

COURSE OUTLINE – subject to changes :

L-01	Mon	11	Jan	introduction to computer algebra
L-02	Wed	13	Jan	Sage as a calculator – getting help
L-03	Fri	15	Jan	exact and floating-point numbers
	Mon	18	Jan	Martin Luther King, Jr., Day. No classes.
L-04	Wed	20	Jan	complex and algebraic numbers
L-05	Fri	22	Jan	symbols, variables, and references
L-06	Mon	25	Jan	data types and data structures
L-07	Wed	27	Jan	evaluation and execution
L-08	Fri	29	Jan	input/output formats – saving data to file
L-09	Mon	1	Feb	code generation
L-10	Wed	3	Feb	univariate and multivariate polynomials
L-11	Fri	5	Feb	rational functions and conversions
L-12	Mon	8	Feb	representation of expressions

Project One due on Wednesday 10 February at 11AM

L-13	Wed	10	Feb	substitution, expansion, and factorization
L-14	Fri	12	Feb	normalizing, collecting, and sorting
L-15	Mon	15	Feb	review of the first 14 lectures
L-16	Wed	17	Feb	first midterm exam on the first 14 lectures
L-17	Fri	19	Feb	defining mathematical functions
L-18	Mon	22	Feb	recursive functions
L-19	Wed	24	Feb	working with functions
L-20	Fri	26	Feb	symbolic and automatic differentiation
L-21	Mon	29	Feb	integration and summation
L-22	Wed	2	Mar	series, approximation, and limits
L-23	Fri	4	Mar	symbolic-numeric computation
L-24	Mon	6	Mar	two dimensional plots
L-25	Wed	9	Mar	plotting in three dimensions and beyond
L-26	Fri	11	Mar	making animations
L-27	Mon	14	Mar	solving equations
L-28	Wed	16	Mar	linear algebra
L-29	Fri	18	Mar	differential equations

Project Two due on Monday 28 March at 11AM

L-30	Mon	28	Mar	linear programming and polyhedra
L-31	Wed	30	Mar	review of lectures 15 to 28
L-32	Fri	1	Apr	second midterm exam covers lectures 15 to 28
L-33	Mon	4	Apr	building interactive web pages
L-34	Wed	6	Apr	an application of interact
L-35	Fri	8	Apr	symbolic computation with sympy
L-36	Mon	11	Apr	numerical computation with numpy and scipy
L-37	Wed	13	Apr	Maxima, a component in Sage
L-38	Fri	15	Apr	computational group theory with GAP
L-39	Mon	18	Apr	higher arithmetic with PARI/GP
L-40	Wed	20	Apr	computing with polynomials in Singular
L-41	Fri	22	Apr	statistical computing with R
L-42	Mon	25	Apr	review of topics covered on the first midterm

Project Three due Wednesday 27 April at noon

L-43	Wed	27	Apr	review of topics covered on the second midterm
L-44	Fri	29	Apr	cumulative review

Thursday 5 May : 10:30AM - 12:30AM, final exam, room to be announced.