اعتماد
NCAAA

T4

2020

Course Specifications

Course Title:	Discrete Structures
Course Code:	501215-3
Program:	**Bachelor in Computer Science**
Department:	**Department of Computer Science**
College:	**College of Computers and Information Technology**
Institution:	**Taif University**

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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: 4/2**

4. **Pre-requisites for this course** (if any)**: NON**

5. **Co-requisites for this course** (if any)**: NON**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	4	80%
2	**Blended**	0	0
3	**E-learning**	0	0
4	**Distance learning**	0	0
5	**Other (Tutorial)**	1	20%

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	40
2	**Laboratory/Studio**	0
3	**Tutorial**	10
4	**Others** (specify)	0
	Total	50

B. Course Objectives and Learning Outcomes

1. Course Description

Introduce propositional logic, predicates, quantifiers; sets, functions, sequences; proof strategy, induction, recursion; relations, equivalence relations, partial orders; basic counting techniques.

2. Course Main Objective

1. Cultivate clear thinking and creative problem solving and thoroughly train in the construction and understanding of mathematical proofs. Exercise common mathematical arguments and proof strategies.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding**	
1.1	Understand relations and their properties	K1

CLOs		Aligned PLOs
2	**Skills :**	
2.1	Evaluate and manipulate predicates, sets, functions and sequences.	S2
2.2	Apply proof techniques including deduction, contradiction, and induction	S2
2.3	Apply counting techniques	S2
3	**Values:**	
3.1		

C. Course Content

No	List of Topics	Contact Hours
1	Logics and Proofs	14
2	Sets, Functions, Sequences, and Summations	8
3	Induction and Recursion	4
4	Relations, Their Properties and Representation Closure of Relations and Equivalence Relations	8
5	Basic Counting Techniques Permutations and Combinations	6
6	Integers and Division, Primes and Greatest Common Divisors Applications of Number Theory	6
7	Review	4
Total		50

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	Understand relations and their properties	Lecture Discussion Problem Solving	Written Exams Quizzes Assignments
2.0	**Skills**		
2.1	Evaluate and manipulate predicates, sets, functions and sequences.	Lecture Discussion Problem Solving	Written Exams Quizzes Assignments
2.2	Apply proof techniques including deduction, contradiction, and induction	Lecture Discussion Problem Solving	Written Exams Quizzes Assignments
2.3	Apply counting techniques	Lecture Discussion Problem Solving	Written Exams Quizzes Assignments
3.0	**Values**		
3.1			

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Assignments	4,6, 8	15%
2	Quizzes	3, 7,10	15%
3	Midterm Exam	6	20%
4	Final Exam	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 :

Academic advising and counseling of students is an important component of teaching; student academic advising is a mandatory requirement of College of Computers and Information Technology (CCIT). Appropriate student advising provides support needed for the student during times of difficulty. In addition, it helps the student to build a close relationship with his/her advisor and to provide student motivation and involvement with the institution.

In addition, since faculty are usually the first to recognize that a student is having difficulty, faculty members play a key role in developing solutions for the students or referring them to appropriate services. Faculty members also participate in the formal student-mentoring program.

Additional counseling is provided by course directors, who provide students with academic reinforcement and assistance and refer "at risk" students to the Vice Dean for Academic Affairs and the Vice Dean for female section.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Rosen K., Discrete Mathematics and its applications, seventh edition, McGraw Hill, 2012.
Essential References Materials	Hein, James L., Discrete Structures, Logic, and Computability, Jones and Bartlett, 2010 and Lab Manual.
Electronic Materials	NON
Other Learning Materials	NON

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	• A Lecture room appropriate for maximum 25 students with a personal computer, a data show and a smart board. • A Lab room appropriate for maximum 15 students with a personal computer, a data show and a smart board.
Technology Resources (AV, data show, Smart Board, software, etc.)	• Lab materials and required software
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of Teaching	Students	Students' surveys and Student's course evaluation
Improvement of Teaching	Course Coordinator	deficiencies based on the student Evaluation, faculty input, course file, and program assessment
Verifying Standards of Student Achievement	Curriculum Committee	• Review CAF (Course assessment file) • Alumni surveys. Periodic exchange and remarking of tests or a sample of assignments with staff at another

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	CS council
Reference No.	Meeting #12
Date	23-10-1443