IDENTIFYING DATA

Technical Office

Subject	Technical Office
Code	V12G360V01702
Study programme	Grado en Ingeniería en Tecnologías Industriales

Descriptors	ECTS Credits		Choose	Year	Quadmester
	6		Mandatory	4th	1st

Teaching language	Spanish
Department	
Coordinator	Alonso Rodríguez, José Antonio Cerqueiro Pequeño, Jorge
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General description	This matter has like vision and like mission approach to the student to his back professional life through the knowledge, handle and application of methodologies, technical and tools oriented to the preparation, organisation and management of projects and other technical documents. It employed a practical approach of the subjects, looking for the integration of the knowledges purchased to the long of the career of face to his application to the development of the methodology, organisation and management of technical works, as true essence of the profession of engineer in the frame of his *atribucións and fields of activity. *Promoverase The development of the competitions of the matter by means of a theoretical approximation-practical, in which the exposed contents of theoretical way develop by means of the realisation of practical activities and works of application oriented to the industrial reality of the profession, assimilating the agile and precise employment of the distinct rule of application and of the best practices established. Given the variety that produces in the spectrum of professional exits, the academic program possesses a part of general contents to all the Industrial Engineers, in which it treats to transmit those appearances that reinforce the **pluridisciplinaridad and possesses another more specific part of the speciality, that does reference to methodological or normative appearances of this field. Likewise the strategy employed allows to expose to the student the professional alternatives that open him , from the free professional exercise (**peritaciones, *ditames, reports, projects, etc.), even his immersion in a small / average technical office more oriented the installations or even to the design of product.

Training and Learning Results

Code	
B1	CG1 Ability to design, develop, implement, manage and improve products and processes in various industrial fields, through analytical, computational and experimental appropriate techniques.
B2	CG2 Ability to lead activities related to CG1 competence.
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.
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 Ability to understand the meaning and application of the gender perspective in the different fields of knowledge and in professional practice with the aim of achieving a more just and equal society

D13 CT13 Ability to communicate orally and in writing in the Galician language.

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.

Expected results from this subject

Expected results from this subject			Training and Learning Results	
(*)			C18	D3
				D5
				D6
				D9
				D10
				D17
(*)	B1		C18	D1
	B2			D2
				D5
				D6
				D7
				D8
				D10
				D11
				D15
				D17
				D20
(*)	B1			D1
	B2			D3
				D5
				D6
				D7
				D9
				D14
				D15
				D17
(*)	B2		C18	D1
				D2
				D3
				D5
				D6
				D7
				D8
				D9
				D11
				D13
				D14
				D16
				D17
				D20
(*)				D3
				D5
				D6
				D7
				D13
				D14
				D17
				D20

Contents

Topic

Presentation	Presentation Guides Educational Methodology of work. Groups of work *Fontes of information and communication: SUBJECT and other Knowledges and *aplicacions computer for the matter.
Technical office.	Introduction *Funcions. Organisation of the work. Technicians of Work in instruments. Integration with the systems of the company. *Kanban. Taking of decision by means of weighting of criteria. Communication.
Cycle of life of a project	Phase I. Start. Diagram of functional blocks and the *sua description. Global definition of the project. Legal feasibility. (*PGOM And environmental legislation) Phase II. Scope and aims. Phase III. Realisation of the project. Phase IV. Closing: permissions and certifications of the project
Industrial project.	Project: Concept, classification, structure, cycle of life. Documents of the project: Index, memory, planes. *pliegos Of conditions, budget, studies with own entity. Normalisation. It JOINS 157002.
Administrative management of works of engineering.	Processing: visa, notary, Public Organisms, etc. Management of licences, permissions and permissions in front of public and personal institutions. Bidding and contracting of projects.
Industrial project. Planes	Structure and index of the planes. Typology of representation: dimension and relation. Block of titles. Sizes and scales. Folded. Criteria for wool preparation of planes. Example; planes of distribution. Example: planes of installations. Diagrams of principle. Legend of symbology.
Fire protection	Basic concepts: classification, sectorization, classification of materials, NRI, evacuation, means of protection. RD 2267/2004 and CTE DB-SI.
Budget and planning.	Measurement economic assessment Theory of management and planning of projects. Agile methodologies, *Gantt, *CPM and *PERT
Basic elements of construction	Basic elements of construction. Cover. *Cimentación. Structural elements. Coatings. Carpentries. Finishings. Examples.
Methodology of design of installations	Types of installations. Determination of loads. Elements of feeding of the loads. Elements of performance control and security. Planes of installations and diagrams of principle.
I fold of Conditions.	Types. Administrative Technical *Facultativas Bidding and contracting of projects.
Legislation.	Legislative legislation Interpretation of the technical legislation generic technical Legislation applied the speciality: *RD 485/1997, *RD 486/1997, *PGOM, *RD 314/2006
Technical documents.	Report: Concept, classification, structure. Certifications . Homologation *Peritaciones, Valuations.
Studies with own entity.	Relative studies to the fulfillment of the legislation of labour risks: Basic Study of Security and Health. Relative studies to the fulfillment of the legislation of management of waste.
Professional activity.	Processing: visa, notary, Public Organisms, etc. Management of licences, permissions and permissions in front of public and personal institutions. Bidding and contracting of projects.
Patent rights.	Technological innovation and patent rights. Patents and models of utility.
(*)Comunicación	(*)Técnicas de presentación de trabajos orales y escritas

Planning

	Class hours	Hours outside the classroom	Total hours
Introductory activities	2	0	2
Lecturing	12	24	36
Mentored work	2	6	8
Project based learning	12	24	36
Problem solving	6	6	12
Practices through ICT	4	4	8
Design Thinking	2	8	10
Learning-Service	4	20	24
Scientific events	2	8	10
Presentation	1	3	4

*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 on the contents of the same, methodologies to be applied, work to be done in the subject and form of evaluation. Likewise, dynamics will be carried out in the class to promote the interrelationship in the students.
Lecturing	Presentation by the teacher 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.
Mentored work	Prepare a technical report on any issue related to Industrial Engineering, with the quality and rigour expected of an Industrial Engineer.
Project based learning	Work will be done using the methodology of "Project-Based Learning- *ABP". Realization of an engineering project, working with an open team. Emphasis will be placed on applying industrial engineering tools and knowledge to create engineering solutions for the real needs of an industry. Submit Problem solving The student must develop the right or correct solutions the exercises posed that are based on the theory taught. They will be performed by applying formulas, algorithms or transformation procedures gives available information. Interpretation of the results will be necessary.
Problem solving	The student must develop the right or correct solutions the exercises raised that are based on the theory taught. They will be performed by applying formulas, algorithms or transformation procedures gives available information. Interpretation of the results will be necessary.
Practices through ICT	Knowledge application activities in a given context, and the acquisition of basic and procedural skills in relation to the subject, through ICT.
Design Thinking	An interdisciplinary group will be created with students from other subjects and grades. This group, applying the methodology "Design Thinking" will generate a work of implementation and / or improvement on a specific activity.
Learning-Service	Learning-Service (ApS) is an innovative methodology that tries to change reality and improve students' learning. It is inserted into the set of activities carried out by a student, and connects with innovative proposals such as competency-based education, project-based or problem-based learning, cooperative and collaborative learning.
Scientific events	To present the ideas developed by students in collaborative groups, a presentation is organized in congress format. This will be public and broadcast in different media.

Personalized assistance

Methodologies	Description
Project based learning	The student will complete 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. Group tutorials will be held with the teacher to answer questions and to follow up on the work.
Mentored work	The student, individually, prepares a technical report, or similar document, on a topic proposed by the teacher. Tutorials will be individual. The student's doubts will be clarified and he/she will be helped in the organization and planning of the work. Tutorials can be done in small groups, bringing together students with the same problem, for a better efficiency.
Design Thinking	The students, in a multidisciplinary group with students from other degrees, will work on a solution to the problem posed. This will be done by applying the Design Thinking methodology and simultaneously applying the Learning as a Service methodology. Meetings are planned to explain the methodologies to be applied and group tutorials to monitor the work.
Scientific events	We will work with the different groups of students to help them prepare the public exhibition of their work. You will conduct several rehearsals with them and guide them to achieve an effective presentation

	This methodology is integrated with the Design Thinling, so the monitoring will be as indicated in that section.			
Learning-Service	This methodology is integrated with the Design Thinling, so the monitoring will be as indicated in that section.			

Assessment

	Description	Qualification	Training and Learning Results	
Lecturing	Theory: The proofs will be of type test or of brief answer. Minimum note of this part: 5 on a qualification of 10 (in this part)	15	B1 B2	D2 D9
Mentored work	Elaborate a relative technical report the any question related with the Industrial Engineering, with the quality and the rigour that expects of an Industrial Engineer. It published a *rúbrica of evaluation in the platform *MOOVI of the subject.	15	B1	D1 D3 D5 D6 D7 D8 D9 D10 D15 D16
Project based learning	Realisation of a project of engineering, 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. It published a *rúbrica of evaluation in the platform *MOOVI of the subject. The evaluation includes an individual proof on the work and *ponderara the note of the project as it will expose in the *rubrica of evaluation.	40	B1 C18 B2	D2 D3 D5 D7 D8 D9 D10 D14 D17 D20
Learning-Service	Realisation of a work in group *interdisciplinar, with students of other subjects and degrees. This group, applying the methodology "*design *thinking" will do a work of implantation and/or improvement on a concrete activity. It will publish a *rúbrica of evaluation in the platform *MOOVI of the subject. In the *rúbrica collects the analysis of ethical and social appearance.	15		
Scientific events	Presentation of the ideas developed by the students in the groups *colaborativos. This activity will be public and with diffusion in different media. It published a *rúbrica of evaluation in the platform *MOOVI of the subject.	5		D1 D3 D5 D6 D17 D20
Presentation	Presentation of group of class of the work made with the methodology of Learning-Service. It valued the preparation of the presentation in *PowerPoint or equivalent and the oral exhibition of the same, to 50% each item.	10		

Other comments on the Evaluation

SYSTEM OF EVALUATION:--------------------------------------
The system of evaluation by defect is the system of continuous evaluation. The student that wish to received to the system of evaluation no continuous will owe to requested officially, in the term and way established by the administration of the And.And.I. Yes the student does not request devandita renounces or does not obtain the favourable verdict of the renounces the continuous evaluation, understands which this in the system of continuous evaluation.
The evaluation will realize in base them rúbricas that publish in the platform MOOVI of the subject.
CRITERIA FOR CONTINUOUS
EVALUATION: ==
To surpass the subject by means of the evaluation continued owe to fulfil, simultaneously, two conditions:
it) obtain a minimum punctuation of 5 on 10 in each of the apartados avaliables or parts indicated in the rúbricas that publish .
b) Obtain a half note, pondered second the percentages indicated previously, minimum of 5 on 10.
Yes one ítem this suspenso, or the student wishes to improve the note of one ítem, will have a maximum of two (2) opportunities to do it. In this case it will apply , envelope to qualification of the apartado, a coefficient corrector that indicated in the presentation of the course. The term for devanditas corrections will be established pole teaching staff.
The percentage that supposes each of the ítems in the qualification of the subject is the indicated in the following table.Ítems   PercentageExamination of theoretical contents
                    15%technical Report   15%Project of activity

40%Work colaborativo. Learning-service

15%Communication of results (PowerPoint or analog)   5%Communication of results (presentation in examination)   5%Communication of results (presentation in congress)   5%Examination of project   Factor multiplicador of the projectMaquetación of the final document   demeritoEditorial of the final document   demeritoFulfilment of norms of delivery and terms   demerito

The subject evaluates in base it one rubrica of evaluation. In the platform MOOVI, published rubrícaa of evaluation of each of the apartados of the subject.

The terms and formats of delivery of the activities published in the platform MOOVI of the subject.The activities indicated like demerito, qualify splitting of a note of 10 and yes no fulfil the specifications indicated in rubrícalas, suppose a factor of multiplication between 0 and 1, that multiplied the global note obtained.

The subject evaluates in base it one rubrica of evaluation. In the platform MOOVI, published rubrícaa of evaluation of each of the apartados of the subject.The terms and formats of delivery of the activities published in the platform MOOVI of the subject.

CRITERIA OF OVERRUN OF The MATERIAMEDIANTE GLOBAL EVALUATION:
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The students that opt for requesting the global evaluation realized an examination with the following structure:
1. Part of theory. Length 45 minutes. Can be used notes and notes of kind, only in bear paper.
Rest of 20 minutes.
2. Practical exercise of realization of one project technical. 150 minutes. Can be used computer Rest of 20 minutes
3. Manufacture of a presentation in PowerPoint or similar, envelope the project developed in the apartado previous. 30 minutes. Use of the computer.
Rest of 10 minutes.
4. Oral exhibition of the previous presentation. Limited it a minimum of 5 minutes and a maximum of 10 minutes. Use of computer and proxector.
5. Relative oral questions to the presentation and the exercise of project during a maximum of 15 minutes.
The computer can be what bring the student, or facilitated the use of one of the computers of the classrooms computings of the School.
The presentation and oral defence will be recorded in video, in accordance with the rule gave University. The percentage that supposes each of the ítems in the qualification of the subject is the indicated in the following table.

Ítems	Percentage
Examination of theoretical contents	30%
Project of activity	40%
Communication of results (PowerPoint or analog)	10%
Communication of results (presentation in examination)	10%
Communication of results. Oral answers to questions	10%

ETHICAL COMMITMENT:
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it Expects that the present student an ethical behaviour accommodated. When studying the subject, the student, purchases a commitment of work in team, collaboration and as regards the mates and to the teaching staff. In the case to detect a no ethical behaviour (copy, plaxio, utilization of unlicensed electronic devices and others) will consider that the student does not gather the necessary requirements to surpass the subject. In this case the global qualification in the present academic course will be of suspenso (0.0).

Sources of information

Basic Bibliography

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Complementary Bibliography

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Comité CTN 157, **PROYECTOS, UNE 157001:2014:Criterios generales para la elaboración formal de los documentos que constituyen un proyecto técnico**, AENOR. ASOCIACION ESPAÑOLA DE NORMALIZACION Y CERT, 2014

GONZÁLEZ, FRANCISCO JAVIER, **Manual para una eficiente dirección de proyectos y obras**, FC Editorial, 2014

ARENAS REINA, JOSE MANUEL, **RÁCTICAS Y PROBLEMAS DE OFICINA TÉCNICA**, LA FABRICA, 2011

MARTÍNEZ GABARRÓN, ANTONIO, **Análisis y desarrollo de proyectos en la ingeniería alimentaria**, ECU, 2011

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MEYERS FRED E., STEPEHENS MATHEW P., **Diseño de instalaciones de manufactura y manejo de materiales, Diseño de instalaciones de manufactura y manejo de materiales**, Prentice Hall, 2006

Tompkins, James A. White John A. Bozer, Yavuz A. Tanchoco J. M. A., **Planeación de instalaciones**, Cengage Learning editores S.A., 2011

Recommendations
Subjects that continue the syllabus
Final Year Dissertation/V12G360V01991

Subjects that it is recommended to have taken before

Graphic expression: Fundamentals of engineering graphics/V12G360V01101
Computer science: Computing for engineering/V12G360V01203