هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

T-104
2022

Course Specification

Course Title:	**Introduction to Computing and Algorithms**
Course Code:	**CS1002**
Program:	**Computer Science**
Department:	**Computer Science**
College:	**Computer Science and information technology**
Institution:	**Al Baha University**
Version:	**V1.0**
Last Revision Date:	**4/4/2023**

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A. General information about the course:

Course Identification					
1. Credit hours:	4 Hours				
2. Course type					
a.	University ☐	College ☒	Department☐	Track☐	Others☐
b.	Required ☒	Elective☐			
3. Level/year at which this course is offered:	2nd Level (1st Year)				

4. Course general Description

This course is designed to provide students with a breadth-first overview of essential concepts and principles of various computing fields and provide a solid foundation for their further study in this dynamic discipline.

Upon successful completion of the course, the student will develop fundamental understanding and competency in the following topics:

- History of computing.
- Binary number system and data representation.
- Computer architecture its components, and their functionalities.
- Basics of problem-solving and algorithms.
- Basics of programming languages.
- Basics of operating systems.
- Basics of artificial intelligence.
- Basics of network technology.
- Basics of database technology.
- Basics of computer security.
- Role of computers in today's society.

Lab:

The lab is designed for majors and non-majors alike, with or without prior programming experience. Topics of the lab include Introduction to Python Basics, Variables, Conditionals, Loops, Functions Arrays, Data Structures, Algorithms, SQL and HTML.

5. Pre-requirements for this course (if any):

None

6. Co- requirements for this course (if any):

None

7. Course Main Objective(s)

- Outline the important history of computing and its developments.
- Practice numbering systems, and information representation in computing.
- Illustrate the computer architecture, its main components, and their functionalities.

- Design computational solutions for simple problems using the appropriate algorithms.
- Define operating systems, their types, roles, and functionalities.
- Describe the role of general information and database systems.
- Apply knowledge of networking and security to solve real life problem.
- Demonstrate social and ethical issues in the technological disciplines such as privacy, liability, copyrights and social awareness.
- Communicate concepts and techniques in oral presentations

1. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1.	Traditional classroom	33	60%
2.	E-learning		
3.	Hybrid • Traditional classroom • E-learning		
4.	Distance learning	22	40%

2. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	33
2.	Laboratory/Studio	22
3.	Field	
4.	Tutorial	
5.	Others (specify)	
	Total	55

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	Realize the important history of computing and its developments.	K1	• Tutorials • Lectures • Exercises	• Quizzes • Midterm Exam • Final Exam
1.2	Define operating systems, their types, roles, and functionalities.	K2	▪ Tutorials ▪ Lectures ▪ Exercises	• Quizzes • Midterm Exam • Final Exam
1.3	Illustrate the computer architecture, its main components, and their functionalities.	K3	▪ Tutorials ▪ Lectures ▪ Exercises	• Quizzes • Midterm Exam • Final Exam
1.5	Describe the role of general information and database systems, and the artificial intelligence.	K4	▪ Tutorials ▪ Lectures ▪ Exercises	• Quizzes • Midterm Exam • Final Exam
2.0	Skills			
2.1	Apply knowledge of Programming, Algorithms, Data structures, SQL, and HTML to solve real life problem.	S1	▪ Tutorials ▪ Lectures ▪ Exercises	▪ Assignment ▪ Lab Exam ▪ Final Exam ▪ Midterm Exam Final Exam
2.2	Develop computational solutions for simple problems using the appropriate algorithms and suggest the appropriate programming languages for coding the solutions.	S2	▪ Tutorials ▪ Lectures ▪ Exercises	▪ Assignment ▪ Lab Exam ▪ Final Exam ▪ Midterm Exam ▪ Final Exam
2.3	Code program that utilizes arrays.	S3	▪ Tutorials ▪ Lectures ▪ Exercises	▪ Assignment ▪ Lab Exam ▪ Final Exam
3.0	Values, autonomy, and responsibility			
3.1	Participate in class\lab discussions.	V1	▪ Class\lab discussion	▪ Rubric

C. Course Content

No	List of Topics	Contact Hours
1.	History of computing	2
2.	Binary number system and data representation	4
3.	Gates, circuits and computer components	4

4.	Basics of problem-solving and algorithms	4
5.	Basics of programming languages	2
6.	Basics of operating systems	4
7.	Basics of database technology	3
8.	Basics of network technology	3
9.	Basics of the world wide web	2
10.	Basics of computer security	2
11.	Basics of artificial intelligence	1
12.	Social and Professional Issues	2
Total		33

No	List of Topics	Contact Hours
1.	Introduction to Python	1
2.	Python Basics	2
3.	Variables, Conditionals, Loops	3
4.	Functions	2
5.	Arrays	2
6.	Data Structures	3
7.	Algorithms	3
8.	SQL	3
9.	HTML	3
Total		22

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Midterm Exam	5	20%
2.	Assignment/Discussion	10-11	15%
3.	Quizzes	Bi-Weekly	5%
4.	Lab Exam	12	20%
5.	Final Exam	13	40%

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.)

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	▪ "Computer Science Illuminated", Fifth Edition, by Nell Dale and John Lewis, 2013, Jones and Bartlett.
Supportive References	▪ "Explorations in Computer Science", Second Edition, by Mark Meyer, Jones and Bartlett. This book contains hands-on exercises that can be used as in-class lab manual or assigned as take-home exercises. ▪ "Foundations of Computer Science", Second Edition, by Gilberg, Richard F., Forouzan, Behrouz A., ▪ Computer Science Curriculum 2013 – http://cs2013.org ▪ ACM (Association for Computer Machinery) Curricula Recommendations - http://www.acm.org/education/curricula-recommendations
Electronic Materials	https://pll.harvard.edu/course/cs50-introduction-computer-science?delta=0
Other Learning Materials	

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	All the lectures should be in a well-prepared lab that can accommodate 25 students at most.
Technology equipment (projector, smart board, software)	• A digital image projection system with a connection to a computer. • High-speed Internet connection. • An instructor computer station. An application to manage labs and learning sessions (e.g. NetSupport School).
Other equipment (depending on the nature of the specialty)	

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of students' assessment	▪ Students ▪ Exam Evaluation Committee ▪ Course Coordinator	▪ Survey (indirect) ▪ Exam Review (direct) ▪ Review of course file (direct)
Quality of learning resources	▪ Faculty Students	Survey (indirect)

Assessment Areas/Issues	Assessor	Assessment Methods
The extent to which CLOs have been achieved	▪ Faculty ▪ Program Leaders or Course Coordinator	▪ Exams (direct) ▪ Exit Exams (direct)
Other		

Assessor (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval Data

COUNCIL /COMMITTEE	
REFERENCE NO.	
DATE	