

MAT2724 – Programme – Hiver 2013

Date	Sujets	Matériel couvert (titres pris dans les notes de Dawkins) (<i>les items en italique ne sont pas dans les notes de cours</i>)	Chapitres correspondants dans Bronson et Costa
8 jan	EDO d'ordre 1	Basic concepts, overview	1,2,7
10 jan		Separable equations, substitutions, modeling	3,4
15 jan		Substitutions, exact equations	4,5
17 jan		Integrating factors, linear DE, modeling	5,6,7
22 jan		Bernoulli equations, <i>orthogonal curves</i> , intervals of validity, existence of solutions	6,7
24 jan		<i>qualitative analysis of autonomous equations, phase line, linearization</i> , stability, Euler's method	18,19
29 jan	EDO d'ordre 2	superposition principle, constant coefficient homogeneous equations	9
31 Jan		reduction of order, fundamental solution, Wronskian	8
5 fév		non-homogeneous equations, undetermined coefficients	11, 13
7 fév		variation of parameters, <i>Euler-Cauchy equations</i>	12, 13
12 fév		mechanical vibrations	14
14 fév	Partiel	Midterm Exam	
17-23 fév	Semaine de lecture	Reading Week	
26 fév	Transformées de Laplace	Laplace transform and inverse transform	21, 22
28 fév		solving IVPs with Laplace transform	23,24
5 mar		IVP with piecewise defined input, Non-constant coefficient IVPs, convolution integrals	
7 mar	Systèmes d'EDO	Systems, matrix notation, solutions of linear systems, phase plane	17
12 mar		Classification of 2x2 systems	26
14 mar		Non-homogeneous equations, <i>matrix exponentials</i>	16
19 mar		modeling, nonlinear systems, linearization, phase plane	
21 mar		<i>Phase plane analysis applications, bifurcations</i>	
26 mar	Solutions séries	power series, Taylor series, convergence	
28 mar		solutions near regular points	
2 avr		Euler-Cauchy equations	8, 10, 17
4 avr	Sujets additionels	<i>Hopf bifurcation, predator-prey systems</i>	