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

COURSE: DATA STRUCTURES AND ALGORITHMS		
DEGREE: DATA SCIENCE AND ENGINEERING	**YEAR: 1**	**TERM: 2**
DEGREE: APPLIED MATHEMATICS AND COMPUTING	**YEAR: 2**	**TERM: 2**

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	no teacher		DESCRIPTION	CLASS HOURS (1,66=50+50 min)	HOMEWORK HOURS (Max. Estim. 6,5h)
	1	Presentation of the course **Lesson 1: Introduction Abstract Data Types (ADT).**	x		1	online		1,66	
1	2	Problems about simple TADs. Unitary Tests (unittests)		x	1	online	Problems about simple ADTs. Unitary Tests (unittests)	1,66	6,5
	3	**Lesson 2: Linear Data Structures: Stacks and Queues. Sinlgy Linked Lists**	x		1	online		1,66	
2	4	Problems about stacks, queues and singly linked lists		x	1	online	Problems about stacks, queues and singly linked lists. Study linear data structures	1,66	6,5
	5	**Lesson 2: Linear Data Structures: Doubly Linked Lists**	x		1	online		1,66	
3	6	Problems about singly linked lists. Presentation of lab case (all phases). Presentation of Phase 1 (lab case)		x	1	face to face	Study linear data structures. Problems about doubly linked lists. Work on Lab case Phase 1.	1,66	6,5

	7	**Lesson 3: Analysis of Algoritmhs. Empirical Analysis. Theoretical Analysis: Big-O functions. Best and Worst cases**	x		1	online	Study Analysis of Algorithms. Problems about Analysis of Algorithms. Work on Lab Case Phase 1. Análisis de Algoritmos.	1,66	
4	8	Problems about analysis of algorithms. Work on Lab Case Phase 1.		x	1	online		1,66	6,5
	9	**Lesson 4. Recursion I**	x		1	online	Study Analysis of Algorithms. Problems about Analysis of Algorithms. Work on Lab Case Phase 1. Study for the first mid-term exam	1,66	
5	10	Problems about recursion. Work on Lab Case Phase 1.		x	1	online		1,66	6,5
	11	**FIRST MID-TERM EXAM**	x		2	online	Work on Lab Case Phase 1. Study for the first mid-term exam	1,66	
6	12	Work on Lab Case Phase 1.		x	1	online		1,66	6,5
	13	**Lesson 5: Trees: Binary Trees. Traversals.**	x		1	online	Study about trees. Problems about trees. Work on Lab Case Phases 1 and 2.	1,66	
7	14	Problems about BST. Work on Lab Case Phase 1. Presentation of Lab Case Phase 2		x	1	online		1,66	6,5
	15	**Lesson 5: Trees: Binary Search Trees (BST).**	x		1	online	Study about BST. Problems about BST. Work on Lab Case Phases 1 and 2.	1,66	
8	16	Problems about BST. Work on Lab Case Phases 1 and 2.		x	1	online		1,66	6,5
	17	**Lesson 5: Trees: Balance Trees.**	x		1	online	Study how to balance a BST. Work on phrases 1 and 2. Work for the oral exam of the phase 1.	1,66	
9	18	**ORAL EXAM OF THE LAB CASE PHASE 1**		x	2	face to face		1,66	6,5
	19	**Lesson 6: Graphs. Implementations**	x		1	online	Study about graphs and their implementations. Work on phases 2 and 3.	1,66	
10	20	Problems about how to balancer a BST. Presentation of Lab Case Phase 3.		x	1	face to face		1,66	6,5
	21	**Lesson 6: Graphs. Traversals and sortesth path algorithm**	x		1	online	Study traversal and shortest path algorithms for graphs. Work on phases 2 and 3. Study for the second mid-term exam.	1,66	
11	22	Problems about graphs. Work on Lab Case Phases 2 and 3.		x	1	online		1,66	6,5
	23	**SECOND MID-TERM EXAM**	x		2	online	Study about graphs. Work on on phases 2 and 3.	1,66	
12	24	Problems about graphs. Work on Lab Case Phases 2 and 3.		x	1	online		1,66	6,5
	25	**Lesson 7. Recursion II. Divide and Conquer.**	x		1	online	Study about divide and conquer. Work on phases 2 and 3.	1,66	
13	26	Work on on phases 2 and 3.		x	1	onine		1,66	6,5
	27	**ORAL EXAM OF THE LAB CASE PHASES 2 AND 3**	x		2	face to face		1,66	

14	28	**ORAL EXAM OF THE LAB CASE PHASES 2 AND 3**		x	1	face to face	Study for the oral exam of the lab case.	1,66	6,5
15	29	Problems of previous exams	x		1	online	Study for the final exam	1,66	3

							Subtotal 1	**48**	**94**
		Total 1 (Hours of class plus student homework)						**142**	
15		Tutorials, handing in, etc						2,0	-
16									
17									
18		Assessment						4	10
							Subtotal 2	**6**	**10**
		Total 2 (Hours of class plus student homework)						**16**	
TOTAL (Maximun 160 horas)								**158**	