COURSE: ADVANCED SEMICONDUCTOR LASERS (3 ECTS)		
MASTER: Master in Photonics Engineering	**YEAR: 2017-2018**	**TERM: 2nd**

WEEKLY PLANNING

SESSION	DESCRIPTION	GROUPS (mark X)		Special room for session (computer classroom, audio-visual classroom…)	WEEKLY PROGRAMMING FOR STUDENT		
		LECTURES	SEMINARS/ LAB[1]		DESCRIPTION	CLASS HOURS	HOMEWORK HOURS
1	INTRODUCTION of the subject. **Basic pulsed lidar systems I.** System components.	x			Introduction to the subject.	1,5	4
2	**Basic pulsed lidar systems II.** Lidar equation. Signal to Noise Ratio. .	x			Previous reading and revision of class materials..	1,5	
3	**Basic pulsed lidar systems III.** Transmitters and Receivers. Performance specifications.	x			Previous reading and revision of class materials.	1,5	10
4	**Continuous lidar systems I.** Frequency modulation. .	x			Previous reading and revision of class materials.	1,5	
5	**Continuous lidar systems II.** Random modulation. .	x			Previous reading and revision of class materials.	1,5	
6	**Exercises**		x		Revision of theoretical concepts and proposed exercises	1,5	20

7	**3D scanning systems.** Analysis of different techniques. Image reconstruction	x			Previous reading and revision of class materials.	1,5	
8	**Doppler Lidars I.** Coherent systems.	X			Previous reading and revision of class materials.	1,5	
9	**Doppler Lidars II.** Direct detection systems.	x			Previous reading and revision of class materials.	1,5	
10	**Differential Absorption Lidar.** Detection of gas traces. Performance. Applications	x			Previous reading and revision of class materials.	1,5	
11	**Exercises**		x		Revision of theoretical concepts and proposed exercises	1,5	
12	**Lidars for remote atmospheric sensing.** Aerosol concentration. Raman lidars	x			Previous reading and revision of class materials.	1,5	
13	**Laboratory Session:** distance measurements with a lidar system		x		The students will perform the measurements and compare them with theoretical predictions	1,5	
14	**Lidar workshop**		x		Presentation and discussion of the student's works.	1,5	
					Subtotal 1	**21**	**34**
					Total 1 *(Hours of class plus student homework hours between weeks 1-7)*	**55**	

[1] **A maximum of 1-2 lab sessions**

	Tutorials, handing in, etc				Solving any remaining question	10	
15	Assessment				Studying the documentation for the final assessment.	3	7
					Subtotal 2	**3**	**17**
					Total 2 *(Hours of class plus student homework hours at week 8)*	**20**	

TOTAL *(Total 1 + Total 2)*	**75**