Universidad Carlos III de Madrid
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COURSE: OPTICAL COMMUNICATIONS		
DEGREE: MASTER IN TELECOMUNICATIONS ENGINEERING	YEAR: 2015-2016	TERM:

The course has 15 sessions spread over 15 weeks. The student will have a weekly session

WEEKLY PLANNING

WEEK	SESSION	DESCRIPTION	GROUPS (mark X)		SPECIAL ROOM FOR SESSION (Computer class room, audio-visual class room)	Indicate YES/NO If the session needs 2 teachers	WEEKLY PROGRAMMING FOR STUDENT		
			LECTURES	SEMINARS			DESCRIPTION	CLASS HOURS	HOMEWORK HOURS (Max. 7h week)
1	1	**PRESENTATION OF THE SUBJECT INTRODUCTION TO OPTICAL COMMUNICATIONS.** BASIC CONCEPTS				NO	Scheme of a system of optical communications. Introduction to the main components. Optical Communication System.	1,6	3
2	2	**INTRODUCTION TO OPTICAL COMMUNICATIONS. (II).**				NO	Multiplexing (optical, electronic). Background. Relationship between bandwitch and spectral width.	1,6	
3	3	**PERSONAL PROJECTS**					Personal approach to work.	1,6	7
4	4	**PERSONAL PROJECTS**					Personal approach to work.	1,6	

5	5	**OPTICAL TRANSMITTERS.** MAIN CONCEPTS AND MODULATION.					Laser Diode. General concepts and key features. Noise. Analogue and Digital Modulation. Power stabilization. Exercises	1,6	7
6	6	**OPTICAL RECEIVERS.** CONCEPT AND DESIGN.					Main characteristics of photodetectors. Design of Receivers. High Z_{IN} preamplifier stages. Equalizing stages. Transimpedance stage. Exercises.	1,6	
7	7	**PERSONAL PROJECTS**					Resolution of doubts	1,6	6
8	8	**PERSONAL PROJECTS**					Resolution of doubts	1,6	
9	9	**OPTICAL FIBERS.** MAIN CHARACTERISTICS. ATTENUATION AND DISPERSION					Working conditions. Types. Numerical apertura. Propagating modes. AtTenuation and dispersión. Coupling to an optical fiber. Exercises.	1,6	5
10	10	**OPTICAL COMMUNICATION SYSTEMS**. TYPES OF DETECTION AND NOISE					Noise detection. Signal-to-Noise Ratio (SNR). Examples. MI-DD: Balance of Powers and rise times. Coherent detection.	1,6	
11	11	**OPTICAL COMMUNICATION SYSTEMS. EXERCISES**					Resolution of exercises	1,6	7
12	12	**UNGUIDED OPTICAL COMMUNICATIONS SYTEMS.** GENERAL FEATURES.					Free space optical communication systems. Friss Formula	1,6	
13	13	**UNGUIDED OPTICAL COMMUNICATIONS SYTEMS.** EXERCISES					Resolution of exercises	1,6	6
14	14	**TRABAJOS PERSONALES**					Discussion of the works	1,6	
15	15	**TRABAJOS PERSONALES**					Discussion of the works	1,6	3
							Subtotal 1	**24**	**44**

Total 1 *(Hours of class plus student homework hours between weeks 1-14)*	68

15		Tutorials, handing in, etc						3,2	
16		Assessment						3	
17									
18									
							Subtotal 2	**3**	**12**
							Total 2 *(Hours of class plus student homework hours between weeks 15-18)*	18.2	

TOTAL *(Total 1 + Total 2. Maximum 90 hours)*	**86.2**