



DEPARTMENT OF MATHEMATICS N A M COLLEGE, KALLIKKANDY



CERTIFICATE COURSE 2021-2022

INTRODUCTION TO GRAPH THEORY

Offered by
Department of Mathematics
NAM College, Kallikkandy

About the course

The certificate course
"Introduction to Graph Theory"
be open to those who have
passed Higher Secondary
Examination. The aim of this
course is to make the learner
to acquire knowledge in basics
of
Graph Theory.

Course duration : 30 hours



For Details & Registration

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Introduction to Graph Theory(CC21MAT03)

Course Details

The Certificate Course “*Introduction to Graph Theory*” is open to all those who have passed higher secondary examination . The aim of this course is to make the learner acquire knowledge in basics of *Graph Theory*. The course will be of 30 hour duration, 5 hours in a week.

(Starting & ending date will be announced soon after the completion of registration)

There will be two assignments as a part of continuous evaluation and an examination after the completion of all classes. Marks obtained by the candidate both in Assignment and end examination will be considered for the purpose of determining the final results. A certificate will be issued by the College, to the candidate who have successfully completed the course. ***To pass the course, the candidate must secure at least 40% of the aggregate marks as a total of internal and examination marks..***

Mark Distribution

Total mark for the course is 50 marks

Maximum marks for assignment is 20 (10 for each assignment)

Maximum Mark for end examination is 30

End examination structure

Maximum Time for end examination is 2 hours

Question pattern is as follows (***All questions will be compulsory***)

Three questions with 2 mark each (Total 6)

Three questions of 4 mark each (Total 12)

Two question of 6 marks each (Total 12)

Grading

80% and above is first division with distinction and will obtain A+ grade

60% and above but below 80% is first class and will obtain A grade

50% and above but below 60% is second class and will obtain B grade

40% and above but below 50% is third class and will obtain C grade

Introduction and Objectives

With the increasing use of computers in society there has been a dramatic growth in all aspects of computer education. Much of the theory of Computer Science uses the area of Mathematics loosely described as discrete mathematics. Graph Theory is a branch of discrete mathematics. It has surprising applications, not just in computer science, but to physical, biological, social, engineering and commerce fields. A graph is a pictorial and mathematical representation of a set of objects where some pairs of objects are connected by links. The concepts of graph theory is used extensively in designing circuit connections in engineering fields.. In Computer Science, Graph theory is used for the study of algorithms. The relationships among inter connected computers in the network follows the principles of graph theory. Also in Science, the molecular structure and chemical structure of a substance, the DNA structure of an organism, etc., are represented by graphs.

. The major objective of this course is to provide an introduction to graph theory.

The course is designed for under graduate students studying Mathematics.

The content of the course include three modules and the topics in each module are mentioned in syllabus.

Objectives of the course are

- To understand the basic concepts in graph theory.
- To understand some applications of graph theory.

Prerequisite for the course

The Course is designed in a simple manner so that anyone with high school level Mathematical skills can follow it easily. Prerequisite include some basic logical ideas, basic numerical & computational skills.

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Course Content (Syllabus)

Module 1. Introduction to Graphs (7 hours)

- 1.1. Graph definition, examples
- 1.2. Graphs as model
- 1.3. Parallel edges, loops
- 1.4. Simple Graphs, bipartite Graphs

Module 2. Types of Graphs (8 hours)

- 2.1. Different types of graphs
- 2.2. Complete graphs
- 2.3. Vertex degree, Neighbourhood
- 2.4. Regular graphs

Module 3. Operations and Applications (15 hours)

- 3.1. Subgraphs, Operations in graphs
- 3.2. Matrix Representation of a graph
- 3.3. Some Applications

- References: 1. A First Look at Graph Theory, Clark John, Holton Derek Allan,
Allied Publishers, 1995
2. A text book of Graph Theory, R. Balakrishnan, K. Ranganathan