



Course Specifications

Course Title:	Discrete Mathematics
Course Code:	MATH 462
Program:	Bachelor of Science in Mathematics
Department:	Mathematics
College:	Science
Institution:	University of Tabuk

Table of Contents

A. Course Identification.....	3
6. Mode of Instruction (mark all that apply)	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	4
1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods.....	4
2. Assessment Tasks for Students	5
E. Student Academic Counseling and Support	5
F. Learning Resources and Facilities.....	5
1.Learning Resources	5
2. Facilities Required.....	5
G. Course Quality Evaluation	6
H. Specification Approval Data	6



A. Course Identification

1. Credit hours:	03 Hours/Week			
2. Course type				
a.	University	<input type="checkbox"/>	College	<input type="checkbox"/>
b.	Required	<input checked="" type="checkbox"/>	Elective	<input type="checkbox"/>
3. Level/year at which this course is offered: L8/Y4				
4. Pre-requisites for this course (if any): Math 251				
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	45	100%
2	Blended		
3	E-learning		
4	Distance learning		
5	Other		

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	45
2	Laboratory/Studio	
3	Tutorial	
4	Others (specify)	
	Total	45

B. Course Objectives and Learning Outcomes

1. Course Description

The main purpose of this course is to improve the student's logical thinking and skills in solving problems by using the basic concepts of discrete mathematics. The course also offers an opportunity for students to apply their knowledge and understanding to solve practical problems.

2. Course Main Objective

- Students will be able recall basic concepts of mathematical reasoning, set and graph theories.
- Students will be able to use mathematical reasoning techniques to perform logic proofs.
- Students will be able to recognize graphs and trees and in solving real world problems.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge and Understanding	
1.1	Students will be able to recall the concepts of rigorous argument and formal proofs of discrete mathematics.	K1
1.2	Students will be able to demonstrate knowledge of basic concepts and procedures of discrete mathematics.	K2
2	Skills :	
2.1	Students will be able to solve complex problems using procedures and techniques of discrete mathematics.	S1
2.2	Students will be able to apply the methods, ideas and theories in real world applications.	S3
2.3	Students will be able to communicate mathematical concepts effectively and clearly.	S4
3	Values:	
3.1	Students will be able to work in groups while committed to ethics.	V1
3.2	Students will be able to manage duties and time.	V2

C. Course Content

No	List of Topics	Contact Hours
1	Basic of discrete mathematics - Formal logic	3 Hrs
2	Formal logic – continue – sets	3 Hrs
3	Sets-identities	3 Hrs
4,5	Algebraic basic rules-semigroups, linear code	6 Hrs
6	Mid-Exam#1	
6,7	Graph theory: graphs-directed graphs	6 Hrs
8	Paths-walks-Eulerian and Hamiltonian graphs	3 Hrs
9	Shortest path-planar graphs	3 Hrs
10,11	Path coloring-trees-spanning trees-different algorithms	6 Hrs
11	Mid-Exam#2	
12	Table of transition planning graphs - Isomorphism in graphs	3 Hrs
13	The partial regression functions-languages and rules	3 Hrs
14	The regular expression	3 Hrs
15	Revision & Final Exam	3 Hrs
Total		45 Hrs

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 be able to recall the concepts of rigorous argument and formal proofs of discrete mathematics.	Introducing new ideas through case study Lectures Class Discussions	Quizzes I II Midterm Exams Final Exams Homework assignments	
1.2	Students will be able to demonstrate knowledge of basic concepts and procedures of discrete mathematics.			

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.0	Skills		
2.1	Students will be able to solve complex problems using procedures and techniques of discrete mathematics.		
2.2	Students will be able to apply the methods, ideas and theories in real world applications.	Lectures Class Discussions	Quizzes I II Midterm Exams Final Exams Homework assignments.
2.3	Students will be able to communicate mathematical concepts effectively and clearly.		
3.0	Values		
3.1	Students will be able to work in groups while committed to ethics.	Lectures Class Discussions	Quizzes Homework assignments Group work
3.2	Students will be able to manage duties and time.		

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Activities	Weekly basis	5%
2	Homework	Weekly basis	5%
3	Quizzes	Weekly basis	10%
4	Mid Exam	6 th week	20%
5	Mid Exam	11 th week	20%
6	Final Exam	At end of the Semester	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 :

Six office hours per week in the lecturer schedule.

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	D. G. Zill & P. D. Shanahan," A First Course in Complex Analysis with Applications", Jones & Bartlett Publishers, New York, 2003.
Essential References Materials	Brown; Churchill, "Complex Variables and Applications," 6 th Ed., McGraw-Hill, 1996.
Electronic Materials	None
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration	1. Lecture room with maximum capacity of 30 students and equipped with White Board, Overhead projector and



Item	Resources
rooms/labs, etc.)	internet connection. 2. Library
Technology Resources (AV, data show, Smart Board, software, etc.)	Projectors
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

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

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	The Curriculum committee
Reference No.	
Date	25/08/2021