Bachelor of Science (Hons) in Mathematics and Information Engineering

**Objectives:**
- Acquire Analytical Problem Solving Skills
- Ability to develop Innovative and Creative Solutions
- Attain Solid Foundation for Research

**Mathematics**
- Analysis
- Calculus
- Algebra
- Discrete Math
- Probability
- Algorithms
- Data Structures
- Information Theory
- Signal Processing

**Information Science**
- Machine Learning
- Big Data
- Communications
- Networking
- Cyber Security

www.mie.cuhk.edu.hk
An interdisciplinary programme jointly offered by Department of Information Engineering and Department of Mathematics
Mathematics is our Passion ...

Overview

Mathematics and Information Engineering (MIEG) is a selective interdisciplinary programme jointly offered by the Faculty of Science and the Faculty of Engineering, with the Department of Mathematics and the Department of Information Engineering being responsible for the management and operations.

This is a rewarding programme designed to equip gifted students with solid fundamental knowledge in mathematics, information and computer sciences. MIEG graduates go for postgraduate studies at the top universities worldwide or pursue independent research or careers in various sectors.

Programme Features

The programme places strong emphasis on research and encourages independent studies under the supervision of professors from either department. Students who excel in their studies will have opportunities to take up research work during their later years of study.

Admission Channels for Different Qualifications

For secondary school students taking HKDSE. Admission is based on the results of 4 Core and 2 Electives with subject weighting.

<table>
<thead>
<tr>
<th>Category</th>
<th>Subject Group</th>
<th>Min. Level</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core</td>
<td>English Language</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Chinese Language</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Mathematics (Compulsory Part)</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Liberal Studies</td>
<td>3</td>
<td>0.5</td>
</tr>
<tr>
<td>Elective</td>
<td>Mathematics Extended Module I or II</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Physics / Chemistry / Biology / Combined Science / Information and Communication Technology</td>
<td>4</td>
<td>1.5</td>
</tr>
<tr>
<td></td>
<td>All other Elective Subjects</td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>
**Curriculum**

<table>
<thead>
<tr>
<th>Year</th>
<th>Level</th>
<th>Subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Beginner</td>
<td>Single-variable Calculus, Linear Algebra, Foundations of Modern Mathematics, Basic Programming</td>
</tr>
<tr>
<td>3</td>
<td>Advanced</td>
<td>Real and Complex Analysis, Algebra, Digital Communications, Analysis of Algorithms, Computer Networks</td>
</tr>
<tr>
<td>4</td>
<td>Expert</td>
<td>Final Year Project, Major Electives: Random Processes, Information Theory, Image Processing, Machine Learning, Cybersecurity, etc.</td>
</tr>
</tbody>
</table>

**Graduation Requirements**

- Major Requirement: 87 units
- University Core Requirement: 39 units
- Total: 126 units

80+ Major Electives for you to choose, from fields of *Big Data, Information Processing, Cyber Security, Internet Engineering, Telecommunications, Computer Networking, Software Engineering, and Mathematics.*

**Non-JUPAS (Local)**

For local applicants with qualifications other than HKDSE, such as GCE-AL, IB, SAT/AP or other qualifications, please check the programme website for relevant information.

**Mainland**

Mainland China students who are current Gaokao candidates must apply through the National Colleges and Universities Enrolment System (全国普通高校统一招生计划).

**International**

For non-local applicants who require a student visa, or entry permit to study in Hong Kong, and with overseas qualifications such as GCE-AL, International-AL, IB, and other high school qualifications from recognised institutions, please contact us for more information.

*Note: Applications of these two schemes will be assessed on a case-by-case basis.*
Testimonials

LIN Yinyin  
2020 graduate  
Currently an MSc student in EECS at UC Berkeley.

"The mathematical bottom-up type of thinking and the engineering top-down type of thinking -- these two types of thinking trained us to be both creative and rigorous."

LI Chenghui  
2018 graduate  
First destination: MSc in IT at CMU. Currently a Research Engineer at Facebook Reality Labs (FRL).

"The MIEG programme is undoubtedly good for pursuing a higher degree. Most of the graduates can get some nice offers when applying for a Master or PhD degree after graduation."

DAI Yaxu  
2016 graduate  
First destination: MSc in CSE at UC San Diego. Currently a Project Manager at SenseTime.

"There are amazing resources for you to experience the excitement of coursework, research, and internship. Many approachable professors will help you achieve your goals."

YIN ZI  
2013 graduate  
First destination: PhD in EE at Stanford. Currently a Quantitative Analyst at D. E. Shaw & Co.

"Good engineering capability is required for experimentation, and a sharp math mind is needed for the understanding and analysis of results. A complete research cycle consists of both aspects."

Contact Persons

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