



Course Specification

(Bachelor)

Course Title: **Discrete Mathematics**

Course Code: **Math 639**

Program: **M Sc Mathematics**

Department: **Mathematics**

College: **College of Science and Humanities**

Institution: **Prince Sattam Bin Abdulaziz University**

Version: **Version 1**

Last Revision Date: **Jan 2025**



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A. General information about the course:

1. Course Identification

1. Credit hours: (3)					
2. Course type					
A.	<input type="checkbox"/> University	<input type="checkbox"/> College	<input checked="" type="checkbox"/> Department	<input type="checkbox"/> Track	<input type="checkbox"/> Others
B.	<input checked="" type="checkbox"/> Required		<input type="checkbox"/> Elective		
3. Level/year at which this course is offered: (Post Graduate)					
4. Course General Description:					
Algorithms and Growth of Functions – Induction and Ordering Principles – structural induction – recurrence relations – Graph – Euler and Hamiltonian Path – Trees, types and their Applications – Lattices – Boolean Algebra and Logic Gates					
5. Pre-requirements for this course (if any):					
None					
6. Co-requisites for this course (if any):					
None					
7. Course Main Objective(s):					
To train the students in designing algorithm, graph theory, structural induction. Lattices, Boolean Algebra and their application to Computer Architecture					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	48	100%
2	E-learning	-	-
3	Hybrid <ul style="list-style-type: none"> • Traditional classroom • E-learning 	-	-
4	Distance learning	-	-

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures (16 X 3)	48
2.	Laboratory/Studio	-



3.	Field	-
4.	Tutorial	-
5.	Others (specify)	-
Total		48

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	Understand the Principles of writing Algorithms	K1	Class Room Lectures Interactive Session	Quiz Homework Mid term exams Final Exam
1.2	Describe the use of Mathematical Induction Principles to formulate algorithms	K2		
2.0	Skills			
2.1	Apply the knowledge of trees and find their simple applications	S2	Application oriented exercise during lecture and tutorials	Application oriented take home assignment Exams
2.2	Use Boolean Algebra to Design using Logic Gates	S1		
3.0	Values, autonomy, and responsibility			
3.1	Conducting scholarly or professional activities in an ethical manner	V2	Group Discussion Brain Storming	Oral Presentation Continuous Assessment

C. Course Content

No	List of Topics	Contact Hours
1.	Algorithms and Growth of functions	6
2.	Induction Principles	6
3.	Recurrence relations	6
4.	Introduction to Graphs	6
5.	Euler and Hamiltonian Path	6
6.	Trees	6
7.	Lattices and Boolean Algebra	6





8.	Logic Gates	6
Total		48

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Mid Term Exam I	6	15%
2.	Quiz (Atleast 2 quiz)	4 & 10	10%
3.	Mid Term Exam II	13	15%
4.	Continuous Assessment, Homework, Assignment, Attendance etc.	Every week	10%
5.	End Semester Exam	17	50%

*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	Discrete Mathematics and Its applications – Eighth Edition - Kenneth H. Rosen, LCCN 2018008740 ISBN 9781259676512 (
Supportive References	Discrete Mathematics – 3rd edition – Schaum’s Series
Electronic Materials	--
Other Learning Materials	Lecture notes issued by the Department of Mathematics

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	<ul style="list-style-type: none"> • A classroom or lecture hall with whiteboard for 25 students.
Technology equipment (projector, smart board, software)	<ul style="list-style-type: none"> • A digital image projection system with connection to desktop computer and laptop computer. • High speed Internet connection. • An instructor computer station.
Other equipment (depending on the nature of the specialty)	None





F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students, Graduates	Course Evaluation and Program Evaluation Survey (Indirect)
Effectiveness of Students assessment	Program Leaders	Peer review (Direct)
Effectiveness of students' assessment	Students	Indirect
Quality of learning resources	Students, Graduates	Indirect (Program Evaluation and Alumni Survey)
Other	Faculty	Indirect (Survey)

Assessors (Students, Faculty, Program Leaders, Peer Reviewers, Others (specify))

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	
REFERENCE NO.	
DATE	OCT 2024

