Last update: 23-04-2019

220021 - Automatic Control

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

Teaching unit: 707 - ESAII - Department of Automatic Control

Academic year: 2019

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: 4,5 Teaching languages: Catalan

Teaching staff

Coordinator: Fatiha Nejjari Akhi-Elarab

Others: Joseba Quevedo, Jordi Damunt

Degree competences to which the subject contributes

Specific:

1. GrETA/GrEVA - An adequate understanding of the following, as applied to engineering: the basics of fluid mechanics; the basic principles of flight control and automation; the main characteristics and physical and mechanical properties of materials

Teaching methodology

It is divided into three parts:
· Attendance lessons of exposition of the contents
· Attendance lessons of evaluable group work.
· Self-study and exercises.
In the first ones, the teacher will expose the theoretical basis of the subject, concepts, methodology and results, that will go along with examples in order to easy the comprehension of the subject.
In the second ones, the students will develop the laboratory practices under the supervision and help of the teacher.
The students, autonomously, will study to assimilate the concepts and resolve the exercises.

Learning objectives of the subject

Get the basic knowledge to model, analyse, and design the automatic control systems. It will be given special importance to concepts of stability and performance of closed-loop systems and their limitations.
Use of the computer to implement application examples of the concepts.

Last update: 23-04-2019

220021 - Automatic Control

Study load

Total learning time: 112h 30m	Hours large group:	31h	27.56%
	Hours medium group:	0h	0.00%
	Hours small group:	14h	12.44%
	Guided activities:	0h	0.00%
	Self study:	67h 30m	60.00%

Last update: 23-04-2019

220021 - Automatic Control

Content

1. Dynamic system modelling	Learning time: 26h Theory classes: 8h Laboratory classes: 2h Self study : 16h
Description:	

2. Dynamic system analysis.	Learning time: 29h 30m Theory classes: 8h Laboratory classes: 4h Self study : 17h 30m
Description:	

3. Stability and precision.	Learning time: 30h Theory classes: 8h Laboratory classes: 4h Self study : 18h
Description:	

4. Control system design.	Learning time: 27h Theory classes: 7h Laboratory classes: 4h Self study : 16h
Description:	

Last update: 23-04-2019

220021 - Automatic Control

Planning of activities

ACTIVITY 1: THEORY SESSIONS	Hours: 65h 30m Theory classes: 28h Self study: 37h 30m
ACTIVITY 2: LABORATORY SESSIONS	Hours: 34h Laboratory classes: 14h Self study: 20h
ACTIVITY 3: MIDTERM EXAM	Hours: 6h 15m Theory classes: 1h 15m Self study: 5h
ACTIVITY 4: FINAL EXAM	Hours: 6h 15m Theory classes: 1h 15m Self study: 5h
ACTIVITY 5: LABORATORY EXAM	Hours: 0h 30m Theory classes: 0h 30m

Qualification system

Laboratory: 20%
Midterm exam: 35%
Final exam: 35%
Laboratory exam: 10%

Unsatisfactory results in the midterm exam (examen parcial) can be recovered by doing a global exam that covers the first and second part of the course. The global exam will be held on the same date and hour scheduled for the final exam of the course. The mark of this global exam may replace the one obtained in the midterm exam if it is higher than this. All the students, who wish so, can opt for this mechanism by sending an email to the coordinator of the course. Laboratory grades are exempt from this recovering mechanism.

Regulations for carrying out activities

All the activities are mandatory

Last update: 23-04-2019

220021 - Automatic Control

Bibliography

Basic:

Ogata, K. Ingeniería de control moderna [on line]. 4ª ed. Madrid: Pearson Educación, 2003 [Consultation: 04/10/2018]. Available on: <http://www.ingebook.com/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=1259>. ISBN 9788420536781.

Dorf, R. C. Sistemas de control moderno. 10ª ed. Madrid: Prentice Hall, 2005. ISBN 8420544019.

Complementary:

Goodwin, G. C.; Graebe, S. F.; Salgado, M. R. Control system design. Upper Saddle River: Prentice Hall, 2001. ISBN 0139586539.

Aström, K. J.; Murray, R. M. Feedback systems: an introduction for scientists and engineers. Princeton: Princeton University, 2008. ISBN 9780691135762.

Villà, R. Apuntes de dinámicas de sistemas. Barcelona: CPDA ETSEIB,

Others resources: