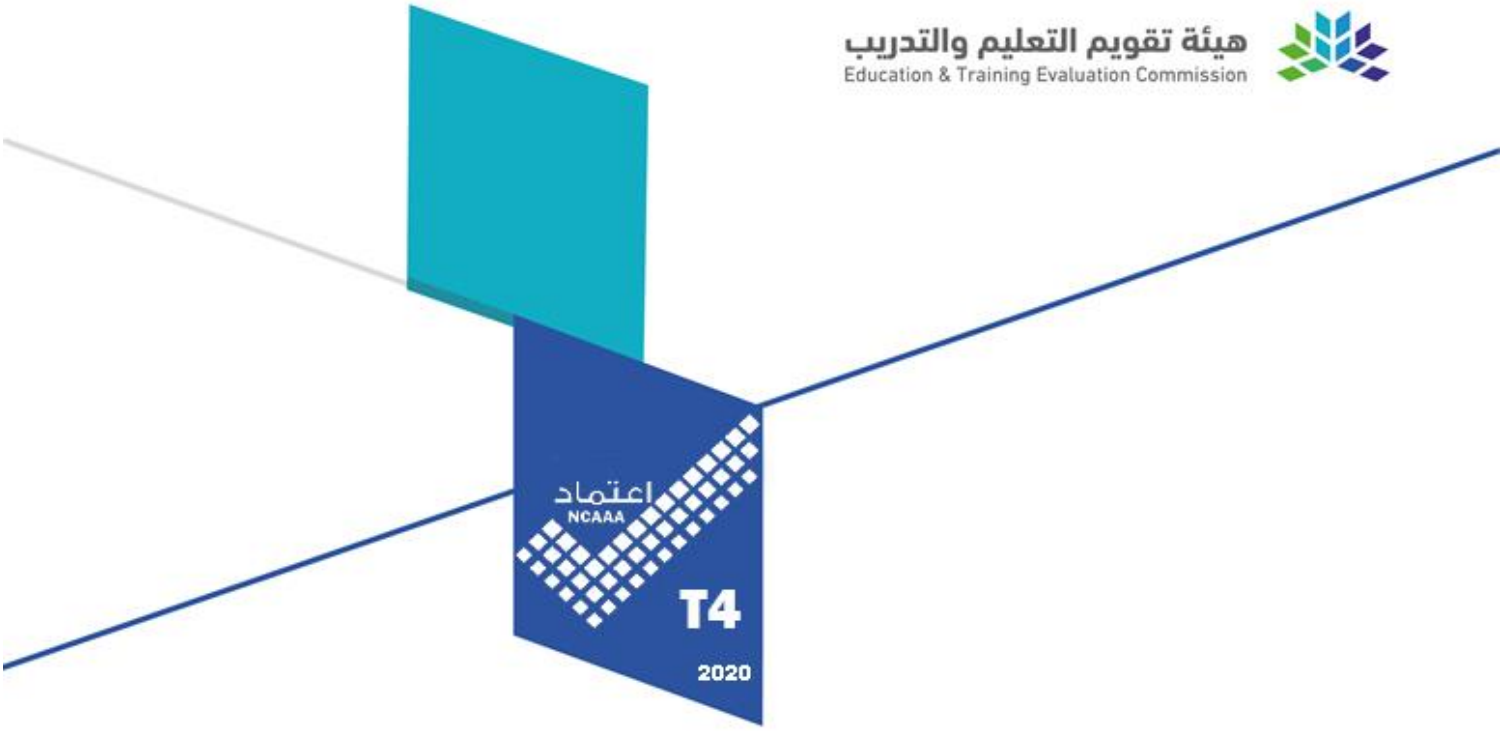
هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	Introduction to Algorithm and Programming
Course Code:	CP32
Program:	Diploma in Programming and Computer Sciences
Department:	Technology department
College:	Applied College
Institution:	Taif University

Table of Contents

A. Course Identification

1. Credit hours: 3
2. Course type **a.** University ☐ College ☐ Department ☑ Others ☐ **b.** Required ☑ Elective ☐
3. Level/year at which this course is offered: First Year Second Level
4. Pre-requisites for this course (if any)**:** None
5. Co-requisites for this course (if any)**:** None

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	3	75%
2	**Blended**		
3	**E-learning**	1	25%
4	**Distance learning**		
5	**Other**		

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	40
2	**Laboratory/Studio**	
3	**Tutorial**	
4	**Others** (specify)	
	Total	40

B. Course Objectives and Learning Outcomes

1. Course Description

This course presents fundamental concepts of problem-solving techniques in computer science and other computational sciences. Topics include: Problem-solving approaches and process, Arithmetic Expression, Debugging, Decision structures, Repetition Structures.

2. Course Main Objective

The course aims to develop organized logical thinking of the student. In this course, student view, consider, analyze, design, plan, work, and solve problems from a computational perspective. To gain general knowledge about modern computing and the concepts and thinking processes underlying modern digital technologies.

3. Course Learning Outcomes

CLOs		AlignedPLOs
1	**Knowledge and Understanding**	
1.1	Specify concepts, techniques, and problem-solving steps in the field of computing and programming.	K1
1.2	Knows the different types of instructions (simple, conditional and iterative) that can compose an algorithm or a program .	K1

CLOs		AlignedPLOs
2	**Skills :**	
2.1	Apply problem-solving process in the field of computing.	S2
2.2	Choose appropriate solution and techniques to solve common real-life problems.	S2
2.3	Write pseudo code and select appropriate solutions to solve problems	S2
3	**Values:**	

C. Course Content

No	List of Topics	Contact Hours
1	Introduction to Computers and Programming and Problem-solving process –I (Input and output, programming process)	**4**
2	Problem-solving process-II (System development, pseudo-code and process-III (Flowchart)	**4**
3	Arithmetic Expression-I (Variables and basic types, mathematical expressions, Order of Operations, Associativity of Operators, Grouping with Parentheses)	**4**
4	Arithmetic Expression-II (Algebraic Expressions, Postfix expression, Prefix expression, Multiple Assignment and Combined Assignment)	**4**
5	Tracing a Program (Focus on debugging: Hand tracing a Program, Focus problem solving: A case study)	**4**
6	Decision Structures-I (Relational Operators, Relational Expressions, Logical Operators)	**4**
7	Decision Structures-II (Flowchart for Evaluating a Decision- (Single, double, multi-way, nested), Solving problems using decisions structures)	**4**
8	Repetition Structures-I (The Increment and Decrement Operators, Repetition Flowchart (Pre-test loop (e.g., while loop), Post-test loop (e.g., do-while loop))	**4**
9	Repetition Structures-II (Repetition Flowchart(Counting loop (e.g., for loop), Nested loop structures))	**4**
10	Repetition Structures-III (Deciding which repetition structure to use, Solving problems using repetition structures)	**4**
Total		**40**

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Specify concepts, techniques, and problem-solving steps in the field of computing and programming.	Lectures	**Direct Assessment** Quizzes / Project Exams **Indirect Assessment** Course Exit Survey
1.2	Knows the different types of instructions (simple, conditional and	Lectures	**Direct Assessment** Quizzes / Project

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
	iterative) that can compose an algorithm or a program .		Exams **Indirect Assessment** Course Exit Survey
2.0	**Skills**		
2.1	Apply problem-solving process in the field of computing.	Lectures	**Direct Assessment** Quizzes / Homework Project / Exams **Indirect Assessment** Course Exit Survey
2.2	Choose appropriate solution and techniques to solve common real-life problems.	Lectures	**Direct Assessment** Quizzes / Homework Project / Exams **Indirect Assessment** Course Exit Survey
2.3	Write pseudo code and select appropriate solutions to solve problems	Lectures	**Direct Assessment** Quizzes / Homework Project / Exams **Indirect Assessment** Course Exit Survey
3.0	**Values**		

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	HomeWorks/StudentParticipation-Attendance/quiz	Every Week	20%
2	Project	From week 3 to week 8	10%
3	Mid-Term	6	20%
4	Final Examination	12	50%

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

- Providing a guide for each group of students, and distributing student lists electronically to faculty members.
- There is an academic advising guide that defines the role of the faculty member in the academic advising process.
- The program supervisor is available throughout the year to answer student inquiries.
- Availability of full information about the program and its members and ways to communicate with them.
- Use the Learning Management System (Black Board) to communicate with students

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Sprankle, Maureen, and Jim Hubbard. Problem solving & programming concepts. Upper Saddle River, NJ: Pearson Prentice Hall, 9th edition, 2011.
Essential References Materials	Wang, Paul S. From computing to computational thinking. Chapman and Hall/CRC, 2016.
Electronic Materials	
Other Learning Materials	http://www.flowgorithm.org/download/index.htm

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	• Classroom with 25 chairs
Technology Resources (AV, data show, Smart Board, software, etc.)	• Video projector / data show • White board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Null

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching	• Students • Faculty members • Coordinator • Program Leaders	• Course exit survey • Feedback from Faculty members • Feedback from Course Coordinator • Feedback from Quality Committees
Effectiveness of assessment	• Faculty members • Coordinator • Program Leaders	• Feedback from Faculty members • Feedback from Course Coordinator • Feedback from Program Leader
Extent of course achievement	• Students • Coordinator • Faculty members	• Course exit survey • Curriculum Committees • Feedback from Course Coordinator • Feedback from Program

Evaluation Areas/Issues	Evaluators	Evaluation Methods
		Leader
Extent of course learning outcomes	• Faculty members • Coordinator • Program Leaders • Quality Committees	• Course exit survey • Curriculum Committees • Feedback from Course Coordinator • Feedback from Program Leader • Feedback from Quality Committees
Quality of learning resources	• Students • Faculty members • Coordinator	• Course exit survey • Course exit survey • Curriculum Committees • Feedback from Course Coordinator • Feedback from Program Leader

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes,Quality oflearning resources, etc.)
Evaluators (Students,Faculty, Program Leaders,Peer Reviewer, Others (specify)
Assessment Methods(Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	