

Bachelor of Science (Hons) Applied Mathematics with Computing **KP/JPS(A6034)05/13**

This programme shapes its students to be versatile and analytical problem-solvers using mathematical modelling coupled with computing dexterity. By offering subjects such as partial differential equations, ordinary differential equations and statistics, the students are introduced to the immense ability of mathematical models in analyzing current events. Due to the large data set that an analyst has to deal with, this programme equips students with programming skills, simulation techniques and computational problem-solving techniques. Realising the importance of training graduates in an interdisciplinary environment, it also offers modules in professional writing and presentation skills to enhance students' communication of their ideas.

Objectives of Course of Study

1. To cultivate analytical problem solvers for a variety of industries;
2. To inculcate an interest in research and development with an interest in mathematical modelling;
3. To develop professionalism in a global market.

Programme Learning Outcomes

Upon the completion of the programme, the students are expected to:

- A. Demonstrate the ability to work independently and to cooperate and contribute as a team, and to serve the community and nation;
- B. Demonstrate the ability to self-develop and self-learn, and to engage in life-long learning;
- C. Demonstrate skill in abstracting the essentials of problems, formulating them mathematically and obtaining solutions by appropriate methods;
- D. Demonstrate knowledge of key mathematical concepts and topics, both explicitly and by applying them to the problems solving;
- E. Demonstrate the skills to utilise the modern software applications for the mathematical computation, modelling, simulations, and statistical analysis;
- F. Relate the importance of practical issues such as ethics, culture, social, economics, management skills, and human relation factors; as well as apply these factors in mathematical related disciplines;
- G. Demonstrate the ability to understand and commit themselves to professional responsibilities;
- H. Demonstrate the ability to write effectively and also communicate effectively with individuals from different backgrounds.

Careers

Graduates can find employment in banking and investment as risk analysts, quantitative analysts/developers, simulation developers, equity analysts, compliance officers, foreign exchange traders, statisticians, inventory strategists, credit analysts or portfolio analysts. They could also seek employment in manufacturing as cryptologists, QC/QA officers, market researchers, system analysts, operations research analysts, and data mining engineers, production planners or business analysts. Employment opportunities are also available in related areas such as insurance, education and information and communication technology.

Subjects

Year 1

Introductory Calculus
Introduction to Scientific Computing
Discrete Mathematics with Applications
Programming Concepts and Design
Introduction to Computer Organisation and Architecture
Intermediate Calculus
Fundamentals of Linear Algebra
Probability and Statistics I
Probability and Statistics II
Data Structures and Algorithms
Liberal Arts Elective* (Choose 1 subject)
Basic Professional Writing

Year 2

Advanced Calculus
Linear Algebra
Object-Oriented Programming
Major Elective* (Choose 6 subjects)
Minor Elective* (Choose 2 subjects)
Liberal Arts Elective* (Choose 1 subject)
Industrial Training

Year 3

Project
Major Electives* (Choose 4 subjects)
Minor Electives* (Choose 3 subjects)
Liberal Arts Elective* (Choose 1 subject)

Major Electives*

Elementary Real Analysis
Introduction to Combinatorics
Operations Research
Mathematical Statistics
Theory of Interest
Ordinary Differential Equations
Graph Theory
Introduction to Abstract Algebra
Linear Regression Analysis
Applied Nonparametric Statistics
Design and Analysis of Experiment
Statistical Quality Control
Numerical Methods
Partial Differential Equations
Introduction to Stochastic Processes
Introduction to Coding Theory
Cryptology
Complex Analysis
Loss Models

Classical Mechanics and Tensor Analysis
Survival Models
Statistical Simulation
Credibility Theory

Minor Electives*

Website Development
Artificial Intelligence
Multimedia Technology
Operating Systems
Database Design and Implementations
Simulation, Modelling and Analysis
Parallel Processing
Advanced Artificial Intelligence
Data Communications and Networks
TCP/IP Internetworking

Liberal Arts Electives*

Oral Communication and Interpersonal Skills
Public Speaking and Oral Presentation
Introduction to Sociology
Academic Writing
Business Accounting I
Business Accounting II
Microeconomics I
Macroeconomics II

*Subject to change/availability

MQA Subjects

Bahasa Kebangsaan/Foreign Language
Pengajian Malaysia
Pendidikan Moral/Pengajian Islam

University Subjects

Co-Curriculum
Sun Zi's Art of War and Business Strategies