uc3m | Universidad Carlos III de Madrid
Vicerrectorado de Estudios
Apoyo a la docencia y gestión del grado

COURSE:

DEGREE: **YEAR:** **TERM:**

WEEKLY PLANNING

WEEK	SESSION	DESCRIPTION	TEACHING (mark X)		SPECIAL ROOM FOR SESSION (Computer class room, audio-visual class room)	WEEKLY PROGRAMMING FOR STUDENT		
			LECTURES	SEMINARS		DESCRIPTION	CLASS HOURS (1,66=50+50 min)	HOMEWORK HOURS (Max. Estim. 3,25h)
1	1	Course Presentation Contents Block 1.- Introduction. 1.1 Definition of Virtual Reality (VR), Augmented Reality (AR) and Mixed Reality (MR). 1.2 Playback devices.				Readings to be determined. Study of the concepts shown in the theoretical classes. Exercises to be determined.	1,66	3,25
2	2	Acoustics basics				Readings to be determined. Study of the concepts shown in the theoretical classes. Exercises to be determined.	1,66	3,25
3	3	1.3 Fundamentals of human auditory system. 1.4 Immersive spatial audio.				Readings to be determined. Study of the concepts shown in the theoretical classes. Exercises to be determined.	1,66	3,25

WEEKLY PLANNING

WEEK	SESSION	DESCRIPTION	TEACHING (mark X)		SPECIAL ROOM FOR SESSION (Computer class room, audio-visual class room)	WEEKLY PROGRAMMING FOR STUDENT		
			LECTURES	SEMINARS		DESCRIPTION	CLASS HOURS (1,66=50+50 min)	HOMEWORK HOURS (Max. Estim. 3,25h)
4	4	Contents Block 2.- Binaural 3D audio for virtual reality. 2.1 3D audio reproduction formats. - Channel-based audio. - Object-based audio. - Scene-based audio. - Ambisonics y wave-field synthesis				Readings to be determined. Study of the concepts shown in the theoretical classes. Exercises to be determined.	1,66	3,25
5	5	2.2 Binaural Rendering: - Introduction. Auralization concept. - Sound source modelling: I - Sound power and directivity. - Acoustic propagation modelling. I- Reverberation time and room impulse response.				Readings to be determined. Study of the concepts shown in the theoretical classes. Exercises to be determined.	1,66	3,25
6	6	II - Acoustic theories for indoor acoustic propagation: a) Statistical theory. Acoustic absorption. Rendering Techniques and Simulation Softwares				Readings to be determined. Study of the concepts shown in the theoretical classes. Exercises to be determined.	1,66	3,25
7	7	b) Geometric theory. Echogram. Rendering Techniques and Simulation Softwares				Readings to be determined. Study of the concepts shown in the theoretical classes. Exercises to be determined.	1,66	3,25
8	8	c) Undulatory theory. Room modes. Rendering Techniques and Simulation Softwares				Readings to be determined. Study of the concepts shown in the theoretical classes. Exercises to be determined.	1,66	3,25

WEEKLY PLANNING

WEEK	SESSION	DESCRIPTION	TEACHING (mark X)		SPECIAL ROOM FOR SESSION (Computer class room, audio-visual class room)	WEEKLY PROGRAMMING FOR STUDENT		
			LECTURES	SEMINARS		DESCRIPTION	CLASS HOURS (1,66=50+50 min)	HOMEWORK HOURS (Max. Estim. 3,25h)
9	9	- Receiver modelling: I - HRTF (head-related transfer function). II - Individualized Binaural Rendering. III - Movement tracking.				Readings to be determined. Study of the concepts shown in the theoretical classes. Exercises to be determined.	1,66	3,25
10	10	Lab 1: Binaural room impulse response simulation				Write a report including main issues of the lab exercise.	1,66	3,25
11	11	2.3. 3D Audio reproduction systems: examples of systems and their equalization.				Readings to be determined. Study of the concepts shown in the theoretical classes. Exercises to be determined.	1,66	3,25
12	12	Lab: Project: Room simulation of a specific room and desing of an auralization				Start with the project desing.	1,66	3,25
13	13	Lab 2: Project: Room simulation of a specific room and desing of an auralization			4.0.B.01	Continue with the project desing.	1,66	3,25
14	14	Lab 3: Project: Room simulation of a specific room and desing of an auralization (cont.)			4.0.B.01	Continue with the project desing.	1,66	3,25
	15	Lab 4: Project: Room simulation of a specific room and desing of an auralization (cont.)			4.0.B.01	Continue with the project desing and write a final report.	1,66	3,25
						Subtotal 1	**25**	**49**
						Total 1 *(Hours of class plus student homework)*	**74**	

15		Tutorials, handing in, etc	1,8	-
16		Assessment	4	4
17				
18				

WEEKLY PLANNING

WEEK	SESSION	DESCRIPTION	TEACHING (mark X)		SPECIAL ROOM FOR SESSION (Computer class room, audio-visual class room)	WEEKLY PROGRAMMING FOR STUDENT		
			LECTURES	SEMINARS		DESCRIPTION	CLASS HOURS (1,66=50+50 min)	HOMEWORK HOURS (Max. Estim. 3,25h)
						Subtotal 2	**6**	**4**
						Total 2 *(Hours of class plus student homework)*	**10**	

TOTAL *(Maximun 83 horas)*	**83**