COLLEGE OF ENGINEERING
General Engineering

GENG106 / Computer Programming
Fall 2022

Instructor Information

Name:
Academic title:
Office:
Phone:
E-mail:
Office Hours

TA Information

Name:
Office:
Phone:
E-mail:
Office Hours:

Class/Laboratory Schedule

Day/Time/Location :

Coordinator Information

Name: Dr. Sayed El-Sayed
Academic title: Lecturer
Office: B06-108 (Annex Building)
Phone: 4403-4269
E-mail: shussein@qu.edu.qa

Course Information

Catalog Description:
This course introduces the student to computer concepts, control structures, functions, arrays: single and multi-dimensional, and string processing. The course also examines input/output statements including data file I/O, arithmetic, logical and comparison operators, along with an introduction to classes.

Credits:
3 Credit Hours.

Contact Hours:
2 Lecture hours and 3 Lab hours.

Prerequisites:
None.

Textbook(s):

Starting Out with Python, Global Edition, 5/E, Tony Gaddis, published by Pearson, 2021.
ISBN 10: 1-292-40863-4 ISBN 13: 978-1-292-40863-7

References:

- On line Python tutorial, online reference https://www.python.org/.
- Python Crash Course, 2nd Edition: A Hands-On, Project-Based Introduction to Programming.

Course Objectives:

To introduce computer based problem solving to the students. To be able to design, develop, compile, and debug programs in a high level programming language. To be able to develop programs to solve numerical engineering problems.

Course Learning Outcomes (CLOs):

1. Write a basic program using fundamental programming constructs including variables, arrays, control structure, loops, functions and files.
2. Analyze a problem and develop an algorithm for its solution.
3. Use a software development environment for coding, compiling, and executing a program.
4. Work productively as a team member to design, implement and test a program for solving a given engineering problem.

Relationship of Course Learning Outcomes (CLOs) to Student Outcomes (SOs):

Course Learning Outcomes (CLOs)	**Related Student Outcomes (SOs)**						
	1	**2**	**3**	**4**	**5**	**6**	**7**
1	✓						
2	✓						
3	✓						
4					✓		

Student Outcomes (SOs)

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3. An ability to communicate effectively with a range of audiences
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Topics Covered:

1. Theory topics

Week#	Topics	Chapter	Section*	Weeks
1	Introduction to Computers and Programming	1		1
2	Input, Processing, and Output.	2		1
3	Decision Structures and Boolean Logic	3		1
4	Repetition Structures	4		1
5	Repetition Structures, continued	4		1
6	Functions	5		1
7	More on Functions**,** Files and exceptions	5,6		1
8	**MidTerm Exam** + More on Files and exceptions	6		1
9	Lists and tuples	7		1
10	Lists, tuples and arrays (*Arrays to be covered via numPy*)	7+notes		1
11	String processing	8		1
12	Dictionaries and sets	9		1
13	More on Dictionaries and sets	9		1
14	Introduction to C++	-		1
15	Course Revision			
	Total			15

*Optional

2. Lab topics

Lab topics are designed such that the lecture instructor leads by one week. This is to ensure that the students are taught the needed background knowledge before they come to the lab. It is critical that both lecture and lab instructors stick to the schedule to ensure the smooth delivery of the materials.

Week#	Lab Topic	Grading Tasks
1	Lab00: Introducing Syllabus, Software installation	
2	Lab01: introduction to Python	
3	Lab02: Input, output, and processing. Expressions and operators	
4	Lab03: Making decisions	
5	Lab04: while Loop	In-lab Assignment 1
6	Lab05: for Loop	
7	Lab06: Functions	Project released
8	Lab07: More on functions, built-in math functions	
9	Lab08: Files and exceptions	In-lab Assignment 2
10	Lab09:Lists and tuples	
11	Lab10: Lists and tuples (introducing *numPy*)	In-lab Assignment 3
12	Lab11: String Processing, Dictionaries and sets	
13	**Final Lab Exam**	
14	Projects evaluation	Projects' Demo
15	Revision	

Method of Instruction

Lectures/Programming Labs

Assessment Methods and Grading Policy

Homework: 0 % (Optional)
Quizzes: 20% (4 quizzes) – *NO makeup for quizzes*
*(Absence from any quiz for **a valid documented excuse**, will be substituted by Quiz5).*
Lab work: 30% (10% for 3 in-lab assignments–take best 2-*NO makeup*, 10% for Project, and 10% for final lab exam.)
Midterm Exam: 20% (Theory)
Final Exam: 30% (Theory)
Active Participation/Others:

Key Dates:

	Assessment type	Date
1	Quiz1	11/9/2022
2	Quiz2	25/9/2022
3	Midterm exam	**9/10/2022**
4	Quiz3	23/10/2022
5	Quiz4	6/11/2022
6	Quiz5 (*for absents with valid excuses*)	1/1/2023
7	Final Exam	**TBA by QU**

ABET Contribution of Course to Professional Component

Subject Area (Credit Hours)
College-Level Math & Basic Science: 3 cr
Engineering :
Engineering Design :
Broad Education :

Computer/Software Usage

Python 3.10.6

Laboratory Projects

Programming exercises and a group project.

Course Ground Rules

- Please arrive on time, unless you have a legitimate reason for arriving late.
- Use of electronic devices (such as cell phones, iPads, smart tablets, PDAs, MP3 players etc) is strictly prohibited during the lecture.
- Keep your cell phone at silent. If you must take an important phone call or send an important SMS, please leave the classroom quietly. Please try your best to minimize distraction for your classmates.

- Plagiarism (copying from each other or from other sources, such as the internet) will be dealt with strictly. If you have copied someone else's work for the assignment or have allowed someone else to copy your work, both types of students will get a ZERO mark for the assignment.
- Do not hesitate to ask if you have any question about any of the material discussed during the lecture.

University Code of Conduct

QU expects its students to adopt and abide by the highest standards of conduct in their interaction with professors, peers, staff members and the wider university community. Moreover, QU expects its students to act maturely and responsibly in their relationships with others. Every student is expected to assume the obligations and responsibilities required from them for being members of the QU community.

As such, a student is expected not to engage in behaviors that compromise their integrity, as well as the integrity of QU. Further information regarding the University Code of Conduct may be found on the web at http://www.qu.edu.qa/students/code-of-conduct

Support for Students with Special Needs

It is Qatar University policy to provide educational opportunities that ensure fair, appropriate and reasonable accommodation to students who have disabilities that may affect their ability to participate in course activities or meet course requirements. Students with disabilities are encouraged to contact their Instructor to ensure that their individual needs are met. The University through its Special Needs Section will exert all efforts to accommodate for individuals' needs.

Contact Information for Special Needs Section:
Tel-Female: (00974) 4403 3843
Tel-Male: (00974) 4403 3854
Location: Student Activities Building
Email: specialneeds@qu.edu.qa

Academic Support and Learning Resources

The University Student Learning Support Center (SLSC) provides academic support services to male and female students at QU. The SLSC is a supportive environment where students can seek assistance with academic coursework, writing assignments, transitioning to college academic life, and other academic issues. SLSC programs include: Peer Tutoring, the Writing Lab, Writing Workshops, and Academic Success Workshops. Students may also seek confidential academic counseling from the professional staff at the Center.

Contact Information for Students Support and Learning Resources:
Tel: (00974) 4403 3876
Fax: (00974) 4403 3871
Location: Female Student Activities Building
E-mail: learningcenter@qu.edu.qa

Student Complaints Policy

Students at Qatar University have the right to pursue complaints related to faculty, staff, and other students. The nature of the complaints may be either academic or non-academic. For more information about the policy and processes related to this policy, you may refer to the student handbook.

Declaration

This syllabus and contents are subject to changes in the event of extenuating circumstances. The instructor (with approval of the Head of Department) reserves the right to make changes as necessary. If changes are necessitated during the term of the course, the students will be notified by email communication and posting the notification on the online teaching tool Blackboard. It is the student's responsibility to check on announcements made while they were absent.

Faculty Name: Sayed El-Sayed
Last Modified: August 17th , 2022