

AS MATHEMATICS COURSE
(Offered in AY 2017/18 Semester 1)

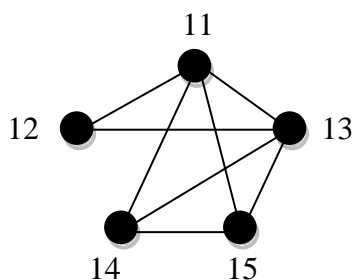
Course Code: AAM 43J
Course Title: Graph Theory
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Course Description:

This module will use a text book mentioned below. Some details (e.g., the table of contents and the first chapter) on this book can be found from website <http://math.nie.edu.sg/fmdong/Courses/Courses.htm> or <http://www.worldscibooks.com/mathematics/6313.html>.

The first four chapters of this book will be included in this module.

A graph is a diagram consisting of dots and lines, where a line is always between two dots and in Graph Theory, such a line is called *an edge*. Graphs are often used to model some situations for solving problems. For example, to find the number of coprime pairs in the set $\{11, 12, 13, 14, 15\}$, one can draw a graph, as shown below, which has five dots representing the numbers in this set and for each pair of dots, one line is drawn to join them whenever the corresponding numbers are coprime. Thus the answer of this question is equal to the number of edges in this graph.



Graph Theory is an area in discrete mathematics which studies the structures of graphs. It has applications not only in other branches of mathematics but also in many other scientific disciplines. This module is aimed mainly at helping students improve their skills of rigorous mathematical reasoning and proof.

Textbook:

K.M. Koh, F.M. Dong and E.G. Tay, *Introduction to Graph Theory*, World Scientific, 2007. (This book can be bought from NIE book store. **Everyone taking this module should have one copy.**)

Assessment Mode:

Three tests and final exam