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

COURSE: Calculus I		
DEGREE: Bachelor in Industrial Technologies Engineering	YEAR: 1st	TERM: 1st

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	1	The real line. Ordered fields. Number systems. Absolute value, bounds, and intevals.	x		NO	Personal study + read “The Real Line” in classroom notes	1,66
1	2	Exercises		x	NO	idem	1,66
2	3	Real functions. Definitions and basic concepts. Elementary functions. Operations with functions.	x		NO	Personal study + read “Real Functions” in classroom notes	1,66
2	4	Exercises		x	NO	idem	1,66
3	5	Sequences. Limit of a sequence. Number e. Indeterminacies. Asymptotic comparison of sequences.	x		NO	Personal study + read “Sequences” in classroom notes	1,66
3	6	Exercises		x	NO	idem	1,66
4	7	Series. Series of nonnegative terms. Alternating series. Telescopic series.	x		NO	Personal study + read “Series” in classroom notes	1,66
4	8	Exercises		x	NO	idem	1,66
5	9	Limits. Properties. Asymptotic comparison of functions.	x		NO	Personal study + read “Limit of a function” in classroom notes	1,66
5	10	Midterm exam #1 + Exercises		x	NO	idem	1,66
6	11	Continuity. Properties. Elementary functions. Discontinuities.	x		NO	Personal study + read “Continunity” in classroom notes	1,66

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			LECTURES	SEMINARS		DESCRIPTION	CLASS HOURS
6	12	Exercises		x	NO	idem	1,66
7	13	Continuity in closed intervals. Derivatives. Algebraic properties.	x		NO	Personal study + finish reading “Continunity” and read “Derivatives” in classroom notes	1,66
7	14	Exercises		x	NO	idem	1,66
8	15	Local behaviour: Rolle’s Theorem, Mean Value Theorem, and L’Hôpital’s Rule.	x		NO	Personal study + finish reading “Derivatives” in classroom notes	1,66
8	16	Exercises		x	NO	idem	1,66
9	17	Taylor: Landau's o notation. Taylor's polynomial. Calculating limits.	x		NO	Personal study + read “Taylor Expansions” in classroom notes	1,66
9	18	Exercises		x	NO	idem	1,66
10	19	Remainder and Taylor's theorem. Numerical approximations. Taylor series.	x		NO	Personal study + continue reading “Taylor Expansions” in classroom notes	1,66
10	20	Midterm exam #2 + Exercises		x	NO	idem	1,66
11	21	Local behaviour of functions. Concavity and convexity. Function graphing.	x		NO	Personal study + finish reading “Taylor Expansions” in classroom notes	1,66
11	22	Exercises		x	NO	idem	1,66
12	23	Primitives. Basic rules. Integration by parts. Primitive of rational functions. Change of variable.	x		NO	Personal study + read “Primitives” in classroom notes	1,66
12	24	Exercises		x	NO	idem	1,66
13	25	Integrals. Riemann's integral. Properties. Riemann's sums. Fundamental theorem of calculus.	x		NO	Personal study + read “Fundamental Theorem of Calculus” in classroom notes	1,66
13	26	Exercises		x	NO	idem	1,66
14	27	Geometric applications. Area of flat figures. Volumes of revolution. Length of curves.	x		NO	Personal study + read “Geometric Applications of Integrals” in classroom notes	1,66
14	28	Exercises		x	NO	idem	1,66
	29	Midterm exam #3		x	NO		1,66
						Subtotal 1	**48,14**

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			LECTURES	SEMINARS		DESCRIPTION	CLASS HOURS
		Total 1 *(Hours of class plus student homework hours between weeks 1-14)*					146
15		Tutorials, handing in, etc					
16		Assessment					3
17							
18							
						Subtotal 2	**3**
		Total 2 *(Hours of class plus student homework hours between weeks 15-18)*					3
TOTAL *(Total 1 + Total 2. Maximum 156 hours)*							**149**

HOMEWORK HOURS (Max. 7h week)
7
7
7
7
7
7

HOMEWORK HOURS (Max. 7h week)
7
7
7
7
7
7
7
7
98

HOMEWORK HOURS (Max. 7h week)
,14
,14