



SULTAN QABOOS UNIVERSITY
COLLEGE OF SCIENCE
DEPARTMENT OF COMPUTER SCIENCE
BACHELOR OF SCIENCE IN COMPUTER SCIENCE
COURSE OUTLINE

I. COURSE INFORMATION			
COURSE CODE	COMP2101		
COURSE TITLE	Introduction to Computer Science		
OMAN QUALIFICATION FRAMEWORK (OQF) LEVEL	5		
CREDIT HOURS	4		
CONTACT HOURS	5		
PRE-REQUISITES	(FPCS0101, FPEL0560) or (FPCS0102,FPEL0560) or (FPCS0101,FPEL0600) or (FPCS0102, FPEL0600) or (FPCS0101,FPEL0601) or (FPCS0102,FPEL0601) or (FPCS0101, FPEL0602) or (FPCS0102,FPEL0602) or (FPCS0101,FPEL0603)		
CO-REQUISITES	-		
EQUIVALENT COURSES	COMP2311 (2-way)		
INCOMPATIBLE COURSES	COMP2002		
COURSE CATEGORY	<input type="checkbox"/> University Requirement	<input type="checkbox"/> University Elective	
	<input type="checkbox"/> College Requirement	<input type="checkbox"/> College Elective	
	<input checked="" type="checkbox"/> Department Requirement	<input type="checkbox"/> Department Elective	
	<input type="checkbox"/> Major Requirement	<input type="checkbox"/> Major Elective	
	<input type="checkbox"/> Specialization Requirement	<input type="checkbox"/> Specialization Elective	
	<input type="checkbox"/> Other (specify):		
COURSE OWNER	College: Science	Department: Computer Science	
	Center:	Unit:	
DELIVERY MODE	<input checked="" type="checkbox"/> Face to Face	<input type="checkbox"/> Blended	<input type="checkbox"/> Online
COURSE TYPE	<input checked="" type="checkbox"/> Lecture/Lab	<input type="checkbox"/> Lecture/Lab	
	<input type="checkbox"/> Lecture/Seminar	<input type="checkbox"/> Lecture/Studio	
	<input type="checkbox"/> Lecture/Tutorial	<input type="checkbox"/> Lecture/Lab/Tutorial or Seminar	
	<input type="checkbox"/> Tutorial	<input type="checkbox"/> Laboratory (Practical)	
	<input type="checkbox"/> Field or Work Placement	<input type="checkbox"/> Studio	
	<input type="checkbox"/> Seminar	<input type="checkbox"/> Internship	
	<input type="checkbox"/> Workshop	<input type="checkbox"/> Project	
	<input type="checkbox"/> Thesis	<input type="checkbox"/> Other (specify):	
LANGUAGE OF INSTRUCTION	English		

COURSE DESCRIPTION	This course introduces some fundamental topics in computer science. This includes data representation, problem-solving, and algorithm design. Furthermore, the course includes the study and practice of basic programming concepts such as data types, variables, arrays, selection, repetition, data files, and functions.		
TEACHING AND LEARNING STRATEGIES	<input type="checkbox"/> Augmented Reality	<input type="checkbox"/> Flipped Classroom	
	<input type="checkbox"/> Blended Learning	<input checked="" type="checkbox"/> Problem-Based Learning	
	<input type="checkbox"/> Discovery-Based Learning	<input type="checkbox"/> Project-Based Learning	
	<input type="checkbox"/> Student-Led Learning	<input type="checkbox"/> Team-Based Learning	
	<input type="checkbox"/> Work-Based Learning	<input type="checkbox"/> Other (specify):	
ASSESSMENT COMPONENT AND WEIGHT	<input checked="" type="checkbox"/> In-term examination(s) (15 %)	<input checked="" type="checkbox"/> Quizzes (5 %)	
	<input checked="" type="checkbox"/> Homework assignments (10 %)	<input type="checkbox"/> Project (%)	
	<input checked="" type="checkbox"/> Final examination (40 %)	<input checked="" type="checkbox"/> Practical/ Lab (5%)	
	<input checked="" type="checkbox"/> Lab Test (20 %)	<input checked="" type="checkbox"/> Active Learning (5%)	
TEXTBOOKS AND EDUCATIONAL MATERIAL	Textbook(s): <input type="checkbox"/> Python for Everyone, Interactive Edition, 2nd Edition, Cay S. Horstmann, Rance D. Necaise, 2016 Supplemental Material: Reference Book: “Computer Science Illuminated, (illustrated edition)., N. Dale, A. Lewis, J. Lewis and N. B. Dale, Jones & Bartlett, 2002”		
GRADING METHOD	<input checked="" type="checkbox"/> A-F Scale	<input type="checkbox"/> Pass/Not Pass	<input type="checkbox"/> Other (specify):
GRADING METHOD DESCRIPTION			
A-F GRADING SCALE:	Range	Letter Grade	Description
	90 – 100	A	Exceptional performance: All course objectives achieved and met in a consistently outstanding manner.
	86 – 89.9	A-	
	81– 85.9	B+	Very Good Performance: The majority of the course objectives achieved (majority being at least two-thirds) and met in a consistently thorough manner.
	77 – 80.9	B	
	73 – 76.9	B-	
	68 – 72.9	C+	Satisfactory Performance: At least most of course objectives have been achieved and met satisfactorily.
	64 – 67.9	C	
	60 – 63.9	C-	
	55 – 59.9	D+	Minimally Acceptable Performance: The course objectives met at a minimally acceptable level.
	50 – 54.9	D	
0 – 49.9	F	Unacceptable performance: The course objectives not met at a minimally acceptable level.	
PASS/NOT PASS:			
OTHER:			

II. SEMESTER INFORMATION			
SEMESTER/YEAR	SPRING2025	SECTION(S)	01, 02, 03, 04, 05, 06, 07, and 08
DAY AND TIME	See Appendix B	VENUE(S)	F52, D17, B12, and DCS labs
COURSE COORDINATOR	Prof. Zuhoor Al-Khanjari	COURSE TEAM	See Appendix B
COORDINATOR OFFICE	0009	OFFICE HOURS	Mon& Wed:12-1
COORDINATOR EXTENSION	2463	COORDINATOR EMAIL	zuhoor@squ.edu.om

III. ALIGNMENT OF COURSE LEARNING OUTCOMES (CLO), PROGRAM LEARNING OUTCOMES (PLO), GRADUATE ATTRIBUTES (GA), AND OMAN QUALIFICATION FRAMEWORK (OQF) CHARACTERISTICS			
CLO	PLO / SO	SQU Graduate Attributes	OQF Characteristics
1. Apply top-down design methodology to develop algorithms to solve simple problems.	1	A,B	1,2
2. Understand the basic syntax and semantics of Python programs	1	A	1
3. Use of objects in Python	1	A, B	1, 2
4. Use simple Python data types and lists .	1	A, B	1, 2
5. Use arithmetic and logical expressions, selection, and repetition control structures to develop Python programs that solve real-life problems.	1, 2	A, B	1, 2
6. Implement mathematically defined problems	1	A, B	1, 2
7. Use Python files and exceptions	1	A, B	1, 2
8. Use built-in and user-defined functions to develop modular Python programs.	1, 2	A, B	1, 2
9. Use current debugging tools when developing a program	2	A, B	1, 2
10. Design a testing plan to assess the correctness of a developed program.	1	A, B	1, 2

IV. COURSE LEARNING OUTCOMES (CLOs) AND ASSESSMENT CRITERIA AND METHODS (FOR EACH CLO)		
CLO1: Apply top-down design methodology to develop algorithms to solve simple problems		
ASSESSMENT CRITERIA (TO ACHIEVE THIS OBJECTIVE, THE STUDENT MUST)		ASSESSMENT METHODS
A)	Design a computing-based solution to meet a given set of requirements.	Lab Exs, HWs, Lab Test, Exam1, or Final Exam
CLO2: Understand the basic syntax and semantics of Python programs		
ASSESSMENT CRITERIA (TO ACHIEVE THIS OBJECTIVE, THE STUDENT MUST)		ASSESSMENT METHODS
A)	Understand the basic syntax of Python programs	Lab Exs, Active Learning, Quizzes, HWs, Lab Test, Exam1, or Final Exam
B)	Understand the basic semantics of Python programs	

CLO3: Use of objects in Python		
ASSESSMENT CRITERIA (TO ACHIEVE THIS OBJECTIVE, THE STUDENT MUST)		ASSESSMENT METHODS
A)	Use of objects in Python to develop Python programs that solve real-life problems	Lab Exs, Active Learning, HWs, Quizzes, Lab Test, Exam1, or Final Exam
CLO4: Use simple Python data types and lists		
ASSESSMENT CRITERIA (TO ACHIEVE THIS OBJECTIVE, THE STUDENT MUST)		ASSESSMENT METHODS
A)	Use simple Python data types to develop Python programs that solve real-life problems	Lab Exs, Active Learning, HWs, Quizzes, Lab Test, Exam1, or Final Exam
B)	Use simple Python lists to develop Python programs that solve real-life problems	
CLO5: Use arithmetic and logical expressions, selection, and repetition control structures to develop Python programs that solve real-life problems		
ASSESSMENT CRITERIA (TO ACHIEVE THIS OBJECTIVE, THE STUDENT MUST)		ASSESSMENT METHODS
A)	Use arithmetic and logical expressions to develop Python programs that solve real-life problems	Lab Exs, Active Learning, HWs, Quizzes, Lab Test, Exam1, or Final Exam
B)	Use selection, and repetition control structures to develop Python programs that solve real-life problems	
CLO6: Implement mathematically defined problems		
ASSESSMENT CRITERIA (TO ACHIEVE THIS OBJECTIVE, THE STUDENT MUST)		ASSESSMENT METHODS
A)	Develop a computing based solution to meet a given set of design requirements.	Lab Exs, Active Learning, HWs, Quizzes, Lab Test, Exam1, or Final Exam
B)	Implement a computing based solution to meet a given set of design requirements	
C)		
CLO7: Use Python files and exceptions		
ASSESSMENT CRITERIA (TO ACHIEVE THIS OBJECTIVE, THE STUDENT MUST)		ASSESSMENT METHODS
A)	Prepare Python data files	Lab Exs, Active Learning, HWs, Quizzes, Lab Test, or Final Exam
B)	Use Python files	
C)	Understand the use of exceptions	
CLO8: Use built-in and user-defined functions to develop modular Python programs		
ASSESSMENT CRITERIA (TO ACHIEVE THIS OBJECTIVE, THE STUDENT MUST)		ASSESSMENT METHODS
A)	Use built-in functions to develop programs	Lab Exs, Active Learning, HWs, Lab Test, Exam1, or Final Exam
B)	Prepare and user-defined functions to develop programs	

CLO9: Use current debugging tools when developing a program		
ASSESSMENT CRITERIA (TO ACHIEVE THIS OBJECTIVE, THE STUDENT MUST)		ASSESSMENT METHODS
A)	Understand the debugging tools	Lab Exs, Active Learning, HWs, Quizzes, or Lab Test
B)	Use debugging tools to check the developed program	
CLO10: Design a testing plan to assess the correctness of a developed program		
ASSESSMENT CRITERIA (TO ACHIEVE THIS OBJECTIVE, THE STUDENT MUST)		ASSESSMENT METHODS
A)	Design a testing plan	Lab Exs, Active Learning, HWs, Quizzes, or Lab Test
B)	Evaluate a computing-based solution against a given set of computing requirements	

V. COURSE CONTENT AND SCHEDULE				
WEEK	LECTURES #	TOPICS/ SUBJECTS	READINGS/ CHAPTERS	REMARKS (e.g., ASSESSMENTS)
1	L1	Welcome and Course Description	Handout	HW1, Quiz, Midterm and/or final
	Lab0	Python programming language & Problem Solving	Handout	
	L2	A Short Introduction to Algorithm development	Ch1	
2	L1	Variables (defining variables, number types, variable names, constants & comments)	Sec. 2.1	HW1, Quiz, midterm, and/or final
	Lab1	Using Thonny to write Python programs	Handout	
	L2	Arithmetic (basic arithmetic operations, powers, floor division and remainder, calling functions & mathematical functions)	Sec. 2.2-3	
3	L1	Strings (the string type, concatenation and repetition, converting between numbers and strings & strings and characters)	Sec. 2.4	HW1, Quiz, midterm, final
	Lab2	Programming with Numbers (Variables and Arithmetic)	Handout	
	L2	Input and Output (user input, numerical input & formatted output)	Sec. 2.5	
4	L1	Using Python Objects (String as an object)	Sec. 2.4	HW1, Quiz, midterm, , final
	Lab3	Input/Output	Handout	
	L2	The if statement & Relational Operators	Sec.3.1-2	

5	L1	Nested Branches & Multiple alternatives	Sec. 3.3-5	HW2, midterm, Quiz, final
	Lab4	The ‘if’ statement	Handout	
	L2	Boolean variables and operators & Analyzing Strings	Sec. 3.6-9	
6	L1	The while Loop (syntax, hand-tracing)	Sec. 4.1-3	HW2, midterm, Quiz, lab test, final
	Lab5	Nested branches and multiple alternatives	Handout	
	L2	Common loop algorithms & The for loop (syntax, processing strings, random numbers, and simulations)	Sec. 4.5-6	
7	L1	Nested loops	Sec. 4.7	HW3, Quiz, lab test, final
	Lab6	While Loops	Handout	
	Midterm Exam			
8	L1	Write python program using the turtle library	Handout	HW3, Quiz, lab test, final
	Lab7	For loops and Nested loops	Handout	
	L2	Processing Strings, Random numbers	Sec. 4.8-4.9	
9	L1	Implementing and Testing functions	Sec. 5.1-5.3	HW3, Quiz, lab test, final
	Lab8	Turtle	Handout	
	L2	Parameter Passing and return values	Sec. 5.3-4	
10	L1	Functions without return values	Sec. 5.5-7	HW4, Quiz, lab test, final
	Lab9	Functions	Handout	
	L2	Variable Scope	Sec. 5.8	
11	L1	Basic Properties of Lists	Sec. 6.1	HW4, Quiz, lab test, final
	Lab10	Lists	Handout	
	L2	List Operations	Sec.6.2-3	
12	L1	Using Lists with Functions	Sec. 6.4-5	HW4, Quiz, lab test, final
	Lab11	Functions with Lists/Tables	Handout	
	L2	Tables	Sec. 6.7	
13	L1	Reading and writing text files	Sec. 7.1-7.2.1	HW4, Quiz, lab test, final
	Lab12	Files	Handout	
	Lab Test			
14	L1	Text input and output	Sec. 7.2.2-7.2.4	Quiz, Final
	Lab13	Files & Handling exceptions	Handout	
	L2	Handling file exceptions	Sec. 7.5-6	
15		Review		

VI. ADDITIONAL INFORMATION (e.g., RUBRICS, etc.)

Assessment Plan

1. Lab Exercises: 5%, all Labs are considered and will be submitted during lab sessions. **Flowcharts can be submitted by email after lab sessions at the same day as the labEx.**
2. 5 Active Learning Exercises: 5%
3. 4 Programming Assignments (HWs): 10%
4. 5 Quizzes: 5%, all are considered and **will be done during lab sessions.**
5. Midterm: 15%
6. Lab Test: 20%
7. Final Exam: 40%

Item	Date Out	Due Date	Weights
Lab Exercises	Lab session	During lab sessions,	5%
	Lab Exercise Flowchart end of lab day		
5 Active Learning Exercises	TBA		5%
5 Online Quizzes	During Lab Sessions		5%
HW1	Week 2 THU	Week 5 SUN	2%
HW2	Week 4 THU	Week 7 SUN	2%
HW3	Week 7 THU	Week 10 SUN	3%
HW4	Week 10 THU	Week 14 SUN	3%
Midterm	Week 7 (Tuesday 18/3/2025) Time: 5:00-6:00 PM Class Rooms: E10, E11, E12, E13, E14		15%
Lab Test	Week 13 (MON 28/4/2025) Time: 6:15 – 7:30 PM College of Science Labs		20%
Final	Week: 16 Date: 21/05/2025 Day: Wed Time: 3:00-6:00 PM, Location: TBA		40%

Department's Late Submission Policy:

- (a) 1-24 hours: 25% of the mark will be deducted.
(b) > 24 hours: Not accepted.

Department's Policy for Dealing with Cheating:

It is essential that each student solves all programming assignments, lab tests and exams individually unless instructed otherwise, e.g., for group projects. Copying, plagiarism, collusion, switching, and falsification are violations of the university academic regulations. Students involved in such acts will be severely penalized. The department has adopted a firm policy on this issue. A zero mark will be assigned the first time a student is caught involved in copying and his/her name will be added to a watch list maintained by the Head of Department. Further repeated involvements in copying will cause the student to get an F grade in that course. This is in line with the university academic regulations.

INSTRUCTORS OF MULTIPLE SECTIONS

Section	Instructor	Day, Time, Place	Office/ Ext.	Email/Contact	Office Hours	
10	Dr. Amaal Hassan	SUN 10:00-11:20, F52 THU 10:00-11:20, D17 MON 14:15-16:05 SCI/0027S	0230/ 2227	amaalh@squ.edu.om	THURSDAY 11:30-1:30	
20	Dr. Amaal Hassan	SUN 10:00-11:20, F52 THU 10:00-11:20, D17 WED 14:15-16:05 SCI/0027S	0230/ 2227	amaalh@squ.edu.om	THURSDAY 11:30-1:30	
30	Dr. Hala Malki	SUN, TUE 10:00-11:20 SCI/0019A MON 14:15-16:05 SCI/0019A	0210/ 2421	h.mulki@squ.edu.om	SUN-TUE 9:00-10:00	
40	Dr. Shadha Al-Aamri	MON, WED 12:00-13:20 SCI/0019A TUE 14:15-16:05 SCI/0019A	0003/2498	sh.alamri@squ.edu.om	TUE-WED 10:30-11:30	
50	Prof. Zuhoor Al-Khanjari (course coordinator)	MON, WED 08:00-09:20 CMT/B12 TUE 16:15-18:05 SCI/0024S	0009/ 2463	zuhoor@squ.edu.om	MON, WED 12:00 –1:00	
60	Dr. Asmaa Al-Busaidi	MON, WED 10:00-11:20 SCI/0027S TUE 14:15-16:05 SCI/0027S	0210/ 2421	asmaab@squ.edu.om	MON-WED 1:40-2:30	
70	Prof. Zuhoor Al-Khanjari (course coordinator)	MON, WED 10:00-11:20 SCI/0024S TUE 14:15-16:05 SCI/0024S	0009/ 2463	zuhoor@squ.edu.om	MON-WED 12:00-1:00	
80	Dr. Asmaa Al-Busaidi	MON, WED 12:00-13:20 SCI/0022S TUE 16:15-18:05 SCI/0027S	0210/ 2421	asmaab @squ.edu.om	MON-WED 1:40-2:30	

VII. STUDENTS' RESPONSIBILITIES

It is students' responsibility to know and comply with all University Academic Regulations relevant to participation in this course. These regulations specifically include attendance requirements and student academic code of conduct.

ACADEMIC INTEGRITY	The University expects the students to approach their academic endeavors with the highest academic integrity. Please refer to the Undergraduate Academic Regulations .
ADD AND DROP	Students who wish to drop or add the course should review the Undergraduate Academic Regulations .
ATTENDANCE	Sultan Qaboos University has a clear requirement for students to attend courses, detailed in the Undergraduate Academic Regulations .
ASSESSMENT AND GRADING	To ensure the provision of a sound and fair assessment and grading, please review the Undergraduate Academic Regulations .
GRADE APPEAL	Students who wish to appeal their grades should review the Undergraduate Academic Regulations .
CLASSROOM POLICIES	Students are expected to dress professionally during class time as required by the University. Use of phones or any other electronic devices in the classroom during class time is strictly prohibited. Unauthorized use may lead to faculty member confiscation of the device for the remainder of the class. Behavior that persistently or grossly interferes with classroom activities is considered disruptive behavior and may be subject to disciplinary action. A student responsible for disruptive behavior may be required to leave the class.
LATE AND MAKE-UP WORK	Students are required to meet the course objectives by submitting coursework no later than the assigned due date. Students may be allowed to submit late work if approved by the course coordinator. Assignments submitted after the due date may be penalized.
MISSED EVALUATIONS	All quizzes, tests, clinical evaluations, and exams must be completed by the date they are assigned. If a quiz, test, or exam is missed due to a documented emergency situation (e.g., medical emergency, death in the immediate family), it is the student's responsibility to contact the instructor.
OTHER	

Course Outline Appendix

1. Program Learning Outcomes / Student Outcomes

SO1. Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.

SO2. Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.

SO3. Communicate effectively in a variety of professional contexts.

SO4. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.

SO5. Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.

SO6. Apply computer science theory and software development fundamentals to produce computing-based solutions.

2. SQU Graduate Attributes and Competencies for Undergraduate Studies

GRADUATE ATTRIBUTES	GRADUATE COMPETENCIES FOR UNDERGRADUATE STUDIES
A. Cognitive Capabilities: The graduate has sufficient general and specialized theoretical knowledge that enables him/her to deal well with his/her specialty and other related fields.	1. Demonstrates familiarity and works with advanced specialized knowledge in the area of specialization.
	2. Demonstrates a general understanding of the relationship of advanced specialized knowledge with knowledge in other relevant professional fields and aspects.
	3. Demonstrates a comprehensive understanding of the theories, principles, and methods used in his/her specialty, and how to create and apply new knowledge.
	4. Demonstrates general knowledge of the legal environment and necessary relevant regulatory frameworks.
	5. Shows awareness of contemporary literature and research.
B. Skill and Professional Capability: The graduate has sufficient skill and practical experience that enables him/her to perform all tasks related to	1. Applies concepts, theories, and investigative methods to synthesize and interpret information to evaluate conclusions.
	2. Applies appropriate research methods and techniques and employs digital knowledge

the specialization and other related fields.	3. Evaluates and critiques information independently
	4. Uses cognitive and technical skills to analyze complex issues and develop appropriate solutions.
	5. Initiates new ideas or processes in the professional, educational or research context.
C. Effective Communication: The graduate has the ability to communicate effectively with others to achieve the desired results	1. Explains, presents, and adapts information to suit the recipients.
	2. Employs appropriate information and communication technology to collect and analyze information.
D. Autonomy and Leadership: The graduate has the ability to lead, make decisions and take responsibility for decisions.	1. Performs advanced professional activities independently.
	2. Demonstrates leadership skills.
	3. Takes professional responsibility.
	4. Assumes full accountability for the tasks and their output.
E. Responsibility and Commitment: The graduate appreciates the importance of available resources and deals with them effectively and is committed to the ethics of the profession and society.	1. Manages time and other resources assigned to accomplishing tasks effectively and responsibly.
	2. Demonstrates effective practices when working in teams.
	3. Demonstrates advanced levels of understanding of values and ethics relevant to the specialization, profession and local and international society and promotes them among others.
	4. Works within the professional, institutional, and specialization guiding frameworks and strategic plans.
	5. Interacts with community affairs positively and preserves national identity.
F. Development and Innovation: The graduate has a passion for development and innovation in the field of specialization.	1. Demonstrates the ability to independently manage learning tasks, with an awareness of how to develop and apply new knowledge.
	2. Utilizes specialized knowledge and skills for entrepreneurship.
	3. Utilizes creative and innovative skills in the field of specialization.

3. OQF Characteristics

1. Knowledge
2. Skills
3. Communication, Numeracy, and Information and Communication Technology Skills.
4. Autonomy and Responsibility
5. Employability and Values
6. Learning to learn