Course Code	Course Title	C	H	I	E	T
17U6MMC13	Graph Theory	4	4	25	75	100

Learning Objectives

This course is to provide a strong foundation in Graph Theory which has diverse applications in many areas.

Learning Outcomes

On satisfying the requirement of this course, students will have the knowledge and skills to

- Explain the basic concepts of graph theory.
- Develop a graph theoretical model for a real life situations.
- Describe and solve some real time problems using the concepts of graph theory.

Unit I Graphs and Subgraphs

Definition and examples of graphs – Degrees–Subgraphs – Isomorphism – Ramsey Numbers.

Unit II Matrices and Degree Sequences

Independent sets and Coverings– Matrices – Operation on Graphs – Degree Sequences – Graphic Sequences.

Unit III Connectedness and Eulerian Graphs

Walks – Trails and Paths – Connectedness and Components – Blocks – Connectivity – EulerianGraphs.

Unit IV Hamiltonian and Tree Graphs, Matching's

Hamiltonian Graphs – Characterization of Trees – Centre of a tree – Matching's.

Unit V Planarity and Colourability

Definition and Properties– Chromatic Numbers and Chromatic Index – Chromatic Polynomials.

Text Book:

S.Arumugam and S.Ramachandran, Invitation to Graph Theory, Reprint 2017,Scitech Publications (India) Pvt Ltd.

Chapters: 2(2.1 – 2.6, 2.8– 2.9), 4(4.0 – 4.4), 5(5.1, 5.2), 6(6.0 – 6.2), 7(7.0, 7.1), 8(8.1), 9(9.1& 9.4).

Reference Books:

1. Gary Chartrand and Ping Zhang,AnIntroduction to Graph Theory, 4th Reprint 2008, Tata McGraw-Hill Edition.
2. Robin J. Wilson, Introduction to Graph Theory, 4th Edition 2012, Pearson Publication.