COURSE OUTLINE – subject to changes:

L-1 Mon 14 Jan welcome to MCS 320, introduction to computer algebra
L-2 Wed 16 Jan the notebook – structuring and documenting work flow
L-3 Fri 18 Jan use as a calculator – getting started and getting help
   Mon 21 Jan Martin Luther King Day. No classes.
L-4 Wed 23 Jan exact and floating-point numbers
L-5 Fri 25 Jan complex and algebraic numbers
L-6 Mon 28 Jan symbols, variables, and references
L-7 Wed 30 Jan university closed due to extreme cold
L-8 Fri 1 Feb data types and data structures
L-9 Mon 4 Feb evaluation and execution
L-10 Wed 6 Feb input/output formats – saving data to file – We meet in computer lab SEL 2249F!
L-11 Fri 8 Feb code generation
L-12 Mon 11 Feb univariate and multivariate polynomials
L-13 Wed 13 Feb rational functions and conversions
L-14 Fri 15 Feb representation of expressions
L-15 Mon 18 Feb substitution, expansion, and factorization
L-16 Wed 20 Feb normalizing expressions
L-17 Fri 22 Feb review of the first 15 lectures

Project One due on Monday 25 February at 4PM
L-18 Mon 25 Feb the first midterm exam covers the first 15 lectures
L-19 Wed 27 Feb defining mathematical functions
L-20 Fri 1 Mar recursive functions
L-21 Mon 4 Mar working with functions
L-22 Wed 6 Mar symbolic and automatic differentiation
L-23 Fri 8 Mar integration and summation
L-24 Mon 11 Mar series, approximations, and limits
L-25 Wed 13 Mar symbolic-numeric computation
L-26 Fri 15 Mar two dimensional plots
L-27 Mon 18 Mar plotting in three dimensions and beyond

Project Two due on Wednesday 20 March at 4PM
L-28 Wed 20 Mar making animations
L-29 Fri 22 Mar solving equations
L-30 Mon 1 Apr linear algebra
L-31 Wed 3 Apr differential equations
L-32 Fri 5 Apr linear programming and polyhedra
L-33 Mon 8 Apr review of lectures 18 to 31
L-34 Wed 10 Apr the second midterm exam covers lectures 18 to 31
L-35 Fri 12 Apr building interactive web pages
L-36 Mon 15 Apr an application of interact
L-37 Wed 17 Apr symbolic computation with sympy
L-38 Fri 19 Apr numerical computation with numpy and scipy
L-39 Mon 22 Apr computational group theory with GAP

Project Three due on Wednesday 24 April at 4PM
L-40 Wed 24 Apr higher arithmetic with PARI/GP
L-41 Fri 26 Apr computing with polynomials in Singular
L-42 Mon 29 Apr review of topics covered on the first midterm
L-43 Wed 1 May review of topics covered on the second midterm
L-44 Fri 3 May cumulative review

Final exam on Tuesday 7 May, 3:30PM - 5:30PM, room to be announced.