

**1. General information****Course:** STATISTICS**Type:** BASIC**Degree:** 357 - UNDERGRADUATE DEGREE PROGRAMME IN ELECTRICAL ENGINEERING (TO)**Center:** 303 - E.DE INGENIERÍA INDUSTRIAL Y AEROSPOACIAL DE TOLEDO**Year:** 1**Main language:** Spanish**Use of additional languages:****Web site:****Code:** 56307**ECTS credits:** 6**Academic year:** 2023-24**Group(s):** 40**Duration:** C2**Second language:****English Friendly:** Y**Bilingual:** N**Lecturer:** ISIDRO HIDALGO ARELLANO - Group(s): 40

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**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                                                                                                                                                                                                                                                                                                   |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A01  | To understand and have knowledge in an area of study that moves on from the general education attained at secondary level and usually found at a level that, while supported in advanced text books, also includes some aspects that include knowledge found at the cutting edge of the field of study.       |
| A02  | To know how to apply knowledge to work or vocation in a professional manner and possess the competences that are usually demonstrated by the formulation and defence of arguments and the resolution of problems in the field of study.                                                                       |
| A03  | To have the capability to gather and interpret relevant data (normally within the area of study) to make judgements that include a reflection on themes of a social, scientific or ethical nature.                                                                                                            |
| A07  | Knowledge of Information Technology and Communication (ITC).                                                                                                                                                                                                                                                  |
| A08  | Appropriate level of oral and written communication.                                                                                                                                                                                                                                                          |
| A12  | Knowledge of basic materials and technologies that assist the learning of new methods and theories and enable versatility to adapt to new situations.                                                                                                                                                         |
| A13  | Ability to take the initiative to solve problems, take decisions, creativity, critical reasoning and ability to communicate and transmit knowledge, skills and abilities in Electrical Engineering.                                                                                                           |
| A17  | Ability to apply principles and methods of quality control.                                                                                                                                                                                                                                                   |
| B01  | Ability to solve mathematical problems that occur in engineering. Aptitude to apply knowledge of: linear algebra; geometry; differential geometry; differential and integral calculus; differential and partial differential equations; numerical methods; numerical algorithms; statistics and optimization. |

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

Know the main approaches for resolution through using numerical methods, to use some statistical software packages at user level, data processing, mathematical calculus and visualization, set out algorithms and program through programming language of a high level, visualize functions, geometric figures and data, design experiments, analyze data and interpret results

Be able to express yourself correctly both orally and in writing, and, in particular, to know how to use mathematical language to express with precision quantities and operations that appear in industrial engineering. Become accustomed to working in a team and behaving respectfully.

Know and interpret the fundamental measurements of descriptive statistics, approximate bidimensional data through regression adjustment, know the fundamentals of probability, estimate the parameters of statistical models, construct confidence intervals, contrast hypotheses and take decisions.

**Additional outcomes****6. Units / Contents****Unit 1:****Unit 2:****Unit 3:**

| 7. Activities, Units/Modules and Methodology   |                               |                                                          |          |                                             |    |     |             |
|------------------------------------------------|-------------------------------|----------------------------------------------------------|----------|---------------------------------------------|----|-----|-------------|
| Training Activity                              | Methodology                   | Related Competences<br>(only degrees before RD 822/2021) | ECTS     | Hours                                       | As | Com | Description |
| Class Attendance (theory) [ON-SITE]            | Lectures                      |                                                          | 1.2      | 30                                          | Y  | N   |             |
| Problem solving and/or case studies [ON-SITE]  | Problem solving and exercises |                                                          | 0.6      | 15                                          | Y  | N   |             |
| Laboratory practice or sessions [ON-SITE]      | Problem solving and exercises |                                                          | 0.4      | 10                                          | Y  | N   |             |
| Study and Exam Preparation [OFF-SITE]          | Self-study                    |                                                          | 3.6      | 90                                          | N  | -   |             |
| Formative Assessment [ON-SITE]                 | Assessment tests              |                                                          | 0.2      | 5                                           | Y  | 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 |
| Assessment of problem solving and/or case studies | 0.00%                 | 20.00%                     |             |
| Laboratory sessions                               | 0.00%                 | 10.00%                     |             |
| Mid-term tests                                    | 0.00%                 | 0.00%                      |             |
| Final test                                        | 0.00%                 | 70.00%                     |             |
| <b>Total:</b>                                     | <b>0.00%</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                             |              |
|---------------------------------------------------------------------------------|--------------|
| <b>Not related to the syllabus/contents</b>                                     |              |
| <b>Hours</b>                                                                    | <b>hours</b> |
| Study and Exam Preparation [AUTÓNOMA][Self-study]                               | 5            |
| <b>Unit 1 (de 3):</b>                                                           |              |
| <b>Activities</b>                                                               | <b>Hours</b> |
| Class Attendance (theory) [PRESENCIAL][Lectures]                                | 10           |
| Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises] | 5            |
| Laboratory practice or sessions [PRESENCIAL][Problem solving and exercises]     | 4            |
| Study and Exam Preparation [AUTÓNOMA][Self-study]                               | 30           |
| <b>Unit 2 (de 3):</b>                                                           |              |
| <b>Activities</b>                                                               | <b>Hours</b> |
| Class Attendance (theory) [PRESENCIAL][Lectures]                                | 10           |
| Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises] | 5            |
| Laboratory practice or sessions [PRESENCIAL][Problem solving and exercises]     | 2            |
| Study and Exam Preparation [AUTÓNOMA][Self-study]                               | 30           |
| <b>Unit 3 (de 3):</b>                                                           |              |
| <b>Activities</b>                                                               | <b>Hours</b> |
| Class Attendance (theory) [PRESENCIAL][Lectures]                                | 10           |
| Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises] | 5            |
| Laboratory practice or sessions [PRESENCIAL][Problem solving and exercises]     | 4            |
| Study and Exam Preparation [AUTÓNOMA][Self-study]                               | 30           |
| <b>Global activity</b>                                                          |              |
| <b>Activities</b>                                                               | <b>hours</b> |
| Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises] | 15           |
| Class Attendance (theory) [PRESENCIAL][Lectures]                                | 30           |
| Laboratory practice or sessions [PRESENCIAL][Problem solving and exercises]     | 10           |
| Study and Exam Preparation [AUTÓNOMA][Self-study]                               | 95           |
| <b>Total horas: 150</b>                                                         |              |

| 10. Bibliography and Sources |                                                      |                  |      |                   |      |             |
|------------------------------|------------------------------------------------------|------------------|------|-------------------|------|-------------|
| Author(s)                    | Title/Link                                           | Publishing house | Citv | ISBN              | Year | Description |
| Montgomery, Douglas C.       | Probabilidad y estadística aplicadas a la ingeniería | Limusa Wiley,    |      | 978-968-18-5915-2 | 2007 |             |

|                                                              |                                                                                                                                                                                                                                                                                                                       |                                                      |                   |      |                                                  |
|--------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|-------------------|------|--------------------------------------------------|
| Walpole, Ronald E.                                           | Probabilidad y estadística para ingeniería y ciencias                                                                                                                                                                                                                                                                 | Pearson Educación                                    | 978-970-26-0936-0 | 2007 |                                                  |
| M. T. González Manteiga y A. Pérez de Vargas                 | Estadística aplicada una visión instrumental<br><a href="https://ebookcentral.proquest.com/lib/bibliotecaucalm-ebooks/detail.action?docID=3189079">https://ebookcentral.proquest.com/lib/bibliotecaucalm-ebooks/detail.action?docID=3189079</a>                                                                       | Ediciones Díaz de Santos                             | 9788479789138     | 2009 |                                                  |
| S. M. Ross y T. Valdés Sánchez                               | Introducción a la estadística<br><a href="https://ebookcentral.proquest.com/lib/bibliotecaucalm-ebooks/detail.action?docID=5635443">https://ebookcentral.proquest.com/lib/bibliotecaucalm-ebooks/detail.action?docID=5635443</a>                                                                                      | Editorial Reverté                                    | 9788429151916     | 2014 |                                                  |
| A. J. Arriaza Gómez y otros                                  | Estadística Básica con R y R Commander<br><a href="http://knuth.uca.es/ebrcmdr">http://knuth.uca.es/ebrcmdr</a>                                                                                                                                                                                                       | UCA                                                  | 978-84-9828-186-6 |      | Libro Libre                                      |
| C. M. Cuadras                                                | Problemas de probabilidades y estadística                                                                                                                                                                                                                                                                             | PPU                                                  | 84-86130-06-9     |      | Signatura Biblioteca: 519.2 CUA                  |
| C. Pérez López                                               | Estadística : problemas resueltos y aplicaciones                                                                                                                                                                                                                                                                      | Pearson educación                                    | 84-205-3780-2     | 2003 | Signatura Biblioteca: 519.2 PER                  |
| D. Peña                                                      | Fundamentos de estadística<br><a href="http://site.ebrary.com/lib/bibliotecaucalm/detail.action?adv.x=1&amp;docID=11028686&amp;f00=all&amp;p00=Estad%C3%ADstica">http://site.ebrary.com/lib/bibliotecaucalm/detail.action?adv.x=1&amp;docID=11028686&amp;f00=all&amp;p00=Estad%C3%ADstica</a>                         | Alianza Editorial                                    | 978-84-206-8380-5 | 2008 | Signatura Biblioteca: 519.2 PEÑ<br>TEXTO DOCENTE |
| D. S. Moore                                                  | Estadística aplicada básica<br><a href="http://site.ebrary.com/lib/bibliotecaucalm/docDetail.action?docID=10609557">http://site.ebrary.com/lib/bibliotecaucalm/docDetail.action?docID=10609557</a>                                                                                                                    | Antoni Bosch                                         | 978-84-95348-04-3 | 2009 | Signatura Biblioteca: 519.2 MOO                  |
| E. Gutiérrez González y O. Vladimirovna Panteleeva           | Estadística inferencial para ingeniería y ciencias<br><a href="http://site.ebrary.com/lib/bibliotecaucalm/detail.action?adv.x=1&amp;docID=11379359&amp;f00=all&amp;p00=Estad%C3%ADstica">http://site.ebrary.com/lib/bibliotecaucalm/detail.action?adv.x=1&amp;docID=11379359&amp;f00=all&amp;p00=Estad%C3%ADstica</a> | Grupo Editorial Patria                               | 9786077444879     | 2016 |                                                  |
| F.J. Martín Pliego López y otros                             | Problemas de inferencia estadística                                                                                                                                                                                                                                                                                   | Thomson-Paraninfo                                    | 84-9732-355-6     | 2002 | Signatura Biblioteca: 519.2(076) MAR             |
| H. A. Quevedo Urías y B. R. Pérez Salvador                   | Estadística para ingeniería y ciencias<br><a href="http://site.ebrary.com/lib/bibliotecaucalm/detail.action?docID=11013660">http://site.ebrary.com/lib/bibliotecaucalm/detail.action?docID=11013660</a>                                                                                                               | Grupo Editorial Patria                               | 9786074389395     | 2014 |                                                  |
| I. Espejo Miranda y otros                                    | Estadística descriptiva y probabilidad: teoría y problemas<br><a href="http://site.ebrary.com/lib/bibliotecaucalm/detail.action?docID=10844601">http://site.ebrary.com/lib/bibliotecaucalm/detail.action?docID=10844601</a>                                                                                           | UCA                                                  | 978-84-9828-467-6 | 2009 |                                                  |
| J.L. Devore                                                  | Probabilidad y estadística para ingeniería y ciencias.6ª edición.                                                                                                                                                                                                                                                     | Thomson                                              | 970-686-457-1     | 2005 | Signatura Biblioteca: 519.2 DEV                  |
| M. Febrero Bande y otros                                     | Prácticas de Estadística en R<br><a href="http://eio.usc.es/pub/pateiro/files/pubdocentepracticaseestadistica.pdf">http://eio.usc.es/pub/pateiro/files/pubdocentepracticaseestadistica.pdf</a>                                                                                                                        | Universidad Santiago de Compostela                   | 978-84-691-0975-1 | 2008 |                                                  |
| M. H. DeGroot                                                | Probabilidad y estadística                                                                                                                                                                                                                                                                                            | Addison-Wesley Iberoamericana                        | 0-201-64405-3     | 1988 | Signatura Biblioteca: D 10454                    |
| R.S. Kenet y S. Zacks                                        | Estadística Industrial Moderna                                                                                                                                                                                                                                                                                        | Thomson                                              | 970-686-027-4     | 2000 | Signatura Biblioteca: 519.2 KEN                  |
| S. J. Álvarez Contreras                                      | Estadística aplicada                                                                                                                                                                                                                                                                                                  | CLAG                                                 | 84-921847-4-4     | 2011 | Signatura Biblioteca: 519.2 ALV                  |
| W. Mendenhall                                                | Probabilidad y estadística para ingeniería y ciencias                                                                                                                                                                                                                                                                 | Pretice Hall                                         | 968-880-960-8     | 1997 | Signatura Biblioteca: D 519.2(076) MEN           |
| I. Espejo Miranda, F. Fernández Palacín y M.A. López Sánchez | Inferencia estadística: teoría y problemas<br><a href="https://ebookcentral.proquest.com/lib/bibliotecaucalm-ebooks/detail.action?docID=4626891">https://ebookcentral.proquest.com/lib/bibliotecaucalm-ebooks/detail.action?docID=4626891</a>                                                                         | Servicio de Publicaciones de la Universidad de Cádiz | 9788498285581     | 2016 |                                                  |