



Guías docentes UJA

Horarios de tutorías

Llamamientos PEVAU

## Syllabus 2023-24 - 14312006 - General Electronics (Electrónica general)

### Caption

- Level 1: Tutorial support sessions, materials and exams in this language
- Level 2: Tutorial support sessions, materials, exams and seminars in this language
- Level 3: Tutorial support sessions, materials, exams, seminars and regular lectures in this language

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Full version (Spanish)

English

DEGREE:	Grado en Ingeniería de telecomunicación (14312006)
FACULTY:	SCHOOL OF ENGINEERING OF LINARES
DEGREE:	Grado en Ingeniería telemática (14512002)
FACULTY:	SCHOOL OF ENGINEERING OF LINARES
DEGREE:	Doble Grado Ing. de tecnologías de la telecomunicación e Ing. telemática (15212002)
FACULTY:	SCHOOL OF ENGINEERING OF LINARES
ACADEMIC YEAR:	2023-24
COURSE:	General Electronics

### SYLLABUS

#### 1. COURSE BASIC INFORMATION

NAME: General Electronics

CODE: 14312006 (\*)

ACADEMIC YEAR: 2023-24

LANGUAGE: English

LEVEL: 2

ECTS CREDITS: 6.0

YEAR: 2

SEMESTER: PC

#### 2. LECTURER BASIC INFORMATION

NAME: FUENTES CONDE, MANUEL

DEPARTMENT: U133 - ING. ELECTRÓNICA Y AUTOMÁTICA

FIELD OF STUDY: 785 - TECNOLOGÍA ELECTRÓNICA

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LANGUAGE: -

LEVEL: 2

NAME: VIVAR GARCIA, MARTA

DEPARTMENT: U133 - ING. ELECTRÓNICA Y AUTOMÁTICA

FIELD OF STUDY: 785 - TECNOLOGÍA ELECTRÓNICA

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E-MAIL: mvivar@ujaen.es

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WEBSITE: -

ORCID: -

LANGUAGE: -

LEVEL: 2

#### 3. CONTENT DESCRIPTION

##### THEORETICAL LESSONS:

The theoretical block has been divided into five modules and nine topics, with the structure outlined below. **Seven mandatory guided practices have to be passed in order to present the final design that will be developed in the other five non-guided sessions.** In addition, the student will be provided with the ability to keep up to date with developments in science and technology, such as the dynamic environment of electronics.

Module I: Amplification, Feedback, Signal Conditioning, Non-linear circuits and Oscillators

- Chapter 1: Operational Amplifier
- Chapter 2: Feedback, Signal Conditioning, Non-linear circuits and Oscillators
- Chapter 3: Signal Conditioning

Module II: Power Electronics

- Chapter 4: Energy conversion systems. Linear Power Supplies

## Module III: Renewable Energies

- Chapter 5: Sustainability. Renewable Energies. Thermal Solar Energy
- Chapter 6: Photovoltaic energy. Stand-alone PV systems

## Module IV: Middle and low power amplification. Active Filters

- Chapter 7: Amplification. Concept and types
- Chapter 8: Active Filters

## Module V: Fundamentals of Electrical Engineering

- Chapter 9: Fundamentals of Electrical Engineering. Electric machines

**PRACTICAL LESSONS**

**The practical block of the subject includes practices in the laboratory and on the terrace of the center and its nature is compulsory. With global design, the development of communication skills, information, ideas, problems and solutions in the field of engineering and society in general is encouraged through processes of delivery of documentation or oral presentations.**

**Collaboration and teamwork will be encouraged through the design of practices in the organization of work.**

**Practice 0** : Practical exam of previous knowledge.

**Practice 1** . AO Characteristics.

**Practice 2** . Oscillators.

**Practice 3** . Signal aconditioning. Adaptation of sensors.

**Practice 4** . Global Design.

**Practice 5** . Linear Sources

**Practice 6** . Photovoltaic I.

**Practice 7** . Photovoltaic II.

**Practice 8** . Global Design.

**Practice 9** . Amplification. Power Devices

**Practice 10** . Global Design.

**Practice 11** . Motor control.

**Practice 12** . Presentation Global Design.

**4. COURSE DESCRIPTION AND TEACHING METHODOLOGY**

The master classes will include the PBL group creation, PBL proposal and typical problem solutions, besides the master lectures. They will be focused on promoting quality teaching, prioritizing activities that promote inclusive and equitable learning (SDG-4).

The practical lectures will help the students to understand theoretical lectures, with basic and design practices in order to demonstrate the capacities achieved by them. Work in a collaborative environment will be encouraged, as well as mixing with the communication of results, with special emphasis on the need for ongoing training in activities related to electronics throughout their professional life independently.

The practical part is going to have an important weight in the subject. The objective will be to set up the theoretical knowledge with the development of the practical classes.

At the beginning, while the theoretical knowledge is advanced, management of competencies and prototyping will be acquired. Next, some basic electronic integration designs will be propose for the students to understand and improve them in the practical classes. Some basic examples would be a developing of acquired knowledge to a radio-controlled car.

The evaluation of the subject would be supported by an improved electronic integration based on the basic designs that have been offered. There are 6 ETCS, 2.7 corresponds to practical activities and 2.7 to theoretical classes.

**Students with special educational needs should contact the Student Attention Service (Servicio de Atención y Ayudas al Estudiante) in order to receive the appropriate academic support**

**5. ASSESSMENT METHODOLOGY**

An useful, feasible, ethical and accurate assessment is made, whose objective it is not only the student's qualification, but it should give enough data in order to analyze the development of the subject by the professor. A Problem Based Learning (PBL) is applied:

- A continuous, weekly evaluation. They need to develop the guided practices ( 7 mandatory sessions to pass in order to present the design) and a global design (5 sessions). The weighting, in this case, would be 5 % corresponding to the participation (classes, practices, seminars and tutorials), 45 % to guided practices and 50 % to the global design.

A continuously monitoring is done and students are informed of their progress. The practices have an evaluation of 0-10 points. For the PBL option, the student will show a good knowledge in the 7 guided practices in order to justify the evolution of the global design in which they are working. A compulsory theoretic-practical exam will be done in exceptional cases (non in person class).

#### UNIQUE TEST

In compliance with article 13 of the Regulation of Academic Regime and Student Assessment of the University of Jaén, any student who justifiably (according to the assumptions contained in the aforementioned article) cannot participate in the regulated and complementary activities of a face-to-face nature proposed in the subject, may request the teaching staff to change the evaluation procedure to a Single Test. This request, together with the corresponding justification, must be made at least one week before the beginning of the examination period. In this case, there will be a theoretical-practical exam that will evaluate S2 (concepts of the subject) and S4 (laboratory practices)

A compulsory theoretic-practical exam or a design will be done in exceptional cases (non in person class).

## 6. BOOKLIST

### MAIN BOOKLIST:

- Renewable Energy Systems : a Smart Energy Systems Approach to the Choice and Modeling of 100% Renewable Solutions [edited by] Henrik Lund. Edition: 2nd ed.. Author: Lund, Henrik, ed. lit.. Publisher: Academic Press ([Library](#))
- Electricity and electronics for renewable energy technology : an introduction by Ahmad Hemami.. Edition: 1st edition. Author: Hemami, Ahmad, author.. Publisher: CRC Press ([Library](#))
- Power electronics handbook [electronic resource] : devices, circuits, and applications edited by Muhammad H. Rashid.. Edition: 3rd ed.. Author: Rashid, M. H.. Publisher: Elsevier BH ([Library](#))
- Design of analog filters Rolf Schaumann, Mac E. Van Valkenburg. Edition: -. Author: Schaumann, Rolf. Publisher: Oxford University Press ([Library](#))

### ADDITIONAL BOOKLIST:

- Planning and installing photovoltaic systems: a guide for installers, architects and engineers [the German Solar Energy Society (DGS)]. Edition: -. Author: Deutsche Gesellschaft für Sonnenenergie. Publisher: James & James ([Library](#))
- Schematic capture with cadence PSpice. Edition: 2nd ed. Author: Herniter, Marc E.. Publisher: Prentice Hall ([Library](#))
- Analog design and simulation using OrCAD Capture and PSpice Dennis Fitzpatrick. Edition: 2nd. ed.. Author: Fitzpatrick, Dennis. Publisher: Elsevier ([Library](#))

## 7. VIRTUAL / CLASSROOM TEACHING SCENARIO

### 1. Teaching methodology and training activities.

If the number of students is greater than the limited capacity in the laboratory (all teaching would be taught in a laboratory) the methodology and activities would be developed as follows:

Training Activities	Format (classroom/online)*	Teaching methodology description
12 Practical sessions in laboratory	In person at 50%	Development of 12 practical sessions, lasting two hours each, in laboratories applying rotation in small groups of 50%. Retransmission of practical classes to the rest of the group if the technical means allow it.
14 Theoretical sessions	In person at 50%	13 sessions of participatory master classes, of two hours each (plus 1 hour), held in the laboratory and broadcasting by videoconference to the rest of the group if the technical means allow it. Periodic rotation of students.
Tutorials	In person + <i>Online</i>	Some tutoring sessions will be done in person and others online (synchronous and asynchronous).

If the number of students is lower than the limited capacity in the laboratory (all teaching would be taught in a laboratory) the methodology and activities would be developed as follows:

Training Activities	Format (classroom/online)*	Teaching methodology description
12 Practical sessions in laboratory	In person	Development of 12 practical sessions, lasting two hours each.

14 Theoretical sessions	In person	13 sessions of participatory master classes, of two hours each (plus 1 hour).
Tutorials	Presencial + <i>Online</i>	Some tutoring sessions will be done in person and others online (synchronous and asynchronous).

## 2. Evaluation system

### Ordinary call

Assessment test	Format (in person/online synchronous or asynchronous)	Description	Percentage
Guided practices	In person	Assessment of guided practices.	40%
Final Work presentation	In person	Presentation of the proposed Global design.	40%
Participation and attendance	In person	Attendance to classes and active participation.	20%

### Extraordinary call

Assessment test	Format (in person/online synchronous or asynchronous)	Description	Percentage
Presentation of a theoretical-practical work	On line	Presentation of the implementation of a proposed global design, supported with videos of the work development asynchronously.	50%

### Unique test\*

Assessment test	Format (in person/online synchronous or asynchronous)	Description	Percentage
Completion of online examination on the officially established date	Synchronous	Taking an online exam to assess the theoretical knowledge of the subject and its application to problems solving.	50%
Presentation of a theoretical-practical work	In person in laboratory	Presentation of the implementation of a proposed global design, supported with videos of the work development asynchronously.	50%

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## 3.Means

In this scenario, the communication channels between teachers and students are fundamentally modified. The following resources will be used:

- Videoconference through Google Meet or similar.
- Virtual whiteboard using Google Jamboard or similar.
- Repository of contents and discussion forums through the PLATEA teaching platform or similar.

## 8. VIRTUAL TEACHING SCENARIO

## 1. Teaching methodology and training activities.

Training Activities	Format (classroom/online)*	Teaching methodology description
12 Practical sessions in laboratory	Synchronous, Asynchronous	Replacement of the 12 practical sessions for online training activities. They will be carried out synchronously by videoconference and will be recorded for asynchronous consultation if the technical means allow it.
14 Theoretical sessions	Synchronous, Asynchronous	14 sessions of participatory master classes, of two hours each, broadcasting by videoconference to the rest of the group of the technical means allow it. It will be supported by audiovisual material for its asynchronous monitoring.
Tutorials	Online	All tutoring sessions will be done online (synchronous and asynchronous).

## 2. Evaluation system

## Ordinary call

Assessment test	Format (in person/online synchronous or asynchronous)	Description	Percentage
Guided practices	Asynchronous	Assessment of guided practices.	40%
Final Work presentation	Synchronous, Asynchronous	Presentation of the proposed Global design.	40%
Participation and attendance	Synchronous, Asynchronous	Attendance to classes and active participation.	20%

## Extraordinary call

Assessment test	Format (in person/online synchronous or asynchronous)	Description	Percentage
Presentation of a theoretical-practical work	Synchronous, Asynchronous	Presentation of the implementation of a proposed global design through videoconference, supported with videos of the work development asynchronously.	50%

## Unique test\*

Assessment test	Format (in person/online synchronous or asynchronous)	Description	Percentage
Completion of online examination on the officially established date	Synchronous	Taking an online exam to assess the theoretical knowledge of the subject and its application to problems solving.	50%
Presentation of a theoretical-practical work	Synchronous, Asynchronous	Presentation of the implementation of a proposed global design through videoconference, supported with videos of the work development asynchronously.	50%

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### 3. Means

In this scenario, the communication channels between teachers and students are fundamentally modified. The following resources will be used:

- Videoconference through Google Meet or similar.
- Virtual whiteboard using Google Jamboard or similar.
- Repository of contents and discussion forums through the PLATEA teaching platform or similar.

## DATA PROTECTION CLAUSE (on line exams)

**Institution in charge of data processing:** Universidad de Jaén, Campus Las Lagunillas, s/n, 23071 Jaén

**Data Protection Delegate:** [dpo@ujaen.es](mailto:dpo@ujaen.es)

**Purpose:** In accordance with the Universities Law and other national and regional regulations in force, carrying out exams and assessment tests corresponding to the courses students are registered in. In order to avoid frauds while sitting the exam, the exam will be answered using a videoconference system, being able the academic staff of the University of Jaén to compare and contrast the image of the person who is answering the exam with the student's photographic files. Likewise, in order to provide the exam with evidential content for revisions or claims, in accordance with current regulation frameworks, the exam will be recorded and stored.

**Legitimacy:** compliance with legal obligations (Universities Law) and other national and regional regulations currently in force.

**Addressees:** service providers who are the owners of the platforms where the exams are carried out and with whom the University of Jaén has signed the corresponding data access contracts.

**Storage periods:** those established in current in force regulations. In the specific case of exam videoconference recordings, not before the examination records and transcripts are closed or the exam can still be reviewed or challenged.

**Rights:** you can exercise your right of access, amendment, cancellation, opposition, suppression, limitation and portability by sending a letter to the postal or electronic address indicated above. In the event that you consider that your rights have been violated, you may submit a complaint to the Andalusian Council for Transparency and Data Protection [www.ctpdandalucia.es](http://www.ctpdandalucia.es)

## CLASS RECORDING CLAUSE PERSONAL DATA PROTECTION

**Person in charge:** Universidad de Jaén, Paraje Las Lagunillas, s/n; Tel.953 212121; [www.ujaen.es](http://www.ujaen.es)

**Data protection delegate (DPO):** TELEFÓNICA, S.A.U. ; Email: [dpo@ujaen.es](mailto:dpo@ujaen.es)

**Procedure aim:** To manage proper recordings of teaching sessions with the aim of facilitating learning process under a multimodal and/or online teaching

**Period for record storage:** Images will be kept during legal term according to regulations in force

**Legitimacy:** Data will be managed according to legal regulations (Organic Law 6/2001, December 21, on Universities) and given consent provided by selecting corresponding box in legal admission documents

**Data recipients (transfers or assignments):** Any person allowed to get access to every teaching modality

**Rights:** You may exercise your rights of access, rectification, cancellation, portability, limitation of processing, deletion or, where appropriate, opposition. To exercise these rights, you must submit a written request to the Information, Registration and Electronic Administration Service of the University of Jaen at the address above, or by e-mail to the address above. You must specify which of these rights you are requesting to be satisfied and, at the same time, you must attach a photocopy of your ID card or equivalent identification document. In case you act through a representative, legal or voluntary, you must also provide a document that proves this representation and identification. Likewise, if you consider that your right to personal data protection has been violated, you may file a complaint with the Andalusian Data Protection and Transparency Council [www.ctpdandalucia.es](http://www.ctpdandalucia.es)

