>
<td>tutorial or seminar</td>
<td>11 hours</td>
</tr>
<tr>
<td>other</td>
<td>0 hours</td>
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</table>

<table>
<thead>
<tr>
<th>Independent study (outside scheduled contact hours), broken down by:</th>
<th>80 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>preparation for classes and review of material (including preparation for examination, if applicable)</td>
<td>44 hours</td>
</tr>
<tr>
<td>completion of assessments (including examination, if applicable)</td>
<td>36 hours</td>
</tr>
<tr>
<td>Total Hours</td>
<td>113 hours</td>
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</table>

Recommended Reading List

Prerequisite modules:
CSU11001, CSU11002, MA2C03

Other/alternative non-module prerequisites:
Mathematics, Matlab

Module Website

Last Update
8/7/2019 by Eamonn O Nuallain