

COURSE OUTLINE – subject to changes :

- L-1 Mon 11 Jan welcome to mcs 275 – scripting in Python – from OOP to LAMP
- L-2 Wed 13 Jan extending Python – wrapping code for use in Python
- L-3 Fri 15 Jan arrays and matrices – working with numpy – SciPy
- Mon 18 Jan **Martin Luther King, Jr., Day – no classes**
- L-4 Wed 20 Jan object oriented programming – defining classes – wrapping and overloading
- L-5 Fri 22 Jan graphical user interfaces – using Tkinter in Python – animations
- L-6 Mon 25 Jan getting data from the web – file manipulation – cluster analysis
- L-7 Wed 27 Jan cryptanalysis – substitution ciphers – pattern matching
- L-8 Fri 29 Jan recursive problem solving – writing recursive functions
- L-9 Mon 1 Feb recursive drawings – the Koch curve and flake – L-systems
- Project One due by 1PM, Wednesday 3 February**
- L-10 Wed 3 Feb iterative versus recursive algorithms – exponential cost in relation to complexity
- L-11 Fri 5 Feb enumerative searches and backtracking – the knapsack problem
- L-12 Mon 8 Feb finding a path in a maze, applying backtracking
- L-13 Wed 10 Feb recursive data structures: binary and classification trees
- L-14 Fri 12 Feb binary trees as objects – preorder, inorder, and postorder traversals
- L-15 Mon 15 Feb problem solving via divide-and-conquer methods, binary and bisection search
- L-16 Wed 17 Feb divide and conquer applied to sorting: merge and quick sort
- L-17 Fri 19 Feb evaluating expressions: postfix to infix – stacks of function calls
- Project Two due by 1PM, Monday 22 February**
- L-18 Mon 22 Feb from recursion to iteration using a stack for the parameters of the calls
- L-19 Wed 24 Feb review of the first 18 lectures
- L-20 Fri 26 Feb **first midterm exam on the first 18 lectures**
- L-21 Mon 1 Mar CGI programming – HTML forms – processing web input by Python scripts
- L-22 Wed 3 Mar client-side and server-side scripting – passing text and commands via the web
- L-23 Fri 5 Mar dynamic web pages – web interfaces to Python code
- L-24 Mon 8 Mar database programming – an open source database MySQL – MySQLdb
- L-25 Wed 10 Mar working with MySQL – Python scripts using MySQLdb
- L-26 Fri 12 Mar accessing a database from a Python script – building a GUI for a database
- Project Three due by 1PM, Monday 15 March**
- L-27 Mon 15 Mar computer networks – client/server interactions – the socket module in Python
- L-28 Wed 17 Mar sockets for communication between programs – pleasingly parallel computations
- L-29 Fri 19 Mar web interfaces for database servers – combining CGI scripts, MySQLdb, and sockets
- L-30 Mon 29 Mar introduction to multithreading – using the thread module – the Thread class
- L-31 Wed 31 Mar managing data between threads – locks and synchronization – bulding simulations
- L-32 Fri 2 Apr multithreaded servers – sockets and threads – handler threads to serve requests
- L-33 Mon 5 Apr advanced web programming – the SocketServer module – a basic HTTP server
- L-34 Wed 7 Apr web clients and crawlers – using the urllib and urlparse modules
- L-35 Fri 9 Apr advanced CGI scripts – using cookies for personalized web browsing
- Project Four due by 1PM, Monday 12 April**
- L-36 Mon 12 Apr an application: web server to a database
- L-37 Wed 14 Apr review for the second midterm exam
- L-38 Fri 16 Apr **second midterm exam on lectures 21 to 36**
- L-39 Mon 19 Apr the meaning of Python – its relation with C/C++ and Java – Cython
- L-40 Wed 21 Apr Python for code generation – Cython for NumPy/SciPy
- L-41 Fri 23 Apr introduction to C++ – OOP with C++ classes
- L-42 Mon 26 Apr review with focus on first midterm
- L-43 Wed 28 Apr review with focus on second midterm
- Project Five due by 1PM, Friday 30 April**
- L-44 Fri 30 Apr comprehensive review
- Monday 3 May, 1:00PM - 3:00PM : Final exam, room to be announced.**