



COURSE: CALCULUS		
DEGREE: COMPUTER SCIENCE AND ENGINEERING	YEAR: 1º	TERM: 1

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	(1) Real numbers.	X			NO	Real numbers. Inequalities and absolute values. Subsets and intervals. Methods of proof.	1,66	6
1	2	Problem session: Real numbers.		X		NO	Problem session.	1,66	
2	3	(2) Sequences and series of real numbers I.	X			NO	Types of sequences (monotonic, recursive, etc.). The Limit Concept. Bolzano-Weierstrass Theorem . Squeeze theorem.	1,66	6

2	4	Problem session: Sequences and series of real numbers I.		X		NO	Problem session.	1,66	
3	5	(2) Sequences and series of real numbers II.	X			NO	Convergence of series of positive terms. Leibniz's test.	1,66	6
3	6	Problem session: Sequences and series of real numbers II.		X		NO	Problem session .	1,66	
4	7	(3) Continuous functions.	X			NO	Limit of a function. Continuous functions. Bolzano's theorem. Weierstrass theorem. Intermediate value theorem. Bisection method	1,66	6
4	8	Problem session: Continuous functions.		X		NO	Problem session.	1,66	
5	9	(4) Derivative.	X			NO	Geometric and physical interpretation of the derivative. Definitions. Derivatives of elementary functions. Chain rule.	1,66	6
5	10	Problem session: Derivative.		X		NO	Problem session.	1,66	
6	11	(5) Theorems about differentiable functions.	X			NO	Inverse function theorem. Mean value theorems (Rolle, Cauchy, Lagrange)	1,66	6
6	12	Problem session: Differentiable functions.		X		NO	Problem session.	1,66	

7	13	(6) Taylor's theorem.	X			NO	Taylor's theorem. Taylor polynomial. Estimates for the remainder. Taylor series.	1,66	6
7	14	Problem session: Taylor's theorem.		X		NO	Problem session.	1,66	
8	15	(7) Applications of the Derivative I.	X			NO	L'Hôpital's rule. Maxima and minima. Convex and Concave functions. Graphical representation.	1,66	6
8	16	Problem session: Applications of the Derivative I.		X		NO	Problem session.	1,66	
9	17	(7) Applications of the Derivative II.	X			NO	Newton-Raphson method.	1,66	6
9	18	Problem session: Applications of the Derivative II.		X		NO	Problem session.	1,66	
10	19	Review Session: (1 – 7).	X			NO	Review Session.	1,66	7
10	20	Review Session.		X		NO	Problem sesión.	1,66	
10	21	Mid-term test: Real numbers. Sequences and series of real numbers. Continuous functions. Derivative. Theorems about differentiable functions. Taylor's theorem. Applications of the Derivative.	X			NO	Mid-term test.	1,66	

11	22	(8) Riemann Integral - Techniques of Integration I.	X			NO	Definitions. Riemann Integral. Fundamental Theorem of Calculus. Integration by parts. Change of variable.	1,66	6
11	23	Problem session: Riemann Integral - Techniques of Integration I.		X		NO	Problem session .	1,66	
12	24	(8) Riemann Integral - Techniques of Integration II.	X			NO	Integration of rational functions. Some trigonometric integrals.	1,66	6
12	25	Problem session: Riemann Integral - Techniques of Integration II.		X		NO	Problem session.	1,66	
13	26	(9) Improper Integrals.	X			NO	Definition. Singularities. Infinite limits of integration.	1,66	6
13	27	Problem session: Improper Integrals.		X		NO	Problem session.	1,66	
14	28	(10) Applications of Integration.	X			NO	Definite Integrals: Areas and Volumes of Revolution. Probability theory. Numerical integration.	1,66	6
14	29	Problem session: Applications of Integration.		X		NO	Problem session.	1,66	
Subtotal 1								48,33	85
Total 1 (Hours of class plus student homework hours between weeks 1-14)								133.33	

15		Tutorials, handing in, etc								
16		Assessment								
17								3	21	
18										
								Subtotal 2	3	21
								Total 2 (Hours of class plus student homework hours between weeks 15-18)		24
								TOTAL (Total 1 + Total 2. Maximum 180 hours)		157,33