



Course Specifications

Course Title:	Discrete Structure
Course Code:	CPCS222
Program:	Bachelor of Science in Computer Sciences Bachelor of Science in Information Systems Bachelor of Science in Information Technology
Department:	Computer Sciences Information Systems Information Technology
College:	Faculty of Computing and Information Technology
Institution:	Northern Border University, Rafha

Table of Contents

A. Course Identification.....	3
1. Credit hours:.....	3
2. Course type.....	3
3. Level/year at which this course is offered.....	3
4. Pre-requisites for this course.....	3
5. Co-requisites for this course.....	3
6. Mode of Instruction (mark all that apply).....	3
7. Contact Hours.....	3
B. Course Objectives and Learning Outcomes.....	3
1. Course Description.....	3
2. Course Main Objective.....	3
3. Course Learning Outcomes.....	4
C. Course Content.....	4
D. Teaching and Assessment.....	5
1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods.....	5
2. Assessment Tasks for Students.....	5
E. Student Academic Counseling and Support.....	5
F. Learning Resources and Facilities.....	6
1. Learning Resources.....	6
2. Facilities Required.....	6
G. Course Quality Evaluation.....	6
H. Specification Approval Data.....	6

A. Course Identification

1. Credit hours:	3
2. Course type	
a.	University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>
b.	Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
3. Level/year at which this course is offered:	Level 4/ Year 2
4. Pre-requisites for this course (if any):	Nil
5. Co-requisites for this course (if any):	Nil

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	60	100%
2	Blended		
3	E-learning		
4	Distance learning		
5	Other		

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	60
2	Laboratory/Studio	
3	Tutorial	
4	Others (specify)	
	Total	60

B. Course Objectives and Learning Outcomes

1. Course Description

This course is designed to provide the student with discrete structures for computer science. Discrete structures are the study of the logical and algebraic relationships between discrete objects. The focus will be on logic and proofs, set theory, functions, relations, counting techniques, sequence, and graph theory.

2. Course Main Objective

The course teaches students the difference between finite and infinite sets, intersection, union, complements. In this course students will study logics and how to create table of truth for propositions.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge and Understanding:	
1.1	Define sets, recognize the union, intersection, difference, and Cartesian product.	K1
2	Skills:	
2.1	Calculate the inverse, complement, composition and closure of a relation.	S1
2.2	Identify the domain, co-domain, range, and type of a function, produce the terms of a sequence, and find its formulae	S2
2.3	Summarize their project work in the form of a written document as well as present it in front of some audience clearly.	S4
3	Values:	
3.1	Engage with a team to complete the group project successfully.	V2

C. Course Content

No	List of Topics	Contact Hours
1	What's a logic proposition	3
2	Different compound propositions	3
3	Create a table of truth of compound propositions and analyze the results	4
4	Correctly write a set (finite or infinite)	4
5	Define the intersection, the union, and the complement of a set	4
6	Define N , Z , Q and R	4
7	Calculate intersection, union and complement of finite and infinite sets	4
8	Building notation of a set	4
9	Definition of a relation	4
10	Difference between reflexive, symmetric and transitive relations	6
11	Connection between relation and functions	6
12	Graphs	8
13	Injective, surjective and bijective functions	6
Total		60

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	Define sets, recognize the union, intersection, difference, and Cartesian product.	Self-explanation, Observation, Guided discovery	Writing-oral
2.0	Skills		
2.1	Calculate the inverse, complement, composition and closure of a relation.	Problem-solving Lab-based learning	Writing – Oral – Performance – Observation
2.2	Identify the domain, co-domain, range, and type of a function, produce the terms of a sequence, and find its formulae	Academic debate Generative learning Lab-based learning	Writing – Oral – Performance – Observation
2.3	Summarize their project work in the form of a written document as well as present it in front of some audience clearly.	Project-based learning Scientific research	Writing – Oral – Performance – Observation
3.0	Values		
3.1	Engage with a team to complete the group project successfully.	Collaborative learning,	Engage with a team to complete the group project successfully.

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Quiz-1	2	2
2	Quiz-2	8	3
3	Assignment-1	4	7.5
4	Assignment-2	10	7.5
5	Oral Questions	1-11	5
6	Project	1-12	15
7	Midterm exam	6	20
8	Final exam	13	40

*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:

Every instructor has an announced office hours schedule. All students are encouraged to visit the concerned teacher according to the schedule. Students can also use Email address or Blackboard System to seek help or book an appointment.

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	<ol style="list-style-type: none"> 1. Rosen, K ,Discrete Mathematics and Its Applications, (2011) 8th Edition, McGraw-Hill. 2. Kevin Ferland, K., Discrete Mathematics and Applications, (2017),Edition 2, CRC Press.
Essential References Materials	<ol style="list-style-type: none"> 1. Hein. J.L, Discrete Structures, Logic, and Computability, (2013) 4th Edition, Jones & Bartlett. 2. Kolman, Ross & Busby, Discrete Math structures,(2007), 6th Edition, Prentice Hall.
Electronic Materials	<ol style="list-style-type: none"> 1. Blackboard System: https://lms.nbu.edu.sa/ 2. Northern Border University Electronic Library: https://www.nbu.edu.sa/AR/Deanship/Library_Issues 3. Saudi Digital Library (SDL): https://portal.sdl.edu.sa/english/
Other Learning Materials	Nil

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	<ul style="list-style-type: none"> • Classroom • Laboratory
Technology Resources (AV, data show, Smart Board, software, etc.)	<ul style="list-style-type: none"> • Data Show (Projectors) in Classroom and laboratory.
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Nil

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment.	Students	Indirect
Quality of learning resources	Students	Indirect
Extent of achievement of course learning outcomes	Faculty	Direct

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	Computer Sciences Department Council
Reference No.	10
Date	24/2/2022