

Partner University		Universitat Politècnica de Catalunya · BarcelonaTech					
Degree		MSc Energy Engineering					
Code	240CF002	Name	Electronics Fundamentals				
ECTS	3	Year	1	Semester	1	Character	Basic Skills
Pre-requisites		none					
Objectives		The main objective of this course is to help students to understand the basis of electronic devices, both in the analogue domain and the digital domain. In order to achieve this objective, the course mainly focus in practical works where the students analyze, measure and characterize diodes, BJTs transistors, logic gates and operational amplifiers (op-amps) embedded in practical examples related to power electronics and control of systems dealing with energy concerns.					
Learning outcomes		At the end of the course the student will be able to: <ul style="list-style-type: none"> • Demonstrate a basic understanding of the electronic devices. • Analyze, measure and characterize diodes, BJTs transistors, logic gates and op-amps. 					
Course main content		<ol style="list-style-type: none"> 1. p-n junction. LEDs. 2. BJT and MOS Transistors. 3. Switching and amplifier behaviours. 4. CMOS digital gates. 5. Operational amplifiers. 					
Methodology		The course is developed through theoretical learning sessions and practical sessions in electronic and computer labs. In the theoretical sessions, the teacher introduces the fundamental concepts of the course, which is after worked on practical sessions using application examples related to power electronics and/or simple energy circuits. In the theoretical sessions, the teacher introduces the fundamental concepts of the course, which are subsequently worked in practical sessions using examples of applications related to power electronics as well as simple circuits related to renewable energy systems.					
Bibliography:							
Student assessment		Theoretical final exam and continuous evaluation of practical works.					
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