

**1. General information**

**Course:** MATHEMATICAL SOFTWARE FOR ELECTRICAL ENGINEERING  
**Type:** ELECTIVE  
**Degree:** 414 - UNDERGRADUATE DEGREE PROGRAMME IN ELECTRICAL ENGINEERING  
**Center:** 602 - E.T.S. INDUSTRIAL ENGINEERING OF C. REAL  
**Year:** 4  
**Main language:** Spanish  
**Use of additional languages:**  
**Web site:**

**Code:** 56445  
**ECTS credits:** 6  
**Academic year:** 2023-24  
**Group(s):** 20  
**Duration:** C2  
**Second language:**  
**English Friendly:** Y  
**Bilingual:** N

| Lecturer: JULIAN PEREZ BETETA - Group(s): 20        |             |              |                            |              |
|---|-------------|--------------|----------------------------|--------------|
| Building/Office                                     | Department  | Phone number | Email                      | Office hours |
| Politécnico/Planta 2                                | MATEMÁTICAS | 926295435    | Julian.Perez@uclm.es       |              |
| Lecturer: VICTOR MANUEL PEREZ GARCIA - Group(s): 20 |             |              |                            |              |
| Building/Office                                     | Department  | Phone number | Email                      | Office hours |
| Politécnico/1.09.5                                  | MATEMÁTICAS | 926295435    | victor.perezgarcia@uclm.es |              |

**2. Pre-Requisites**

Not established

**3. Justification in the curriculum, relation to other subjects and to the profession**

Not established

**4. Degree competences achieved in this course****Course competences**

| Code  | Description   |
|-------|---|
| CB01  | Prove that they have acquired and understood knowledge in a subject area that derives from general secondary education and is appropriate to a level based on advanced course books, and includes updated and cutting-edge aspects of their field of knowledge. |
| CB02  | Apply their knowledge to their job or vocation in a professional manner and show that they have the competences to construct and justify arguments and solve problems within their subject area.  |
| CB03  | Be able to gather and process relevant information (usually within their subject area) to give opinions, including reflections on relevant social, scientific or ethical issues.  |
| CB04  | Transmit information, ideas, problems and solutions for both specialist and non-specialist audiences.   |
| CB05  | Have developed the necessary learning abilities to carry on studying autonomously   |
| CEB03 | Basic knowledge of the use and programming of computers, operating systems, databases and software applied to engineering.  |
| CG03  | Knowledge of basic and technological subjects to facilitate learning of new methods and theories, and provide versatility to adapt to new situations.   |
| CG04  | Ability to solve problems with initiative, decision-making, creativity, critical reasoning and to communicate and transmit knowledge, skills and abilities in the field of industrial engineering.  |
| CG05  | Knowledge required to carry out measurements, calculations, valuations, appraisals, valuations, surveys, studies, reports, work plans and other similar work.   |
| CG06  | Ability to handle specifications, regulations and mandatory standards.  |
| CG07  | Ability to analyse and assess the social and environmental impact of technical solutions.   |
| CG08  | Ability to apply quality principles and methods.  |
| CG09  | Organisational and planning skills in the field of companies and other institutions and organisations.  |
| CG10  | Capacity to work in a multilingual and multidisciplinary environment.   |
| CT02  | Knowledge and application of information and communication technology.  |
| CT03  | Ability to communicate correctly in both spoken and written form.   |

**5. Objectives or Learning Outcomes****Course learning outcomes**

Description

Use of software to solve mathematical problems in electrical engineering.

**6. Units / Contents****Unit 1:**

- Unit 1.1
- Unit 1.2
- Unit 1.3
- Unit 1.4
- Unit 1.5
- Unit 1.6

Unit 1.7  
Unit 1.8  
Unit 1.9  
Unit 1.10  
Unit 1.11

**Unit 2:**

Unit 2.1  
Unit 2.2  
Unit 2.3  
Unit 2.4

**Unit 3:**

Unit 3.1  
Unit 3.2  
Unit 3.3

| 7. Activities, Units/Modules and Methodology   |                                  |   |          |   |    |     |             |
|--|----------------------------------|---|----------|---|----|-----|-------------|
| Training Activity                              | Methodology                      | Related Competences<br>(only degrees before RD<br>822/2021)                               | ECTS     | Hours                                       | As | Com | Description |
| Class Attendance (practical) [ON-SITE]         | Practical or hands-on activities | CB01 CB02 CB03 CB04<br>CB05 CEB03 CG03 CG04<br>CG05 CG06 CG07 CG08<br>CG09 CG10 CT02 CT03 | 0.6      | 15  | N  | -   |             |
| Problem solving and/or case studies [ON-SITE]  | Problem solving and exercises    | CB01 CB02 CB03 CB04<br>CB05 CEB03 CG03 CG04<br>CG05 CG06 CG07 CG08<br>CG09 CG10 CT02 CT03 | 0.6      | 15  | Y  | Y   |             |
| Formative Assessment [ON-SITE]                 | Assessment tests                 | CB02 CB03 CB04 CB05<br>CEB03 CG04 CG08 CT02<br>CT03                                       | 0.2      | 5   | Y  | Y   |             |
| Study and Exam Preparation [OFF-SITE]          | Self-study                       | CB02 CB03 CB04 CB05   | 3.6      | 90  | N  | -   |             |
| Class Attendance (theory) [ON-SITE]            | Lectures                         | CB02 CB03 CB04 CB05<br>CEB03 CG04 CG08 CT02<br>CT03                                       | 1        | 25  | N  | -   |             |
| <b>Total:</b>                                  |                                  |   | <b>6</b> | <b>150</b>                                  |    |     |             |
| <b>Total credits of in-class work: 2.4</b>     |                                  |   |          | <b>Total class time hours: 60</b>           |    |     |             |
| <b>Total credits of out of class work: 3.6</b> |                                  |   |          | <b>Total hours of out of class work: 90</b> |    |     |             |

As: Assessable training activity

Com: Training activity of compulsory overcoming (It will be essential to overcome both continuous and non-continuous assessment).

| 8. Evaluation criteria and Grading System |                       |                            |             |
|---|-----------------------|----------------------------|-------------|
| Evaluation System                         | Continuous assessment | Non-continuous evaluation* | Description |
| Final test                                | 0.00%                 | 30.00%                     |             |
| Progress Tests                            | 30.00%                | 0.00%                      |             |
| Laboratory sessions                       | 70.00%                | 70.00%                     |             |
| <b>Total:</b>                             | <b>100.00%</b>        | <b>100.00%</b>             |             |

According to art. 4 of the UCLM Student Evaluation Regulations, it must be provided to students who cannot regularly attend face-to-face training activities the passing of the subject, having the right (art. 12.2) to be globally graded, in 2 annual calls per subject, an ordinary and an extraordinary one (evaluating 100% of the competences).

| 9. Assignments, course calendar and important dates                             |              |
|---|--------------|
| Not related to the syllabus/contents  |              |
| Hours   | hours        |
| <b>Unit 1 (de 3):</b>   |              |
| <b>Activities</b>   | <b>Hours</b> |
| Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities]     | 5            |
| Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises] | 5            |
| Formative Assessment [PRESENCIAL][Assessment tests]                             | 2            |
| Study and Exam Preparation [AUTÓNOMA][Self-study]                               | 60           |
| Class Attendance (theory) [PRESENCIAL][Lectures]                                | 10           |
| <b>Unit 2 (de 3):</b>   |              |
| <b>Activities</b>   | <b>Hours</b> |
| Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities]     | 5            |
| Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises] | 5            |
| Formative Assessment [PRESENCIAL][Assessment tests]                             | 1            |
| Study and Exam Preparation [AUTÓNOMA][Self-study]                               | 20           |
| Class Attendance (theory) [PRESENCIAL][Lectures]                                | 10           |

| Unit 3 (de 3):  |       |
|---|-------|
| Activities  | Hours |
| Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities]     | 5     |
| Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises] | 5     |
| Formative Assessment [PRESENCIAL][Assessment tests]                             | 2     |
| Study and Exam Preparation [AUTÓNOMA][Self-study]                               | 10    |
| Class Attendance (theory) [PRESENCIAL][Lectures]                                | 5     |
| Global activity   |       |
| Activities  | hours |
| Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities]     | 15    |
| Study and Exam Preparation [AUTÓNOMA][Self-study]                               | 90    |
| Formative Assessment [PRESENCIAL][Assessment tests]                             | 5     |
| Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises] | 15    |
| Class Attendance (theory) [PRESENCIAL][Lectures]                                | 25    |
| <b>Total horas: 150</b>   |       |

| 10. Bibliography and Sources                                   |   |                           |      |                |      |             |
|--|---|---------------------------|------|----------------|------|-------------|
| Author(s)  | Title/Link  | Publishing house          | Citv | ISBN           | Year | Description |
| Jane Hahn  | Latex for everyone<br>MATLAB resources<br><a href="http://es.mathworks.com/academia/">http://es.mathworks.com/academia/</a>   | Prentice Hall             |      | 0136059082     | 1993 |             |
| Alfonso Bueno, Gaspar D.<br>Montesinos, Víctor M. Pérez-García | Herramientas informáticas de las matemáticas en ingeniería  | Publicación Universitaria |      |                | 2005 |             |
| Ernesto Aranda   | Curso de Latex<br><a href="http://matematicas.uclm.es/earanda/wp-content/uploads/downloads/2013/10/latex.pdf">http://matematicas.uclm.es/earanda/wp-content/uploads/downloads/2013/10/latex.pdf</a> |                           |      |                |      |             |
| Garr Reynolds  | Presentación Zen: Ideas sencillas para el diseño de presentaciones  | Pearson Educación         |      | 978-8483226377 | 2009 |             |