DEPARTMENT OF MATHEMATICS

REPORT ON VALUE ADDED COURSE CONDUCTED FROM

13TH OCTOBER 2021 TO 03RD JANUARY 2022

Title: Applications of Graph Theory

Date: 13/10/2021 to 03/01/2022

Venue: Room No - 311

Participants : 3rd year B.Sc(EMCs) students.

Resource Person: Mrs. Haritha A

Number of Students: 30

Event Co-Ordinator: Mr.Ravindranath K

Objective: The course is designed to provide Basic knowledge of applications of Graph Theory. To understand and apply the fundamental concepts in graph theory. To understand the method of finding shortest path in road or a network in Graph theory.

Department of Mathematics organized value added course on Applications of Graph Theory from 13th ctober 2021 to 03rd January 2022 for the students of 3rd year B.Sc(EMCs) through offline mode. The value added course was inaugurated by Dr.A.Nagarathna, Principal under the patronage of Sri.M.R. Janakiram (Honarable Director, Gokula Education Foundation), Sri.M.R.Kodandaram (Honarable Director, Gokula Education Foundation) and Sri.Ramprasad(Chief Executive, Gen Science, Gokula Education Foundation). The resource person to the course was Mrs. Haritha A. This course was conducted for 30 hrs.

The registration process started on 8th October 2021.The program started at 3:30pm on 13th october 2021 followed by the inauguration and then the sessions began with the brief introduction of the resource person and few words delivered by principal madam.

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The session started with the history of graph theory and she explained about Definition of a graph, identifying edges and vertices. Finding the degree of a vertex with examples.

She explained pseudo graph, planar graph, operations on graphs, Bipartite graphs, isolated vertex, pendent vertex, distance and centre of the graph, application of Euler graph, cayley's theorem, weighted graphs, rank of an incidence matrix, converting matrix to graph, rank of a circuit matrix.

The following are the topics covered in the sessions:

- Graphs and Simple Graphs, Graph Isomorphism
- Pictorial diagram of the graph
- Subgraphs, Vertex Degrees
- Connectivity, Euler and Hamilton Paths, Directed Graphs
- Konigsberg Bridge's Problem
- Fundamental Circuits, Defines bipartite graphs
- Lists basic properties of trees.
- Expresses and prove Cayley Theorem.
- Dijikstra's Algorithms
- Trees and its Applications.
- Fundamental Circuit Matrix
- Applications – The Shortest Path Problem, Sperner's Lemma .

She explained about Applications of graph theory in real life.Graph is a data structure which is used extensively in our real-life.

- Social Network: Each user is represented as a node and all their activities, suggestion and friend list are represented as an edge between the nodes.
- Google Maps: Various locations are represented as vertices or nodes and the roads are represented as edges and graph theory is used to find shortest path between two nodes.
- Recommendations on e-commerce websites: The "Recommendations for you" section on various e-commerce websites uses graph theory to recommend items of similar type to user's choice.
- Graph theory is also used to study molecules in chemistry and physics.
- Modern numerical techniques for wide range of PDEs, useful in science and engineering applications.

The main conclusion of this course was connected with the enhancing of students understanding of mathematics and their interest in mathematical subjects in general.

Outcome: Through this value added course students will be able to define the basic concepts of graphs, directed graphs, and weighted graphs. The students will be able to apply principles and concepts of graph theory in practical situations.

Value Added Course on "Applications of Graph theory" Photos :

Bengaluru, Karnataka, India
7, 1st Cross Rd, AG's Layout, Mathikere, Bengaluru,
Karnataka 560054, India
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