

# MTH304 Applications of Graph Theory

**Level:** 3

**Credit Units:** 5 Credit Units

**Language:** ENGLISH

**Presentation Pattern:** EVERY JAN

## Synopsis:

Graph theory has widely used in many areas such as operational research, computation, chemistry and electronics as graphs are natural models for a variety of situations. This course focuses on some important real-world applications which include the topics of project planning and scheduling, electrical circuit analysis, kinematic design, some geometric design, error-correcting codes and experiment design

## Topics:

- Planning and scheduling.
- Knapsack problem.
- Circuit analysis.
- Solving circuit equations.
- Geometric design.
- Incidence structures.
- Kinematic design.
- Planar kinematic systems.
- Error-correcting codes.
- Hamming codes.
- Blocking in experimental design.
- Balanced design and codes.

## Learning Outcome:

- Show how to prove a mathematical statement in graph theory.
- Determine whether a given design is balanced.
- Calculate the vertices, edges, faces of a given polyhedron.
- Demonstrate mathematical reasoning by providing proofs to mathematical statements in graph theory.
- Apply algorithms covered in this course to graph theory problems.
- Compute spanning trees of a given graph.

## Assessment Strategies - Regular Semester (Evening Class):

Components	Description	Weightage Allocation (%)
Overall Continuous Assessment	COMPUTER MARKED ASSIGNMENT 1	10
	TUTOR-MARKED ASSIGNMENT 1	20
Overall Examinable Components	Written Exam	70
<b>Total</b>		<b>100</b>

\*The information listed is subject to review and change.