



## IDENTIFYING DATA

### Projects elaboration and management in engineering

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |      |            |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------|------------|
| Subject             | Projects elaboration and management in engineering                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           |      |            |
| Code                | V12G320V01704                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |           |      |            |
| Study programme     | Degree in Electrical Engineering                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |           |      |            |
| Descriptors         | ECTS Credits                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Choose    | Year | Quadmester |
|                     | 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Mandatory | 4th  | 1st        |
| Teaching language   | Spanish                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |           |      |            |
| Department          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |      |            |
| Coordinator         | Troncoso Saracho, José Carlos                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |           |      |            |
| Lecturers           | Troncoso Saracho, José Carlos                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |           |      |            |
| E-mail              | tsaracho@uvigo.es                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |      |            |
| Web                 | <a href="http://http://webs.uvigo.es/oficinatecnica/">http://http://webs.uvigo.es/oficinatecnica/</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |           |      |            |
| General description | <p>(*)Esta materia ten como visión e como misión achegar ao alumno á súa vida profesional posterior a través do coñecemento, manexo e aplicación de metodoloxías, técnicas e ferramentas orientadas á elaboración, organización e xestión de proxectos e outros documentos técnicos.</p> <p>Empregábase un enfoque práctico dos temas, buscando a integración dos coñecementos adquiridos ao longo da carreira de face á súa aplicación ao desenvolvemento da metodoloxía, organización e xestión de traballos técnicos, como verdadeira esencia da profesión de enxeñeiro no marco das súas atribucións e campos de actividade.</p> <p>Promoverase o desenvolvemento das competencias da materia por medio dunha aproximación teórico-práctica, na que os contidos expostos de modo teórico desenvólvanse por medio da realización de actividades prácticas e traballos de aplicación orientados á realidade industrial da profesión, asimilando o emprego áxil e preciso da distinta normativa de aplicación e das boas prácticas establecidas.</p> <p>Dada a variedade que se produce no espectro de saídas profesionais, o programa académico posúe unha parte de contidos xerais a todos os Enxeñeiros Industriais, no que se trata de transmitir aqueles aspectos que reforcen a *pluridisciplinaridad e posúe outra parte máis específica da especialidade, que fai referencia a aspectos metodolóxicos ou normativos dese campo.</p> <p>Así mesmo a estratexia empregada permite expor ao alumno as alternativas profesionais que se lle abren, desde o exercicio profesional libre (*peritaciones, ditames, informes, proxectos, etc.), ata a súa inmersión nunha pequena / mediana oficina técnica máis orientada a instalacións ou mesmo ao deseño de produto.</p> |           |      |            |

## Competencies

|      |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Code |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| B1   | CG1 Skills for writing, signing and developing projects in the field of industrial engineering, whose purpose, within the field of Electric Engineering, construction, alteration, repair, maintenance, demolition, manufacturing, installation, assembly or operation of: structures, mechanical equipments, energy facilities, electrical systems and electronic installations and industrial plants, and manufacturing processes and automation. |
| B2   | CG2 Ability to manage the activities object of the engineering projects described in CG1.                                                                                                                                                                                                                                                                                                                                                           |
| B10  | CG10 Ability to work in a multidisciplinary and multilingual environment.                                                                                                                                                                                                                                                                                                                                                                           |
| C18  | CE18 Knowledge and skills to organize and manage projects. Know the organizational structure and functions of a project office.                                                                                                                                                                                                                                                                                                                     |
| D1   | CT1 Analysis and synthesis.                                                                                                                                                                                                                                                                                                                                                                                                                         |
| D2   | CT2 Problems resolution.                                                                                                                                                                                                                                                                                                                                                                                                                            |
| D3   | CT3 Oral and written proficiency in the own language.                                                                                                                                                                                                                                                                                                                                                                                               |
| D5   | CT5 Information Management.                                                                                                                                                                                                                                                                                                                                                                                                                         |
| D6   | CT6 Application of computer science in the field of study.                                                                                                                                                                                                                                                                                                                                                                                          |
| D7   | CT7 Ability to organize and plan.                                                                                                                                                                                                                                                                                                                                                                                                                   |
| D8   | CT8 Decision making.                                                                                                                                                                                                                                                                                                                                                                                                                                |
| D9   | CT9 Apply knowledge.                                                                                                                                                                                                                                                                                                                                                                                                                                |
| D10  | CT10 Self learning and work.                                                                                                                                                                                                                                                                                                                                                                                                                        |

D11 CT11 Planning changes to improve overall systems.

D12 CT12 Research skills.

D13 CT13 Adaptability to new situations.

D14 CT14 Creativity.

D15 CT15 Objectification, identification and organization.

D16 CT16 Critical thinking.

D17 CT17 Working as a team.

D20 CT20 Ability to communicate with people not expert in the field.

D21 CT21 Leadership.

### Learning outcomes

| Expected results from this subject                                   | Training and Learning Results |     |                                                                                               |
|----------------------------------------------------------------------|-------------------------------|-----|-----------------------------------------------------------------------------------------------|
| (*)CT1 Análisis y síntesis. Saber<br>Saber hacer                     |                               | C18 | D3<br>D5<br>D6<br>D9<br>D10<br>D17                                                            |
| (*)CT2 Resolución de problemas                                       | B1<br>B2<br>B10               | C18 | D1<br>D2<br>D5<br>D6<br>D7<br>D8<br>D10<br>D11<br>D12<br>D15<br>D17<br>D20<br>D21             |
| (*)CT3 Comunicación oral y escrita de conocimientos en lengua propia | B1<br>B2                      |     | D1<br>D3<br>D5<br>D6<br>D7<br>D9<br>D14<br>D15<br>D17                                         |
| (*)CT5 Gestión de la información                                     | B2                            | C18 | D1<br>D2<br>D3<br>D5<br>D6<br>D7<br>D8<br>D9<br>D11<br>D13<br>D14<br>D16<br>D17<br>D20<br>D21 |
| (*)CT6 Aplicación de la informática en el ámbito de estudio          |                               |     | D3<br>D5<br>D6<br>D7<br>D13<br>D14<br>D17<br>D20<br>D21                                       |

### Contents

Topic

|                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.- Presentation                                       | <input type="checkbox"/> Presentation<br><input type="checkbox"/> Guides Educational<br><input type="checkbox"/> Methodology of work.<br><input type="checkbox"/> Groups of work<br><input type="checkbox"/> Sources of information and communication: SUBJECT and other<br><input type="checkbox"/> Knowledges and Computer Applications for the matter.                                                                                                            |
| 2.- Technical office.                                  | <input type="checkbox"/> Introduction<br><input type="checkbox"/> Work.<br><input type="checkbox"/> Organisation of the work<br><input type="checkbox"/> Integration with the systems gives company<br><input type="checkbox"/> Takes of decisions<br><input type="checkbox"/> Communication.                                                                                                                                                                        |
| 3.- Industrial project                                 | <input type="checkbox"/> Project: Concept, classification, structure, cycle of life.<br><input type="checkbox"/> Documents of the project: Index, memory, plans. Specifications, budget, studies with own entity.<br><input type="checkbox"/> Normalisation. UNE 157002.                                                                                                                                                                                             |
| 4.- Technical documents                                | <input type="checkbox"/> Technical reports<br><input type="checkbox"/> Certifications<br><input type="checkbox"/> Homologation<br><input type="checkbox"/> *Peritaciones<br><input type="checkbox"/> Valuations                                                                                                                                                                                                                                                      |
| 5.- Legislation                                        | <input type="checkbox"/> Legislative legislation<br><input type="checkbox"/> Interpretation gives technical legislation<br><input type="checkbox"/> technical Legislation *generica applied the speciality                                                                                                                                                                                                                                                           |
| 6.- Budget and planning                                | <input type="checkbox"/> Measurement<br><input type="checkbox"/> economic assessment<br><input type="checkbox"/> Theory of management and planning of projects.<br><input type="checkbox"/> Agile methodologies,<br><input type="checkbox"/> Gantt, CPM and PERT                                                                                                                                                                                                     |
| 7.- Studies with own entity                            | <input type="checkbox"/> Relative studies to the fulfillment of the legislation of labour risks.<br><input type="checkbox"/> Relative studies to the fulfillment of the legislation of management of waste.<br><input type="checkbox"/> Other studies.                                                                                                                                                                                                               |
| 8.- Administrative management of works of engineering. | <input type="checkbox"/> *Tramitación: Visa, notary, Public Organisms, etc.<br><input type="checkbox"/> Management of licences, permissions and permissions in front of public and personal institutions.<br><input type="checkbox"/> Bidding and contracting of projects.                                                                                                                                                                                           |
| 9.- Professional activity                              | <input type="checkbox"/> Professions regulated<br><input type="checkbox"/> free Exercise of the profession<br><input type="checkbox"/> Exercise of the profession by extraneous account.<br><input type="checkbox"/> Exercise of the profession in the public administration<br><input type="checkbox"/> Direction *facultativa<br><input type="checkbox"/> civil and professional Responsibility<br><input type="checkbox"/> Schools and professional associations. |
| 10.- Patent rights.                                    | <input type="checkbox"/> Technological innovation and patent rights.<br><input type="checkbox"/> Patents and models of utility.                                                                                                                                                                                                                                                                                                                                      |

## Planning

|                                     | Class hours | Hours outside the classroom | Total hours |
|-------------------------------------|-------------|-----------------------------|-------------|
| Introductory activities             | 2           | 1                           | 3           |
| Master Session                      | 12          | 24                          | 36          |
| Presentations / exhibitions         | 2           | 4                           | 6           |
| Tutored works                       | 2           | 6                           | 8           |
| Integrated methodologies            | 12          | 24                          | 36          |
| Troubleshooting and / or exercises  | 6           | 6                           | 12          |
| Practice in computer rooms          | 4           | 4                           | 8           |
| Integrated methodologies            | 8           | 24                          | 32          |
| Teaching and/or informatives events | 1           | 4                           | 5           |
| Multiple choice tests               | 0.5         | 1.5                         | 2           |
| Short answer tests                  | 0.5         | 1.5                         | 2           |

\*The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.

## Methodologies

| Description |
|-------------|
|-------------|

|                                     |                                                                                                                                                                                                                                                                                                                     |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Introductory activities             | The subject will be presented, information of the contents of the same, methodologies that are going to be applied, work to be done in the subject and form of evaluation.<br>In addition, classroom dynamics will be developed to foster interrelation in students.                                                |
| Master Session                      | Teacher presentation of the contents on the subject of study, theoretical bases and / or guidelines of a work, exercise or project to be developed by the student.                                                                                                                                                  |
| Presentations / exhibitions         | It will be presented by the students, either individually or in groups, in front of the teacher and the rest of the class, content of the subject, results of work done, etc.                                                                                                                                       |
| Tutored works                       | Prepare a technical report on any matter related to Industrial Engineering, with the quality and rigor expected from an Industrial Engineer.                                                                                                                                                                        |
| Integrated methodologies            | A work will be carried out applying the methodology of "Project Based Learning - ABP".<br>Performing an engineering project, working with an open team. Emphasis will be placed on the application of industrial engineering tools and knowledge to create engineering solutions for the real needs of an industry. |
| Troubleshooting and / or exercises  | The student must develop the right or correct solutions to the exercises that are based on the theory taught.<br>They will be realized applying formulas, algorithms or procedures of transformation available information. Interpretation of results will be necessary.                                            |
| Practice in computer rooms          | Activities of application of knowledge in a given context, and acquisition of basic and procedural skills in relation to the subject, through ICT.                                                                                                                                                                  |
| Integrated methodologies            | An interdisciplinary group will be created with students from other subjects and grades.<br>This group, applying the methodology "design thinking" will provoke a work of implantation and / or improvement on a concrete activity.                                                                                 |
| Teaching and/or informatives events | To present the ideas developed by the students in the collaborative groups, a presentation is organized in a congress format. This will be published and disseminated in different media.                                                                                                                           |

### Personalized attention

| Methodologies                       | Description                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Integrated methodologies            | The student, of individual way, elaborates a technical report, or similar document, on a subject proposed by the professor. The *tutorías will be individual. They cleared the doubts of the student and helped him in the organisation and planning of the work. Can realise *tutorías in small group. Gathering to students with the even problem, for a better efficiency. |
| Tutored works                       | The student realised a project of *ingenieria, working with an open team. It will do upsetting in the application of tools and knowledges of industrial engineering to create solutions of engineering for the real needs of an industry. They will do *titorías of group with the professor to clear doubts and for the follow-up of the work.                               |
| Teaching and/or informatives events | It worked with the different groups of students to help them to prepare the public exhibition of his work. It realised several essays with them and oriented them to achieve an effective presentation.                                                                                                                                                                       |

### Assessment

|                             | Description                                                                                                                                                                                                                                | Qualification | Training and Learning Results                                                         |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------------------------------------------------------------------------------------|
| Presentations / exhibitions | (*)Presentación breve dun tema concreto proposto polo profesor. A exposición realizácese en clase.<br>Publicarase unha rubrica de avaliación na plataforma TEMA da materia.                                                                | 5             | D1<br>D3<br>D5<br>D6<br>D17<br>D20<br>D21                                             |
| Tutored works               | (*)Elaborar un informe técnico relativo a calqueira cuestión relacionada coa Enxeñaría Industrial, coa calidade e o rigor que se espera dun Enxeñeiro Industrial.<br>Publicarase unha rubrica de avaliación na plataforma TEMA da materia. | 10            | B1<br>D1<br>D2<br>D3<br>D5<br>D6<br>D7<br>D8<br>D9<br>D10<br>D12<br>D15<br>D16<br>D20 |

|                                     |                                                                                                                                                                                                                                                                                                                |    |          |                                                                                                 |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----------|-------------------------------------------------------------------------------------------------|
| Integrated methodologies            | (*)Realización dun traballo en grupo interdisciplinar, con alumnos doutras materias e graos. Este grupo, aplicando a metodoloxía "design thinking" fara un traballo de implantación e/ou mellora sobre unha actividade concreta. Pubricarase unha rubrica de avaliación na plataforma TEMA da materia.         | 15 | B1<br>B2 | D1<br>D2<br>D5<br>D7<br>D8<br>D9<br>D11<br>D12<br>D13<br>D14<br>D15<br>D16<br>D17<br>D20<br>D21 |
| Integrated methodologies            | (*)Realización dun proxecto de enxeñería, traballando cun equipo aberto. Farase fincapé na aplicación de ferramentas e coñecementos de enxeñaría industrial para crear solucións de enxeñaría para as necesidades reais dunha industria. Pubricarase unha rubrica de avaliación na plataforma TEMA da materia. | 40 | B1<br>B2 | C18<br>D1<br>D2<br>D3<br>D5<br>D6<br>D7<br>D8<br>D9<br>D16<br>D17<br>D20<br>D21                 |
| Teaching and/or informatives events | (*)Presentación das ideas desenvolvidas polos alumnos nos grupos colaborativos. Esta actividade será publica e con difusión en diferentes medios de comunicación. Pubricarase unha rubrica de avaliación na plataforma TEMA da materia.                                                                        | 10 |          | D1<br>D3<br>D5<br>D6<br>D17<br>D20                                                              |
| Multiple choice tests               | (*)Probas para avaliación das competencias adquiridas que inclúen preguntas pechadas con diferentes alternativas de resposta. Os alumnos seleccionan unha resposta entre un número limitado de posibilidades.                                                                                                  | 10 |          |                                                                                                 |
| Short answer tests                  | (*)Probas para avaliación das competencias adquiridas que inclúen preguntas directas sobre un aspecto concreto. Os alumnos deben responder de maneira directa e breve en base aos coñecementos que teñen sobre a materia.                                                                                      | 10 |          |                                                                                                 |

### Other comments on the Evaluation

#### EVALUATION SYSTEM:

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The default evaluation system is the continuous evaluation system.

The student who wishes to host a non-continuous evaluation system must officially request it, within the time and manner established for that, in the E.E.I. If the student requests and obtains the favorable verdict of the resignation to the continuous evaluation, it is understood that it is in the continuous evaluation system.

The student who intends to request the resignation of evaluation will continue to notify the teacher as soon as possible. It is recommended to do so at the beginning of the course, or before beginning the teaching.

The evaluation will be made based on the rubrics that are published in the TEMA palaforma of the subject.

#### CRITERIA FOR OVERCOMING THE MATTER THROUGH CONTINUOUS EVALUATION:

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To overcome the subject by means of continuous assessment, they must simultaneously fulfill two conditions:

A) obtain a minimum score of 4 out of 10 in each of the evaluable sections.

B) obtain an average grade, weighted according to the percentages indicated above, minimum of 5 out of 10.

If a section is suspended, or the student wishes to improve the grade of a section, he / she will have a maximum of \* two (2)

opportunities to do so. In this case, a correction coefficient will be applied to the qualification of the section. The score will be multiplied by 0.85, the first time and by 0.75 the second time. The deadline for such corrections will be set by the teacher.

#### CRITERIA FOR OVERCOMING THE MATTER THROUGH EVALUATION NOT CONTINUOUS:

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Students who choose to officially resign to continuous assessment must carry out a tutored work by the teacher, consisting of an industrial project or similar, and an evaluation test.

To obtain the grade, you will find the average proportional (60% theory and 40% practical). It is obligatory to obtain a minimum grade of 4 points out of 10 in each of the two parts.

To overcome the matter, the aforementioned average must be a minimum of 5 points out of 10 possible.

ethical="" commitmentETHICAL COMMITMENT:

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It is expected that the student presents an appropriate ethical behavior.

In attending the course, the student, acquires a commitment of teamwork, collaboration and respect to colleagues and teachers.

In the case of detecting unethical behavior (copying, plagiarism, use of unauthorized electronic devices and others) it will be considered that the student meets the necessary requirements to overcome the matter. In this case the overall grade in this academic year will be suspended (0.0).

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#### Sources of information

##### Basic Bibliography

O profesor da asignatura, **Apuntes de Oficina Técnica**, Plataforma Teledocencia, 2017

Comité CTN 157 - PROYECTOS, **UNE 157001:2014: Criterios generales para la elaboración formal de los documentos que constituyen un proyecto técnico**, AENOR, 2014

Cos Castillo, Manuel de, **Teoría general del proyecto**, Síntesis, 1995

Cos Castillo, Manuel de, **Teoría general del proyecto II**, Síntesis, 1997

**Paso a paso con GanttProject**, conectareducacion.educ.ar, 2016

##### Complementary Bibliography

GARCIA-HERAS PINO, ÁLVARO y JULIÁN RODRÍGUEZ FERNÁNDEZ, **Documentación técnica en instalaciones eléctricas**, 2, Paraninfo, 2017

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#### Recommendations

##### Subjects that continue the syllabus

Methodology for the preparation, presentation and management of technical projects/V12G320V01905

Final Year Dissertation/V12G330V01991

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##### Subjects that it is recommended to have taken before

Graphic expression: Fundamentals of engineering graphics/V12G320V01101

Computer science: Computing for engineering/V12G320V01203

Electrical engineering/V12G320V01401

Basics of circuit analysis and electrical machines/V12G320V01304

Basics of operations management/V12G320V01605

Electrical installations 1/V12G320V01503

Electrical installations 2/V12G320V01602

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#### Other comments

Basic knowledge of computer science, systems representation, standardization of drawing, industrial standardization and construction.

For the acquisition of the competences envisaged in this matter, it is recommended that active participation and participation in all planned activities and the use of tutorials, especially those related to the review of the works.

The key point to successfully pass the subject is to "understand" the subject and not so much its "memorization". In case of

doubts or questions, the student should ask the teacher well in class, during the student's hours or telematically.

As a general rule a resolute doubt avoids five questions in the future.

Students are advised to attend the tutorials to expose doubts. Active participation in the tutoring mechanisms is recommended.

Finally, with regard to attendance, although some minimums are set in theory and practice, students are advised to attend all the theoretical and practical sessions of the subject.

Didactic materials

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It requires access to the internet and the usual office tools.

The documentation will be facilitated through the TEMA platform and will be expanded and commented on the face-to-face classes and other face-to-face activities.

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