

MATH1004 Discrete Mathematics**3 credit points**

Assumed knowledge: HSC Mathematics Extension 1.

Prohibition: May not be counted with MATH1904 or MATH2011.

Contact Hours: 6 per week (Summer School), or 3 per week (Semester 2).

Assessment: One 1.5 hour examination and assigned work.

This unit is an introduction to fundamental aspects of discrete mathematics, an area of mathematics which deals with “things that come in chunks that can be counted.” It focusses on the enumeration of the Catalan numbers.

Sets. Functions.

Counting principles. Ordered selections. Unordered selections. The inclusion-exclusion principle. Multinomial coefficients.

Boolean expressions. Karnaugh maps. Logic. Digital Logic. Mathematical induction.

Generating functions. Linear recurrence relations.

Graphs and trees.

Textbook

K G Choo and D E Taylor. *Introduction to Discrete Mathematics*. Longman Cheshire, Australia, 1995.

Reference book

P F Dierker and W L Voxman. *Discrete Mathematics for Computer Scientists*. Harcourt-Brace-Jovanovic, San Diego, CA, USA, 1986.