



<b>COURSE: NANOPHOTONICS (3 ECTS)</b>		
<b>MASTER: Master in Photonics Engineering</b>	<b>YEAR: 2017-2018</b>	<b>TERM: 1st</b>

WEEKLY PLANNING							
SESSION	DESCRIPTION	GROUPS (mark X)		Special room for session (computer classroom, audio-visual classroom...)	WEEKLY PROGRAMMING FOR STUDENT		
		LECTURES	SEMINARS/ LAB <sup>1</sup>		DESCRIPTION	CLASS HOURS	HOMEWORK HOURS
1	Introduction to Biophotonics. Objectives for the course. Definitions. Types of Light-Tissue and light-cells interaction.	X			Introduction to the subject. Answering questions about background	1,5	4
2	Light-Tissue Interaction. Optical Properties of Tissues with strong (multiple Scattering). Linear (elastic) and non-linear (inelastic) scattering.	X			Previous reading and revision of class materials. Decision about the topics of the works.	1,5	
3	Methods to Obtain the Optical Parameters of Tissues. Short pulse propagation in tissues. Diffuse photon-density waves.	X			Previous reading and revision of class materials.	1,5	15
4	Laboratory Session I		X		Answer questions about the experimental set-ups, perform experiments	1,5	
5	Light-induced Processes in Tissues. Fluorescence and Non-radiative processes	X			Previous reading and revision of class materials.	1,5	
6	Spectroscopy of Tissues and Cells (I). Linear Spectroscopy:	X			Previous reading and revision of class materials.	1,5	

7	Discussion of Case Studies I		x		The students, split in groups, will prepare the description of a case study that will be discussed in class	1,5	20
8	Spectroscopy of Tissues and Cells (II). Non-linear Spectroscopy.	X			Previous reading and revision of class materials.	1,5	
9	Spectroscopy of Tissues and Cells (III). Fluorescence Spectroscopy.	x			Previous reading and revision of class materials.	1,5	
10	Bioimaging: Transmission Microscopy, Fluorescence Microscopy, Confocal Microscopy, Optical Coherence Tomography. Other Imaging techniques.	x			Answer questions about the experimental set-ups, the optical behavior of the samples and the operation mode of the devices.	1,5	
11	Photonic Biosensors.	x			Previous reading and revision of class materials.	1,5	
12	Laboratory Session II		x		Answer questions about the experimental set-ups, perform experiments	1,5	
13	Advanced concepts for biophotonics.	x			Previous reading and revision of class materials.	1,5	
14	Discussion of Case Studies II		x		The students, split in groups, will prepare the description of a case study that will be discussed in class	1,5	34
<b>Subtotal 1</b>						<b>21</b>	
<sup>1</sup> A maximum of 1-2 lab sessions							<b>34</b>
<b>Total 1 (Hours of class plus student homework hours between weeks 1-7)</b>							<b>55</b>
	Tutorials, handing in, etc				Solving any remaining question	10	
15	Assessment				Studying the documentation for the final assessment.	3	7
<b>Subtotal 2</b>						<b>3</b>	<b>17</b>
<b>Total 2 (Hours of class plus student homework hours at week 8)</b>							<b>20</b>
<b>TOTAL (Total 1 + Total 2)</b>							<b>75</b>