TEACHING GUIDE

Unmanned vehicles guidance

Master in
Telecommunication Engineering

Universidad de Alcalá

Academic Year 2023/2024

1er Curso - 2nd Semester

TEACHING GUIDE

Course Name:	**Unmanned vehicles guidance**
Code:	**201829**
Master in:	**Telecommunication Engineering**
Department and area:	**Electrónica** **Tecnología Electrónica**
Type:	**Optional (Specialized)**
ECTS Credits:	**6.0**
Year and semester:	**1er Curso, 2nd Semester**
Teachers:	Por definir
Tutoring schedule:	Consultar al comienzo de la asignatura
Language:	English

1. COURSE SUMMARY

Presentation

2. SKILLS

Basic, Generic and Cross Curricular Skills.

This course contributes to acquire the following generic skills, which are defined in the Section 3 of the Annex to the Orden CIN/355/2009:

en_CGT1 - Skill of analysis and synthesis.

en_CB6 - To have and understand knowledges that provide a basis or opportunity to be original in the development and/or application of ideas, often in a research context

en_CB7 - That students know how to apply the acquired knowledge and problem-solving abilities in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their area of study.

en_CB9 - That students be able to communicate their findings and the ultimate knowledge and reasons behind them to specialized and non-specialized audiences in a clear and unambiguous manner.

en_CT1 - Troubleshooting skill

en_CT6 - Ability to integrate knowledge from different scientific areas

Professional Skills

This course contributes to acquire the following professional skills, which are defined in the Section 5 of the Annex to the Orden CIN/355/2009:

en_EURACE - Link to the correlation table between the Learning Outcomes, according to the ENAEE (European Network for Accreditation of Engineering Education) standards, and the Master's subjects where the corresponding skills are acquired.

Learning Outcomes

After succeeding in this subject the students will be able to:

RA1. Example

RA2. Another One.

RA3. And more.

3. CONTENTS

Contents Blocks	Total number of hours
Example Module 1.	x hours
	x hours
	x hours
	x hours

4. TEACHING - LEARNING METHODOLOGIES. FORMATIVE ACTIVITIES.

4.1. Credits Distribution

Number of on-site hours:	60 hours
Number of hours of student work:	90
Total hours	150

4.2. Methodological strategies, teaching materials and resources

The teaching strategy of the course is divided into 3 sections: classroom learning, learning in small groups and finally the working sessions in the laboratory.

Sessions of large group in the classroom:

Working sessions in the classroom, in large groups, will consist of lectures where the main concepts of the theory of circuits will be presented. The aim is to introduce students to the theoretical foundations of circuit analysis in a guided and reflective way. The understanding of these concepts will culminate with the use of them in both the laboratory and the problem solving sessions in small groups.

Teaching materials will be essential to create reflective learning environments, where students and teachers can undertake a critical analysis that allows the student to autonomously relate concepts.

The order of presentation of the contents will evolve from the simple to the complex, in order to avoid a high degree of abstraction that might cause a student lack of interest in the course. In any case, it is very convenient, during the working sessions in the classroom, to establish linkages with other subjects in the curriculum, and to provide possible experience on the contents, which will help to attract students' attention and will encourage their interest in the subject.

5. ASSESSMENT: procedures, evaluation and grading criteria

Preferably, students will be offered a continuous assessment model that has characteristics of formative assessment in a way that serves as feedback in the teaching-learning process.

5.1. PROCEDURES

The proposed evaluation process is inspired by continuous evaluation, although, respecting the

regulations of the University of Alcalá, the student may take the final evaluation. To qualify for the final evaluation, students of the Master's Degree will have to request it in writing to the director of the Master's Degree in the first two weeks of teaching the subject, explaining the reasons that prevent them from following the continuous evaluation system. The evaluation of the learning process of all students who do not submit an application in this regard or see it denied will be carried out, by default, according to the continuous evaluation model described below. The student has two calls to pass the subject, one ordinary and one extraordinary.

Ordinary Call

Continous Assessment:

The main assessment tools will be:

1. Problems (EP). Solving practical problems individually or in small groups. Solving practical problems individually or in small groups.
2. Laboratory Exercises (EL). Performance of laboratory practices and delivery of the corresponding reports. The evaluation will consider systematic observation, where the teacher will record the main difficulties and skills observed in each student, and the realization of a single memory by practice, by each of the groups of students who have done it.

3. **Assessment** Tests (PE). Performing written tests focused on both practical and theoretical aspects of the subject.

Students must attend 100% of the laboratory sessions and deliver the corresponding reports to all laboratory practices. Recovery sessions will be enabled for those students who have not attended any of the sessions and justify it documentarily.

The students, as a group, will deliver the reports of the laboratory practices following the established schedule. These practices will be evaluated by the professor responsible for the laboratory group, to assess if the objectives indicated in the script of the same have been met.

Assessment through final exam:

In the case of evaluation by means of a final exam, the evaluation elements to be used will be the following:

Extraordinary Call

The procedure will be the same as that described for the assessment by means of a final exam in the ordinary call.

5.2. EVALUATION

EVALUATION CRITERIA

The assessment criteria measure the level in which the competences have been acquired by the student. For that purpose, the following are defined::

CE1.

CE2.

CE3.

GRADING TOOLS

The work of the student is graded in terms of the assessment criteria above, through the following tools:

1. Ordinary call
   a. Continuous assessment, with three assessment exams (PEI1,PEI2,PEP3).
   b. Final assessment (PEF)
2. Extraordinary call. Final assessment (PEF)

GRADING CRITERIA

In the ordinary call-continuous assessment the relationship between the competences, learning outcomes, criteria and evaluation instruments is as follows.

Skill	Learning Outcomes	Evaluation criteria	Grading Tool	Contribution to the final mark
CTecTel1	RA1	CE1, CE6	EL	12,5%
CTecTel1	RA1, RA3, RA4	CE2, CE3, CE6	EL	12,5%
CTecTel1, CTecTel4	RA5	CE4, CE6	EL	12,5%
CTecTel1, CTecTel4	RA6	CE5, CE6	EL	12,5%

In the ordinary call-final evaluation, the relationship between the competences, learning outcomes, criteria and evaluation instruments is as follows.

Skill	Learning Outcomes	Evaluation criteria	Grading Tool	Contribution to the final mark
CtecTel1, CTecTel4	RA1, RA2, RA3, RA4, RA5, RA6	CE1, CE2, CE3, CE4, CE5, CE6	PL	50%
CtecTel1, CTecTel4	RA1, RA2, RA3, RA4, RA5, RA6	CE1, CE2, CE3, CE4, CE5, CE6	PEF	50%

Extraordinary call

In the case of the extraordinary call, the same percentages that have been established in the case of the evaluation by means of a final exam will be maintained, giving the option of making the PL or maintaining the mark obtained in the EL (continuous evaluation) or in the PEF (final evaluation), according to the student's decision. In any case, the PL will be made by those students who have not done it in the final exam option in the ordinary call.

6. BIBLIOGRAPHY

6.1. Basic Bibliography

- P. P. Vaidyanathan, Multirate Systems and Filter Banks. Englewood Cliffs, N.J.: Prentice Hall, 1993.

- H. S. Malvar, Signal Processing with Lapped Transforms, Artech House, Norwood, MA, 1992.

- K. R. Rao and P. Yip, Discrete Cosine Transforms, Academic Press, New York, 1990.

6.2. Additional Bibliography

- IEEE Transactions on Signal Processing.

- IEEE Communications Magazine

Disclosure Note

During the evaluation tests, the guidelines set out in the Regulations establishing the Rules of Coexistence of the University of Alcalá must be followed, as well as the possible implications of the irregularities committed during said tests, including the consequences for committing academic fraud according to the Regulation of Disciplinary Regime of the Students of the University of Alcalá.