

**Tennessee Technological University
Mathematics Department**

MATH 6700: Graph Theory

- I. COURSE DESCRIPTION FROM CATALOG:**
Fundamental concepts of undirected and directed graphs, trees, connectivity, traversability, colorability, network flows, matchings and coverings, Ramsey theory, and graph minors. Lec. 3. Cr. 3.
- II. PREREQUISITE(S):**
C or better grade in Math 3400 or consent of instructor.
- III. COURSE OBJECTIVE(S):**
To learn fundamental concepts of Graph Theory.
- IV. STUDENT LEARNING OUTCOMES:**
Students will:
- Write precise and accurate mathematical definitions of objects in graph theory;
 - Develop skill in writing proofs in graph theory including direct arguments, indirect arguments, and proofs by induction;
 - Demonstrate understanding of fundamental notions, results, and algorithms in graph theory such as isomorphism, trees (Greedy algorithm and Kruskal's algorithm), Eulerian circuits, Hamilton cycles, planarity, vertex coloring (4 Color Theorem), vertex and edge connectivity, matchings (Hall's Marriage Theorem), and network flows (Max flow- Min cut Theorem), Ramsey theory and graph structure theory.
- V. TOPICS TO BE COVERED:**
Graphs, trees, connectivity, traversability, colorability, network flows, matching and coverings, Ramsey theory, and graph minors.
- VI. ADDITIONAL INFORMATION:**
- VII. POSSIBLE TEXTS AND REFERENCES:**
Graph Theory 5th edition by Reinhard Diestel
- VIII. MAJOR TEACHING METHOD:**
Lecture
- IX. SPECIAL INSTRUCTIONAL MATERIALS:**
None
- X. ANY TECHNOLOGY THAT MAY BE USED:**
- XI. STUDENT ACADEMIC MISCONDUCT POLICY:**
Maintaining high standards of academic integrity in every class at Tennessee Tech is critical to the reputation of Tennessee Tech, its students, alumni, and the employers of Tennessee Tech graduates. The Student Academic Misconduct

Policy describes the definitions of academic misconduct and policies and procedures for addressing Academic Misconduct at Tennessee Tech. For details, view Tennessee Tech Policy 217-Student Academic Misconduct at [Policy Central](#).

XII. DISABILITY ACCOMMODATION:

Students with a disability requiring accommodations should contact the Accessible Education Center. An Accommodation Request (AR) should be completed as soon as possible, preferably by the end of the first week of the course. The Accessible Education Center is located in the Roaden University Center, Room 112; phone 372-6119. For details, view Tennessee Tech's Policy 340-Services for Students with Disabilities in [Policy Central](#).