NGEE ANN SCHOOL OF INFOCOMM TECHNOLOGY

Diploma Plus Programme

Certificate in Advanced Computing Mathematics (CACM)

This programme is designed especially for and will benefit IT-related students by helping to build a stronger mathematics foundation required for pursuing degree programs in computing in both the local and overseas universities. Students who have obtained this Diploma Plus are deemed to have equivalent qualification in A-level Mathematics, thereby meeting the prerequisite to read all modules carrying A-level Mathematics as prerequisite, upon admission/matriculation to NUS.

The programme consists of three modules (CACM1, CACM2 and CACM3). A student who has successfully completed the three modules will be awarded the Certificate in Advanced Computing Mathematics under the framework of Ngee Polytechnic's Diploma Plus Programme.

There are three compulsory modules as follows with 3 credit units (45 hours) each:

- Advanced Statistics (CACM1),
- Calculus (CACM2),
- Discrete Mathematics (CACM3).

They are offered in semester 2, 3 and 4 respectively. The total number of contact hours for each module is 45. Each module includes lectures cum tutorial classes with a maximum of 3 contact hours per week.

Module 1: Advanced Statistics (CACM1)

This module provides a foundation in mathematics for students who intend to enrol in university courses such as IT and business. It includes further applications of probability and statistics and introduces concepts of sampling and hypothesis testing.

The main emphasis in this module is to develop students' ability to analyse, formulate and solve different types of problems, as well as, to work with data and perform statistical analysis. Topics covered include probability distributions, sampling, hypothesis testing and correlation and regression.

Module 2: Calculus (CACM2)

This module provides a foundation in mathematics for students who intend to enrol in university courses such as IT and business. It includes the concepts and techniques of differentiation and integration, applications of such techniques, as well as, concepts and applications of Maclaurin's series and differential equations.

The main emphasis in this module is to develop students' ability to analyse, formulate and solve different types of problems. Topics covered include differentiation, integration, applications of differentiation and integration, Maclaurin's series and differential equations.

Module 3: Discrete Mathematics (CACM3)

This module provides the students with the basic skills and understanding of the mathematical principles and techniques required in the area of computing. The notations and concepts taught will enable the students to translate actual problems into abstractions, to formulate formal descriptions, and to reason about their properties in a rigorous way.

Topics covered include set theory, logic, relations, functions, graphs and trees. Where appropriate, computer-related applications of mathematics will be introduced to the students to show the relevance of mathematics in computing.