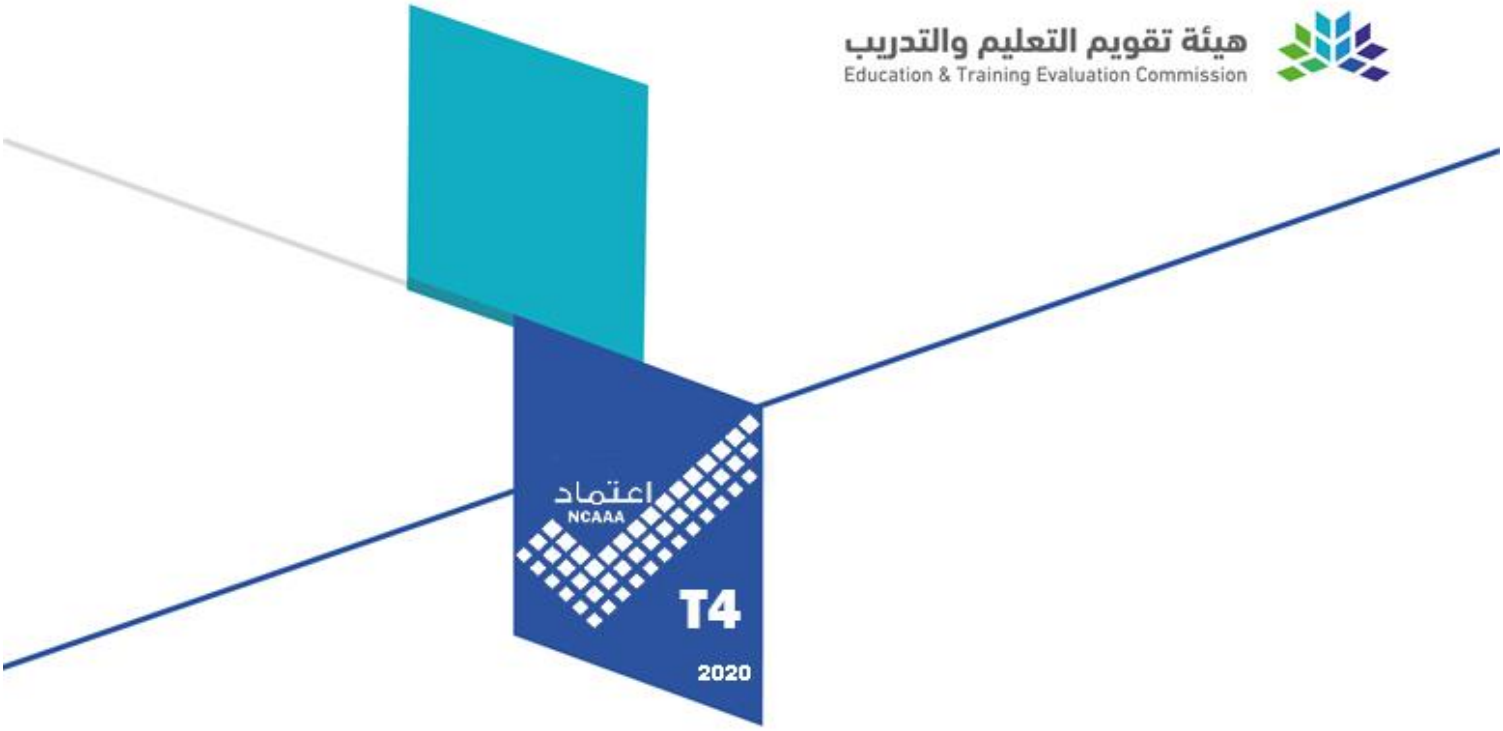
هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	Discrete Mathematics for Computer Science (2)
Course Code:	CSI 222
Program:	Computer Science and Information Technology
Department:	Computer Science and Information
College:	College of Science in Zulfi
Institution:	Majmaah University

Table of Contents

A. Course Identification

1. Credit hours: 2 Credit Hours
2. Course type **a.** University ☐ College ☐ Department ☑ Others ☐ **b.** Required ☑ Elective ☐
3. Level/year at which this course is offered: 4 th
4. Pre-requisites for this course (if any)**:** Discrete Mathematics for Computer Science (1) – CSI 212
5. Co-requisites for this course (if any)**:** **N/A**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	12	40 %
2	**Blended**	6	20 %
3	**E-learning**	12	40 %
4	**Distance learning**		
5	**Other**		

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	30
2	**Laboratory/Studio**	
3	**Tutorial**	
4	**Others** (specify)	
	Total	30

B. Course Objectives and Learning Outcomes

1. Course Description

This course is to introduce students to the concepts of: Number Theory: Divisibility and Euclidean algorithms. Modular arithmetic, Fermat's and Euler's theorems, Chinese remainder theorem. Concepts of Abstract Algebra: groups, rings, fields, Homomorphisms, Lagrange's theorem, Finite fields. Automata Theory: Finite state machine, regular expressions, DFA, NDFA, and their equivalence, Grammars and Chomsky hierarchy.

2. Course Main Objective

1. Using group discussion
2. Updating the materials of the course to cover the new topics of the field.
3. Encourage students to learn the benefits of this course to be engaged in other applications.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding**	
1.1	Describe efficient basic number-theoretic algorithms, including greatest common divisor, multiplicative inverse mod n, and raising to powers mod n.	
1.2	Discuss the concepts of finite state machines and context free grammar.	
1.3	Define the basic algebraic structures: group, ring, and field	
2	**Skills :**	
2.1	Apply the properties of natural numbers to computer applications	
2.2	Convert among equivalently powerful notations for a language, including DFAs, NFAs, and context free grammars	
3	**Values:**	
3.1	Solve problems in elementary number theory	
3.2	Design an efficient finite state machine to accept a specified language	

C. Course Content

No	List of Topics	Contact Hours
1	Number Theory: Divisibility and Euclidean algorithms. Modular arithmetic, Fermat's and Euler's theorems, Chinese remainder theorem.	10
2	Concepts of Abstract Algebra: groups, rings, fields, Homomorphisms, Lagrange's theorem, Finite fields.	10
3	Automata Theory: Finite state machine, regular expressions, DFA, NDFA, and their equivalence, Grammars and Chomsky hierarchy.	10
Total		30

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	Students will have a skills for describe efficient basic number-theoretic algorithms.	Lectures, Individual presentations & Brainstorming exercises	Quiz , Mid Exam , Assignment, Final Exam, Individual demonstrations
1.2	Students will have an understanding to define the concepts of finite state machines and context free grammar.	Lectures, Individual presentations & Brainstorming exercises	Quiz , Mid Exam , Assignment, Final Exam, Individual demonstrations.
1.3	Students will understand the basic algebraic structures: group, ring, and field.	Lectures, Individual presentations & Brainstorming exercises	Quiz , Mid Exam , Assignment, Final Exam, Individual demonstrations.
2.0	**Skills**		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.1	Apply the properties of natural numbers to computer applications	Lectures, Individual presentations & Brainstorming exercises	Quiz , Mid Exam , Assignment, Final Exam, Individual demonstrations
2.2	Convert among equivalently powerful notations for a language, including DFAs, NFAs, and context free grammars	Lectures, Individual presentations & Brainstorming exercises	Quiz , Mid Exam , Assignment, Final Exam, Individual demonstrations
…			
3.0	**Values**		
3.1	Design an efficient finite state machine to accept a specified language.	Lectures, Individual presentations & Brainstorming exercises	Quiz , Mid Exam , Assignment, Final Exam, Individual demonstrations.

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Quizzes		10 %
2	Mid Exams		30 %
3	Assignments		10 %
4	Group Discussion, Presentation		10 %
5	EExam		20 %
6	Final Exam		20 %
7			
8			

***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 :

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Kenneth H. Rosen, “Discrete Mathematics and Its Applications”, Mcgraw-Hill College, 2011.
Essential References Materials	Kenneth H. Rosen, “Discrete Mathematics and Its Applications”, Mcgraw-Hill College, 2011.
Electronic Materials	Determines as the course is going on
Other Learning Materials	Videos and presentations are available with instructor

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classrooms are available at college of science Az Zulfi
Technology Resources (AV, data show, Smart Board, software, etc.)	Smart Board and required software
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	N/A

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods

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

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	