

Contents

This is an unofficial listing of the course content for CSE 111 Programming with Functions. Please see [I-Learn](#) for the official list, including quizzes and due dates.

Overview

[Syllabus](#)

[Help](#)

Lesson 1 - Getting Started

Activity	Domain Topics	Computing Topics
Development environment		
Prepare		input, data types, arithmetic, f-strings, print, if, logic
Prepare: Checkpoint	exercise heart rates	input, int, arithmetic, f-strings, print
Teach: Class Activity (for campus sections)	pendulum	input, float, arithmetic, f-strings, print
Prove: Milestone	tire volume	input, float, arithmetic, f-strings, print

Lesson 2 - Calling Functions

Activity	Domain Topics	Computing Topics
----------	---------------	------------------

Prepare		calling built-in functions, functions in standard modules, and methods; named arguments.
Prepare: Checkpoint	items per box	math.ceil
Teach: Team Activity	purchase discount	selection, datetime.now, datetime.weekday
Prove: Assignment	tire volume	datetime.now, datetime format codes, open, print

Lesson 3 - Writing Functions

Activity	Domain Topics	Computing Topics
Prepare		user-defined function, header, parameter, body, return, main
Prepare: Checkpoint	fuel efficiency	writing functions, main
Teach: Team Activity	fitness: body mass index, basal metabolic rate	writing functions, main
Prove: Milestone	2-D graphics	writing and calling functions

Lesson 4 - Function Details

Activity	Domain Topics	Computing Topics
Prepare		variable scope, default parameter values, optional arguments, function design heuristics
Prepare: Checkpoint	cone volume	variable scope: fix a program with a broken function that tries to use

variables that are defined in another function

writing functions, local variables, calling functions

[Teach: Team Activity](#)

storage efficiency of steel cans

[Prove: Assignment](#)

2-D graphics

writing and calling functions

Lesson 5 - Testing Functions

Activity

Domain Topics

Computing Topics

[Prepare](#)

assert, pytest, pytest.approx, pytest.main, if `__name__ == "__main__"`:

[Prepare: Checkpoint](#)

prefix and suffix

pytest, assert, test string functions

[Teach: Team Activity](#)

given name, surname, full name

pytest, assert, test string functions, fix errors in functions

[Prove: Milestone](#)

English parts of speech, generate a sentence

pytest, assert

Lesson 6 - Troubleshooting Functions

Activity

Domain Topics

Computing Topics

[Prepare](#)

syntax error, logic error, error messages, print statements, test functions, debugger

Prepare: Checkpoint	fuel usage	debugger
Teach: Team Activity	self-esteem measure	debugger
Prove: Assignment	English parts of speech, generate a sentence	debugger

Lesson 7 - Lists and Repetition

Activity	Domain Topics	Computing Topics
Prepare		Lists, repetition, pass by value and reference
Prepare: Checkpoint		demonstration of pass by value and reference
Teach: Team Activity	pseudo random numbers	lists, append, write a function with default parameter values, call a function with optional arguments
Prove: Milestone	molar mass calculator, molecules, elements	create and return a compound list, retrieve and print individual elements from a compound list

Lesson 8 - Dictionaries

Activity	Domain Topics	Computing Topics
Prepare		Dictionaries, compound values, find one item, process all items, convert between list and dictionary

Prepare: Checkpoint	vehicles	in operator, use a key to retrieve a value
Teach: Team Activity	family history	process all items in a list, retrieve a value from a dictionary, retrieve an item from a list, indexes
Prove: Assignment	molar mass calculator, molecules, elements	create a dictionary, process all items in a dictionary, retrieve elements from a list

Lesson 9 - Text Files

Activity	Domain Topics	Computing Topics
Prepare		text files, open, for each line, CSV files, csv module
Prepare: Checkpoint	Canadian Provinces	text files, for loop, lists, append, pop, count
Teach: Team Activity	student IDs	csv module, dictionaries
Prove: Milestone	grocery store	csv module, dictionaries

Lesson 10 - Handling Exceptions

Activity	Domain Topics	Computing Topics
Prepare		exception, try, except, else, finally, TypeError, ValueError, ZeroDivisionError, IndexError, KeyError, FileNotFoundError, PermissionError, validate user input

Prepare: Checkpoint	text file and line number	exception handling, FileNotFoundError, PermissionError, ValueError, IndexError
Teach: Team Activity	vehicle accidents	exception handling, FileNotFoundError, PermissionError, ValueError, csv.Error, KeyError, ZeroDivisionError
Prove: Assignment	grocery store	summation, round, datetime.now, datetime format codes, try, except, FileNotFoundError, PermissionError, KeyError

Lesson 11 - Functional Programming

Activity	Domain Topics	Computing Topics
Prepare		higher-order functions, nested functions, lambda functions, map, filter, sort key
Prepare: Checkpoint	U.S. phone numbers	higher-order functions, map function, read a text file into a list
Teach: Team Activity	student given name, surname, and birthdate	higher-order functions, nested functions, lambda functions, sorted function, read a CSV file into a compound list
Prove: Milestone (block) (semester)	student chosen project	

Lesson 12 - Using Objects

Activity	Domain Topics	Computing Topics
Prepare		creating an object, dot operator, attributes, methods, lists and dictionaries as objects
Prepare: Checkpoint	fruit	modify a list using object oriented programming
Teach: Team Activity	GUI	creating objects, accessing attributes, calling methods
Prove: Milestone (block). (semester).	student chosen project	

Lesson 13 - Student Chosen Project

Activity	Domain Topics	Computing Topics
No preparation content, checkpoint, or team activity. Students work on their own chosen project.		
Prove: Assignment (block). (semester).	student chosen project	

Lesson 14 - Conclusion

Activity	Domain Topics	Computing Topics
Prepare		