Mathematics and Information Engineering

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The Chinese University of Hong Kong

Programme Exploration Day
25 May 2022
About MIEG programme

MIEG Programme

Jointly offered by the Faculty of Science and Faculty of Engineering

Managed by

- Department of Mathematics (Faculty of Science)
- Department of Information Engineering (Faculty of Engineering)

Curriculum:

- Higher level math courses: along with math majors (rigorous treatment)
- Engineering Courses: mainly with IERG and some with CSCI students
About MIEG programme

Objectives:
1. Acquire Analytical Problem Solving Skills
2. Ability to develop Innovative and Creative Solutions
3. Attain Solid Foundation for Research
What does the curriculum look like?

**Faculty Package**
- Linear Algebra, Foundation of Modern Mathematics
- Calculus and programming classes

**Year 2**
- Discrete Structures and Probability, Fourier Analysis
- Multivariable Calculus, Basic Analog and Digital Circuits
- Systems Programming, Data Structures, Communication Systems

**Year 3**
- Design and Analysis of Algorithms,
- Information and Software Engineering Practice, Computer Networks
- Real Analysis, Complex Analysis, Algebra

**Year 4**
- Final Year Projects I and II
- and Major Electives

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.*
What are some of the areas you can specialize in?

A wide range of **major electives** allow you to specialize in

- Communications Systems and Computer Networks
- Multimedia (Image and Video) Processing, Machine Learning (Artificial Intelligence)
- Coding and Information Theory
- Theory of Computation
- Data Sciences (Big Data), Optimization
- Formal and Abstract Mathematics
To which graduate programs have some of the alumni gone?

Data (2010 - 2020)

M.S./Ph.D. in Electrical (Information) Engineering

M.S./Ph.D. in Computer Science and Mathematics

M.S./Ph.D. in Finance

Remark
- More than 60 percent of the alumni of this program goes to graduate schools. Rest find jobs in a variety of industries like finance, programming, etc.
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<table>
<thead>
<tr>
<th>Institution</th>
<th>Programme</th>
<th>No. of Offers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carnegie Mellon University</td>
<td>MS in Information Networking</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>MS in Computer Vision</td>
<td>1</td>
</tr>
<tr>
<td>Princeton University</td>
<td>PhD in Electrical and Computer Engineering</td>
<td>1</td>
</tr>
<tr>
<td>Columbia University</td>
<td>MS in Computer Science</td>
<td>1</td>
</tr>
<tr>
<td>University of Maryland</td>
<td>PhD in Electrical Engineering</td>
<td>1</td>
</tr>
<tr>
<td>University of Illinois Urbana-Champaign</td>
<td>PhD in Computer Science</td>
<td>1</td>
</tr>
<tr>
<td>University of Michigan</td>
<td>PhD in Computer Science and Engineering</td>
<td>1</td>
</tr>
<tr>
<td>University of Chicago</td>
<td>MS in Computational and Applied Mathematics</td>
<td>1</td>
</tr>
<tr>
<td>University of California, San Diego</td>
<td>MS in Computer Science</td>
<td>1</td>
</tr>
<tr>
<td>Georgia Tech</td>
<td>PhD in Computer Science</td>
<td>1</td>
</tr>
<tr>
<td>Purdue University</td>
<td>PhD in Computer Science</td>
<td>1</td>
</tr>
<tr>
<td>EPFL</td>
<td>PhD in Computer and Communication Sciences</td>
<td>2</td>
</tr>
<tr>
<td>ETH Zurich</td>
<td>MS in Computer Science</td>
<td>1</td>
</tr>
<tr>
<td>CUHK</td>
<td>PhD in Information Engineering</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>PhD in Systems Engineering and Engineering Management</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>PhD in Computer Science and Engineering</td>
<td>1</td>
</tr>
</tbody>
</table>
The secret behind the numbers

- You reap what you sow
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- It is designed for the top students (Yearly intake: \( \approx 15 \))
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**Important**: If you are considering this programme, please read: http://www.mie.cuhk.edu.hk/advice.shtml
JUPAS Admission for MIEGN

- Secondary school students taking Hong Kong Diploma of Secondary School Examination (HKDSE) should apply for admission through the Joint University Programmes Admissions System (JUPAS)
- Choose "Mathematics and Information Engineering / MIEGN" of CUHK (JUPAS Code: JS4733) in JUPAS application
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Minimum Admission Requirements (HKDSE applicants for 2022-23 onwards):

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<thead>
<tr>
<th>Minimum admission requirements</th>
<th>Subject</th>
<th>Minimum Level</th>
<th>Subject Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 Core Subjects</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>2 Elective Subjects</td>
<td>Mathematics Extended Module 1 or 2</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Preferred subjects: Physics / Chemistry / Biology / Combined Science / Information and Communication Technology</td>
<td>4</td>
<td>Preferred subjects: 1.5</td>
</tr>
<tr>
<td></td>
<td>Any other elective subjects</td>
<td></td>
<td>Any other subjects: 1</td>
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Our advice

Your next step: gather lots of information

► From Alumni

► From Webpage: http://www.mie.cuhk.edu.hk

► From Prof. Chandra Nair, Programme Director (MIEG)
  - Email: chandra@ie.cuhk.edu.hk
  - Webpage: http://chandra.ie.cuhk.edu.hk
  - Office: SHB 811

► From me (send email to make an appointment)
  - My email: ctli@ie.cuhk.edu.hk
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QUESTIONS