WEEK	DATE	MODULE	LECTURE 1 MONDAY	LECTURE 2 THURSDAY	LECTURE 3 THURSDAY	RECORDED CONTENT	TYPES	BUILT IN FUNCTIONS	MODULES AND LIBRARIES	LAB DOMAIN	LAB TOPICS	1E LAB 1 MONDAY	1E LAB 2 MONDAY	1E LAB 3 MONDAY	1F LAB 1 TUESDAY	1F LAB 2 TUESDAY	1F LAB 3 THURSDAY	1E AND 1F TUTORIAL THURSDAY	1E AND 1F END OF TUTORIAL QUIZ	ASSIGNMENT TOPIC	ASSIGNMENTS	DUE DATES
7	Feb 14	**NO CLASS MIDTERM EXAMS**																				
8	Feb 21	NO CLASS	NO CLASS	NO CLASS	NO CLASS	NO CLASS	NO CLASS	NO CLASS	NO CLASS	NO CLASS	NO CLASS									Text-based adventure game	A4 released on Friday	
9	Feb 28	Standard library, testing, dictionaries and iteration	Exploring the **standard library**; math module; **random** numbers; **constants**, built-in constants; **Boolean** expressions and, or, not; short-circuiting; repetition (looping) with **while**; sentinel values; breaking out of loops; infinite loops; loops and user input	Floats and rounding; **errors**, syntax and semantics; **testing**; disjointed equivalency partitions and coverage; automated testing; **unit testing**; assertions; unit testing examples	**Dictionaries**; iteration, Iterables and **iterators**;	itertools and zip(); using enumerate() instead of range; ranges vs iterators vs views	dictionary, iterable, iterator, generator	dict( ), zip( ), enumerate( ), filter( ), iter( ), next( ), set( )	math, random, copy, pprint, statistics, getpass, builtins, unittest. mock, itertools, http, http.client, http.server	Data Communication	Echo client	Lab 6: Data communication. You will Implement and demonstrate an echo client.	Lab 6 continued	Lab 6 conclusion	Lab 6: Data communication. You will Implement and demonstrate an echo client.	Lab 6 continued	Lab 6 conclusion	Doctests vs unit tests, repetition	Quiz 6			
10	Mar 7	Sets, mocking, functions 2.0	**Syntactic sugar** and list and dictionary **comprehensions**; nested data structures; **pass** statement	Syntactic sugar and conditional expressions; **sets**; more about **unit testing** (fixtures; mocking; generating input for tests; testing printed output; creating 'predictable' random numbers)	More about **functions**: default values; variable length parameter lists; positional and arbitrary arguments; keyword arguments; annotations; building good functions (implementing encapsulation, information hiding, message passing; decomposition; testing)	Simple **recursion**	set	set( )	sys, time, typing, timeit	Web scraping and simple APIs	Repetition, mocking	Lab 7: Web scraping and simple APIs. You will work with files and data and learn how to scrape a webpage! You will build, document, annotate, test, and debug a small module of related atomic functions using dictionaries, iteration, nested data structures, and comprehensions.	Lab 7 continued	Lab 7 conclusion	Lab 7: Web scraping and simple APIs. You will work with files and data and learn how to scrape a webpage! You will build, document, annotate, test, and debug a small module of related atomic functions using dictionaries, iteration, nested data structures, and comprehensions.	Lab 7 continued	Lab 7 conclusion	Iteration, typing, annotations, nested data structures, mocking	Quiz 7			A4 due on Friday
11	Mar 14	**NO CLASS SPRING BREAK**																				
12	Mar 21	Decorators and closures, duck typing, exceptions	Function decorators, inner functions, and closures	Compiling vs interpreting; **duck typing** (static vs dynamic) and strong vs weak typing; **sys.argv** for command line arguments; passing command line arguments to the main function	**Exceptions**: try-except-else-finally; unit testing: testing for expected exceptions; exception hierarchy: commonly used exceptions; guard clauses are wasteful (LBYL vs EAFP)	**Modules and packages; refactoring**: code smells and the refactoring catalog: 1. the basics 2. encapsulation 3. moving features around 4. organizing data 5. clarifying logic 6. refactoring simple APIs	exception, module, package	try-except, with	argparse	Style, profiling, and optimizing	Function annotations, duck typing, modules and packages, functions 2.0	Lab 8: Profiling and optimizing. You will experiment with decorators and inner functions and consider the benefits and costs of LBYL vs EAFP.	Lab 8 continued	Lab 8 conclusion	Lab 8: Profiling and optimizing. You will experiment with decorators and inner functions and consider the benefits and costs of LBYL vs EAFP.	Lab 8 continued	Lab 8 conclusion	LBYL vs EAFP and exceptions, decorators, inner functions and closures	Quiz 8	Lego Mindstorms Robots	A5 released on Monday	
13	Mar 28	File IO, classes, RDD	**File IO**: opening, reading from, writing to, closing, deleting files; **context managers** and else blocks; context managers and file-like objects; working with **JSON**	Intro to **classes**; attributes; **class-level variables**; instance initializers, validation and **invariants**; methods; classes vs objects; **state**	Designing good classes: **responsibility-driven design**, design before implementation, Abbot's heuristic; **visibility**, encapsulation, and information hiding; unit testing classes		class, file-like objects, context manager	open( )	os, json, csv, zipfile, difflib, filecmp,os.path, secrets	Flask and serving an API	Exceptions and file IO, refactoring	Lab 9: Flask and serving an API. You will build, test, document, and publish a simple web API using classes and Flask!	Lab 9 continued	Lab 9 conclusion	Lab 9: Flask and serving an API. You will build, test, document, and publish a simple web API using classes and Flask!	Lab 9 continued	Lab 9 conclusion	Refactoring, classes and how to use them	Quiz 9			A5 due on Friday
14	Apr 4	Useful libraries and APIs	Introducing Python libraries and APIs for desktop, web, and data science: keeping time, **scheduling** tasks, **launching** programs	Python library exploration: machine learning with **numpy** and **pandas** and **matplotlib**	Python library exploration: **regular expressions**		array		datetime, subprocess, webbrowser, numpy, pandas, matplotlib	Machine learning	Classes and APIs	Lab 10: Machine learning. You will use arrays, math, and Python to make some predictions!	Lab 10 continued	Lab 10 conclusion	Lab 10: Machine learning. You will use arrays, math, and Python to make some predictions!	Lab 10 continued	Lab 10 conclusion	Machine learning, preparing for the final exam, Python – where to go from here	Quiz 10	Web-based CRUD app	A6 released on Monday	A6 due on Friday
15	Apr 11	**NO CLASS FINAL EXAMS**	Final review																			
16	Apr 18																					