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Coordinating unit: 205 - ESEIAAT - Terrassa School of Industrial, Aerospace and Audiovisual Engineering

Teaching unit: 758 - EPC - Department of Project and Construction Engineering

Academic year: 2018

Degree: BACHELOR'S DEGREE IN AEROSPACE TECHNOLOGY ENGINEERING (Syllabus 2010). (Teaching unit Compulsory)
BACHELOR'S DEGREE IN AEROSPACE VEHICLE ENGINEERING (Syllabus 2010). (Teaching unit Compulsory)

ECTS credits: 6 Teaching languages: English

Teaching staff

Coordinator: Gonçalves Ageitos, Maria

Others: Garcia Almiñana, Daniel
Shelly Domenech, Alvaro
Perez Llera, Luis Manuel
Llargues Montaña, Joan

Degree competences to which the subject contributes

Specific:

4. GrETA/GrEVA - Applied knowledge of materials science and technology; mechanics and thermodynamics; fluid mechanics; aerodynamics and flight mechanics; navigation systems and air traffic; aerospace technology; structural theory; economy and production; projects; environmental impact.

Generical:

1. THE ABILITY TO ANALYSE AND SYNTHESISE: The ability to think abstractly about the fundamental concepts of a text or exposition and to intelligibly present the result of one's work.

Transversal:

2. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 3. Communicating clearly and efficiently in oral and written presentations. Adapting to audiences and communication aims by using suitable strategies and means.

3. TEAMWORK - Level 3. Managing and making work groups effective. Resolving possible conflicts, valuing working with others, assessing the effectiveness of a team and presenting the final results.

Teaching methodology

The teaching methodology will consist in:
· In-class sessions for the exposition of the contents
· In-class practical work (exercises and problems)
· Autonomous work for the development of the project.
· Collaborative work in groups.
· Autonomous study.

Learning objectives of the subject

Introduce the theoretical and practical knowledge that is needed so the student can aboard the fulfilment of any kind of project in the field of aeronautics engineering. In this subject, it is remarked the intention that the student acquire the knowledge and the ability of using the necessary tools for: the defining and concept of the project, the management of the project, the study of alternatives and making decisions taking environmental issues into account.
The fundamental objectives are:

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· Comprehension of the basic concepts that surround a project
· Application of work methodologies, both in group and individually, that are need for the development of projects (project management)
· Promotion of the student creativity.
· Analysis of the problems to be solved and the conditions that a project involve.
· Synthesis of the alternatives of the solution of the project
· Evaluation of the solution taken and of the work carried out during the development of the project.
· Develop of the basic engineering of the proposed solution.

Study load

Total learning time: 150h	Hours large group:	32h	21.33%
	Hours small group:	28h	18.67%
	Self study:	90h	60.00%

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Content

1. The project in engineering

Learning time: 18h

Theory classes: 4h
Laboratory classes: 4h
Self study : 10h

Description:
(ENG) 1.1 El Projecte d'Enginyeria. La metodologia per a la solució de problemes: Concepte de projecte d'enginyeria. El procés projectual. Conceptes bàsics (Especificacions bàsiques. Abast del Projecte. Objecte del Projecte. Justificació del Projecte). Fases del Projecte. Cicle de vida del projecte.
1.2 El Projecte d'Enginyeria. Un treball individual i de grup: Complexitat dels projectes. Multidisciplinarietat / Jerarquització. Els diferents rols dels actors dels projectes. Avantatges i condicionants del treball en grup. Documents formals dels projectes. Models i formats de treball.
1.3 L'entorn col·laboratiu BSCW. Una eina per al treball en grup: Funcionament de l'entorn. Organització de la documentació. Treball sobre l'entorn. Registre i accés al BSCW

Related activities:
(ENG) Activitat 1: Sessions grup gran/teoria
Activitat 2: Exercicis sessions de teoria
Activitat 3: Cas pràctic de realització projecte

2. Analysis and synthesis in a project

Learning time: 36h

Theory classes: 8h
Laboratory classes: 8h
Self study : 20h

Description:

3. Planning and programming of the projects

Learning time: 27h

Theory classes: 6h
Laboratory classes: 6h
Self study : 15h

Description:

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4. Estimated cos and economic evaluation of the projects.	Learning time: 27h Theory classes: 6h Laboratory classes: 6h Self study : 15h
Description:	

5. Project phases and basic document	Learning time: 42h Theory classes: 8h Laboratory classes: 4h Self study : 30h
Description:	

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Planning of activities

ACTIVITY 1: THEORY SESSIONS	Hours: 22h Theory classes: 14h Self study: 8h
ACTIVITY 2: EXERCISES THEORY SESSIONS	Hours: 20h Theory classes: 14h Self study: 6h
ACTIVITY 3: CASE STUDY OF MAKING PROJECT	Hours: 84h Laboratory classes: 28h Self study: 56h
ACTIVITY 4: FINAL EXAM	Hours: 14h Theory classes: 2h Self study: 12h
ACTIVITY 5: PROJECT EVALUATION. ORAL PRESENTATION	Hours: 10h Theory classes: 2h Practical classes: 8h

Qualification system

The Final Mark of this subject will be calculated as the weighted average of the following marks:
Final exam 30%
Theory exercises 20%
Project documents 10%
Oral presentation of the project 5%
Individual work in the project 35%

One of the parameters considered to assess the student work in the laboratory is his/her participation on the weekly follow-up sessions. As such, the laboratory sessions are considered as evaluation activities, therefore the non-justified absence to any of the laboratory sessions will involve a qualification of ABSENT (NO PRESENTAT). The session devoted to the final project presentation constitutes also an evaluation activity, the non-attendance to this session will also involve a qualification of ABSENT (NO PRESENTAT).

The in-class exercises mark is obtained from the activities and work developed in class related to the concepts introduced in each session and its substitution by alternative activities cannot be requested.

The assessment of the project documents will consider their content and formal aspects.

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Regulations for carrying out activities

Activity 3. Project Development
Students will get organized in collaborative teams in order to develop the project work. Team members have to choose a representative that will act as group coordinator.
The contribution of each student to the team work will be assessed by the team supervisor. In order to do so, each team should develop for each laboratory session an agenda with the topics to discuss in the next meeting, and the minutes of the meeting including the topics dealt with and the agreements reached.

The presence of the student in the laboratory sessions is considered as an evaluation activity, therefore attendance to laboratory sessions is mandatory for all team members. Attendance to laboratory sessions constitutes a requirement to be able to pass the subject. At the beginning of each laboratory session, the team supervisor will hand over a signatures sheet for the students to formally register their attendance to the meeting.

The virtual collaborative environment BSCW must be used to develop the project work. All the project information, both generated and used by the team, must be uploaded to the BSCW folder structure. For evaluation purposes, the professors will exclusively consider the information uploaded to the BSCW.

The contents and format of the documentation to be delivered during the project development will be defined early in the semester. All documents have to be available in the corresponding folder of the BSCW environment. Works delivered later than the agreed deadlines will not be admitted for evaluation. Teams not delivering their work will get a qualification of ABSENT (NO PRESENTAT).

Activity 4. Final theory exam
The written evaluation may consist or include a multiple-choice test with four possible answers. In this case, each wrong answer will reduce the mark by 0.5 points, while a blank answer will not affect the mark. In addition, the written exam may involve solving practical exercises.

Activity 5. Project Assessment. Oral Presentation.
The last week of the semester each team will perform a project presentation of around 20-25 minutes. To develop the presentation computer media will be available. The oral presentation will be assessed by Department professors, who will ask any question they might consider relevant and they will assess different aspects of the presentation, such as: structure, clarity, dynamics, answers to the questions, media used, etc.

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Bibliography

Basic:

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Cos Castillo, M. Teoría general del proyecto, vol. 1, Dirección de proyectos. Madrid: Síntesis, 1995. ISBN 8477383324.

Cos Castillo, M. Teoría general del proyecto, vol. 2, Ingeniería de proyectos. Madrid: Síntesis, 1997. ISBN 8477384525.

Gómez-Senent, E. El proyecto diseño en ingeniería. Valencia: Universidad Politécnica de Valencia, 1997. ISBN 8477214549.

Gómez-Senent, E. Las fases del proyecto y su metodología. Valencia: Universidad Politècnica de Valencia, 1992. ISBN 8477211809.

Romero López, C. Técnicas de programación y control de proyectos. Madrid: Pirámide, 1997. ISBN 8436811518.

Humphreys, K.K.; Wellman, P. Basic cost engineering. 3rd ed. New York: Marcel Dekker, 1996. ISBN 0824796705.

Complementary:

Pahl, Gerhard [et al.]. Engineering design: a systematic approach. 3rd ed. London: Springer, 2007. ISBN 781846283185.

Jones, J. Christopher. Design methods. 2nd ed. New York: Van Nostrand Reinhold, 1992. ISBN 0442011822.

Pugh, Stuart. Total design: integrated methods for successful product design. Wokingham: Addison Wesley, 1990. ISBN 0201416395.

Goldenberg, J.; Mazursky, D. Creativity in product innovation. Cambridge: Cambridge University Press, 2002. ISBN 0521002494.

Kerzner, Harold. Project management: a systems approach to planning, scheduling and controlling. 10th ed. Hoboken: John Wiley & Sons, 2009. ISBN 9780470278703.

Stevenson, S.; Whitmore, S. Strategies for engineering communication. New York: John Wiley & Sons, 2002. ISBN 0471128171.

Others resources:

Notes developed by the Department professors.