



COURSE: PHYSICS		
DEGREE: COMPUTER ENGINEERING	year: 1st	SEMESTER: 1st

WEEKLY PROGRAMMING									
WEEK	SE SSI ON	DESCRIPTION	GROUPS		GROUPS	Special room for session (computer classroom, audio- visual classroom ... (*)	WEEKLY PROGRAMMING FOR STUDENT		
			LECTU RES	LECTU RES			DESCRIPTION	DESCR IPTIO N	HORAS TRABJO Semana Máximo 7 H
1	1	T1. A review of kinematics and dynamics. - Kinematics: Uniform motion and motion with uniform acceleration. - Dynamics: Newton's laws - Work. - Kinetic energy and the Work-Energy theorem. - Potential energy and conservative forces. - Fundamental interactions	X				- Reading of the corresponding chapters in the proposed literature. - Study and personal work on the lecture (i.e. searching additional information, etc)	1,66	5
1	2			X			- Solve the proposed exercises. - Participation in discussions and activities	1,66	

2	3	T1 (cont.) T2. Atoms and solids. - Electric charge. - The atomic structure of matter. The electron. The atomic nucleus: protons and neutrons. - The Bohr model. The electron energy levels. - Revised atomic models. Quantum numbers. The Pauli exclusion principle. - Solids. Ionic, covalent and metallic bonds. - Energy levels in solids. The conduction and valence bands. - Insulators, conductors and semiconductors. - Charge carriers in semiconductors: electrons and holes - Intrinsic and extrinsic semiconductors .	X				- Reading of the corresponding chapters in the proposed literature. - Study and personal work on the lecture (i.e. searching additional information, etc)	1,66	5
	4			X			- Solve the proposed exercises. - Participation in discussions and activities	1,66	
3	5	T2 (cont.)	X				- Reading of the corresponding chapters in the proposed literature. - Study and personal work on the lecture (i.e. searching additional information, etc)	1,66	5
3	6			X			- Solve the proposed exercises. - Participation in discussions and activities	1,66	
4	7	T3. Coulomb's law. Electric field. - Interaction between two electric charges. Coulomb's law. - Electric field due to a point charge. The superposition principle. - Electric field lines.	X				- Reading of the corresponding chapters in the proposed literature. - Study and personal work on the lecture (i.e. searching additional information, etc)	1,66	5
4	8			X			- Solve the proposed exercises. - Participation in discussions and activities	1,66	

5	9	T3 (cont.) T4. Gauss' law. - Uniformly charged distributions and charge densities. - Electric flux. - Gauss' law. - Gauss's law as a tool for the calculation of electric fields.	X				- Reading of the corresponding chapters in the proposed literature. - Study and personal work on the lecture (i.e. searching additional information, etc)	1,66	6
	10	- Test exam (*)		X			- Solve the proposed exercises. - Participation in discussions and activities	1,66	
6	11	T4 (cont.) T5. Electric potential. - Electrostatic work. - Potential difference between two points. Electric potential. - Potential due to a point charge. The superposition principle. - Electrostatic energy. Conservation of energy.	X					1,66	6
	12			X			- Reading of the corresponding chapters in the proposed literature. - Study and personal work on the lecture (i.e. searching additional information, etc)	1,66	
7	13	T5 (cont.)	X				- Reading of the corresponding chapters in the proposed literature. - Study and personal work on the lecture (i.e. searching additional information, etc)	1,66	5
7	14			X			- Solve the proposed exercises. - Participation in discussions and activities	1,66	
8	15	T6. Conductors. - Conductors and insulators. Conductors in electrostatic equilibrium. - Properties of conductors in electrostatic equilibrium: Electric field and potential inside the conductor. Charge distributions. Electric field and potential at the surface. - Conductors and cavities. Electric shielding.	X				- Reading of the corresponding chapters in the proposed literature. - Study and personal work on the lecture (i.e. searching additional information, etc)	1,66	5

8	16			X			- Solve the proposed exercises. - Participation in discussions and activities	1,66	
	9	17	T7. Capacitors and dielectrics - Capacitor. - Definition of capacitance. Capacitance of a parallel plate capacitor. - Parallel and serial capacitors. - Energy stored in a capacitor. - Capacitors with dielectrics. Dielectric constant. Dielectric breakdown.	X			- Reading of the corresponding chapters in the proposed literature. - Study and personal work on the lecture (i.e. searching additional information, etc)	1,66	5
9	18	- Test exam (*)		X			- Solve the proposed exercises. - Participation in discussions and activities	1,66	
10	19	T8. Electric current and electric circuits. -Electric current. Intensity and current density. -Ohm's law. Resistance. Electrical conductivity.	X				- Reading of the corresponding chapters in the proposed literature. - Study and personal work on the lecture (i.e. searching additional information, etc)	1,66	5
10	20			X			- Solve the proposed exercises. - Participation in discussions and activities	1,66	
11	21	T9. Magnetic forces and magnetic fields. - Introduction to the magnetism. - Magnetic field. The Lorentz force on a point charge. - Charged particles moving inside a magnetic field. - Magnetic forces on a current-carrying wire. Magnetic torques. Magnetic moment of a coil. - Magnetic fields due to currents. - Ampère's law.	X				- Reading of the corresponding chapters in the proposed literature. - Study and personal work on the lecture (i.e. searching additional information, etc)	1,66	5

11	22			X			- Solve the proposed exercises. - Participation in discussions and activities	1,66	
12	23	T9 (cont.)	X				- Reading of the corresponding chapters in the proposed literature. - Study and personal work on the lecture (i.e. searching additional information, etc)	1,66	5
12	24	- Test exam (*)		X			- Solve the proposed exercises. - Participation in discussions and activities	1,66	
13	25	T10. Semiconductor devices. - The pn junction. Semiconductor diodes. Characteristic curve. - Optoelectronic devices: LED, laser diode, photodiode. - Bipolar transistors. Transistor as an amplifier or switch. - Field effect transistors. The MOSFET transistor. - Applications: description of logical gates; memory cells.	X				- Reading of the corresponding chapters in the proposed literature. - Study and personal work on the lecture (i.e. searching additional information, etc)	1,66	5
13	26			X			- Solve the proposed exercises. - Participation in discussions and activities	1,66	
14	27								
14	28	- Retake exam) (*)		X				1,66	
R	29								
LAB		LAB: Measurements and uncertainties (**)		X	LAB 4.SB014 .SB024. SB03		- Reading of the guideline document. - Data acquisition - Analysis of results - Preparation of the report. <i>According to the teaching adaptations for this year, this session could be online</i>	1,66	3
		LAB: Instrumentation (**)		X	LAB		- Reading of the guideline document. - Data acquisition - Analysis of results	1,66	3

				4.SB014 .SB024. SB03		- Preparation of the report. <i>According to the teaching adaptations for this year, this session could be online</i>		
		LAB: Electric and magnetic phenomena (**)	X	LAB 4.SB014 .SB024. SB03		- Reading of the guideline document. - Data acquisition - Analysis of results - Preparation of the report. <i>According to the teaching adaptations for this year, this session could be online</i>	1,66	3
		LAB: Electric and magnetic phenomena (**)	X	LAB 4.SB014 .SB024. SB03		- Reading of the guideline document. - Data acquisition - Analysis of results - Preparation of the report. <i>According to the teaching adaptations for this year, this session could be online</i>	1,66	3
SUBTOTAL							51,46 + 79 = 130	
		Assessment						20
TOTAL								150

(*) Dates of the test exams are provisional.

(**) Dates of the lab sessions are provisional.