National University of Sciences and Technology
School of Electrical Engineering and Computer Science

MATH-161 : Discrete Mathematics (3**+0**)

Title: Discrete Mathematics	
Code: MATH-161	**Credit Hours:** 3+0
Class: BESE-5AB	**Semester:** Fall 2014
Pre-requisite(s): Nil	

Objectives

On successful completion of course, the students will be able to:

a. Use mathematical reasoning to comprehend and construct mathematical arguments.

b. Solve counting problems with the help of combinatorial analysis.

c. Apply graph theory to complicated problems.

d. Develop/apply various algorithms for/to real life situations.

e. Develop sound logic for programming.

Contents

Introduction, Logic, Propositional Equivalences, predicates and Quantifiers, Basic Set Theory, Functions, Sequences and Summation, The Integers and Division, Methods of Proof; Mathematical Induction, Recursive Definition and Algorithms, Basic counting, Pigeon hole principle, Relations and their Properties, Graphs, Euler and Hamilton Path, Trees, Shortest Path Problem, Tree Sorting, Spanning Trees, Boolean function, Logic gates, minimization of circuits

Books

Text Books:

K.H. Rosen, Discrete Mathematics and its Applications ,(4th Edition) McGraw Hill

Reference Books:

Susanna S. Epp, Discrete Mathematics with Applications (3rd Edition),Brooks Cole

B Kolman, R.C. Busby & S.C. Ross, Discrete Mathematical Structures, (5th Edition) Pearson Education

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Instructor: Mr Moin-ud-Din **Office:** Room A-111, Ground Floor, Faculty Block **Email:** moin.din@seecs.edu.pk **Tel:** 051-9085-2350	**Instructor's Website:** **Counseling Hours:** Mon: 1000-1130 Wed: 1100-1230 Thu: 1200-1300, 1430-1515 **TA/Lab Engineer:** None

Grading Policy

THEORY

10% Quizzes

10% Assignments

15% OHT-1 (One Hour Test -1)

15% OHT-2 (One Hour Test-2)

50% ESE (End Semester Exam)

PRACTICAL

0% Project

0% Lab Assignments

Course Calendar

Topic
Introduction, Logic, Propositional Equivalences, predicates and Quantifiers
Basic Set Theory, Functions, Sequences and Summation
The Integers and Division, Methods of Proof; Mathematical Induction
Recursive Definition and Algorithms
Basic counting, Pigeon hole principles
Relations and their Properties
Relation Representation
Equivalence Relations, Partial Ordering
Intro to Graphs
Graph Isomorphism, Connectivity
Euler and Hamilton Path, Intro to Trees
Shortest Path Problem
Tree Sorting, Spanning Trees
Minimum Spanning Trees
Boolean function, Logic gates, minimization of circuits

Plagiarism Policy

SEECS maintains a zero tolerance policy towards plagiarism. While collaboration in this course is highly encouraged, you must ensure that you do not claim other people's work/ ideas as your own. Plagiarism occurs when the words, ideas, assertions, theories, figures, images, programming codes of others are presented as your own work. You must cite and acknowledge all sources of information in your assignments. Failing to comply with the SEECS plagiarism policy will lead to strict penalties including zero marks in assignments and referral to the academic coordination office for disciplinary action.

Quizzes Policy

The quizzes will be a surprise test and normally will be of ten minutes duration. The question framed is to test the concepts involved in recent lectures. Number of quizzes that will be used for evaluation is at the instructor's discretion. Grading for quizzes will be on a fixed scale of 0 to 10. A score of 10 indicates an exceptional attempt towards the answer and a score of 1 indicates your answer is entirely wrong but you made a reasonable effort towards the solution. Scores in between indicate very good (8-9), good (6-7), satisfactory (4-5), and poor (2-3) attempt. Failure to make a reasonable effort to answer a question scores a 0.

Assignments Policy

In order to develop comprehensive understanding of the subject, assignments will be given. Late assignments will not be accepted/graded. All assignments will count towards the total (No 'best-of' policy). Copying of assignments is highly discouraged and violations will be dealt with severely by referring any occurrences to the disciplinary committee.

Project Policy

Not Applicable as there is no project for the course

Tools/Software Requirements

Microsoft Word

Course Website

Through LMS