



## Syllabus

Course No.	1900733W	College	Science	Dept.	Mathematics
Teacher	王彤 (Tong Wang)				
Time	2022.12.19—2023.01.06				
Course Name	English	Graph Theory			
	Chinese	图论			
Course credit hours	Total	Theory	Office Hour or Practice	Credits	
	70	60	10	12.0	

### Course description:

This course, in a modern point of view, provides the most basic concepts of graph theory and what we believe to be the most interesting and important theoretical result in the field, and types of applications to real-world problems that can be modeled by graphs as well as efficient algorithms for their solutions. The course covers basic concepts of graph, tree and graphic space, plane graph and planar graph, network flow and connectivity, matching and independent set, coloring theory, graph and group.

### Requirements for courses; ability and knowledge in advance

Preparatory Courses: Combinatorics

### Background of Course:

A graph consists of a set of elements together with a binary relation defined on the set. A graph can be represented by a diagram in which the elements are shown as points and the binary relation as lines joining pairs of points. It is this representation which gives graph theory its name and much of its appeal. However, the true importance of graphs is that, as basic mathematical structures, they arise in diverse contexts, both theoretical and applied. The concepts of a graph was known already to

Euler in the eighteenth century, but it was the notorious Four-Color Problem, posed by F. Guthrie in the mid-nineteenth century, that spurred the development of this simple concept into a flourishing theory. In the twentieth century, interaction between graph theory and linear algebra, probability theory, number theory, group theory, geometry, topology, and other branches of mathematics have led to further developments in the subject. In recent decade, its fundamental links with operation research and computer science have resulted in the fast growth and greatly increased prominence of graph theory.

**Teaching methods (Lectures, practice, etc.)**

Lectures and self-study

**Forms of evaluation and requirements**

Homework & Quiz (40% )

Attendance (10%)

Final Exam (50%)

	Name	Publisher	Author	Year	Price
<b>Textbook</b>	Theory and Application of Graphs	The Press of University of Science and Technology of China	Junming Xu	2004	¥160
<b>College</b>					