# HERIOT WATT UNIVERSITY

UK | DUBAI | MALAYSIA

# Mathematical and Computer Sciences
## 2025

# About
## the School of Mathematical and Computer Sciences

The School of Mathematical and Computer Sciences at Heriot-Watt University Malaysia is a leading academic institution that offers a comprehensive range of programmes in the fields of mathematics and computer science. With a strong focus on research and innovation, the school provides students with a dynamic and intellectually stimulating learning environment.
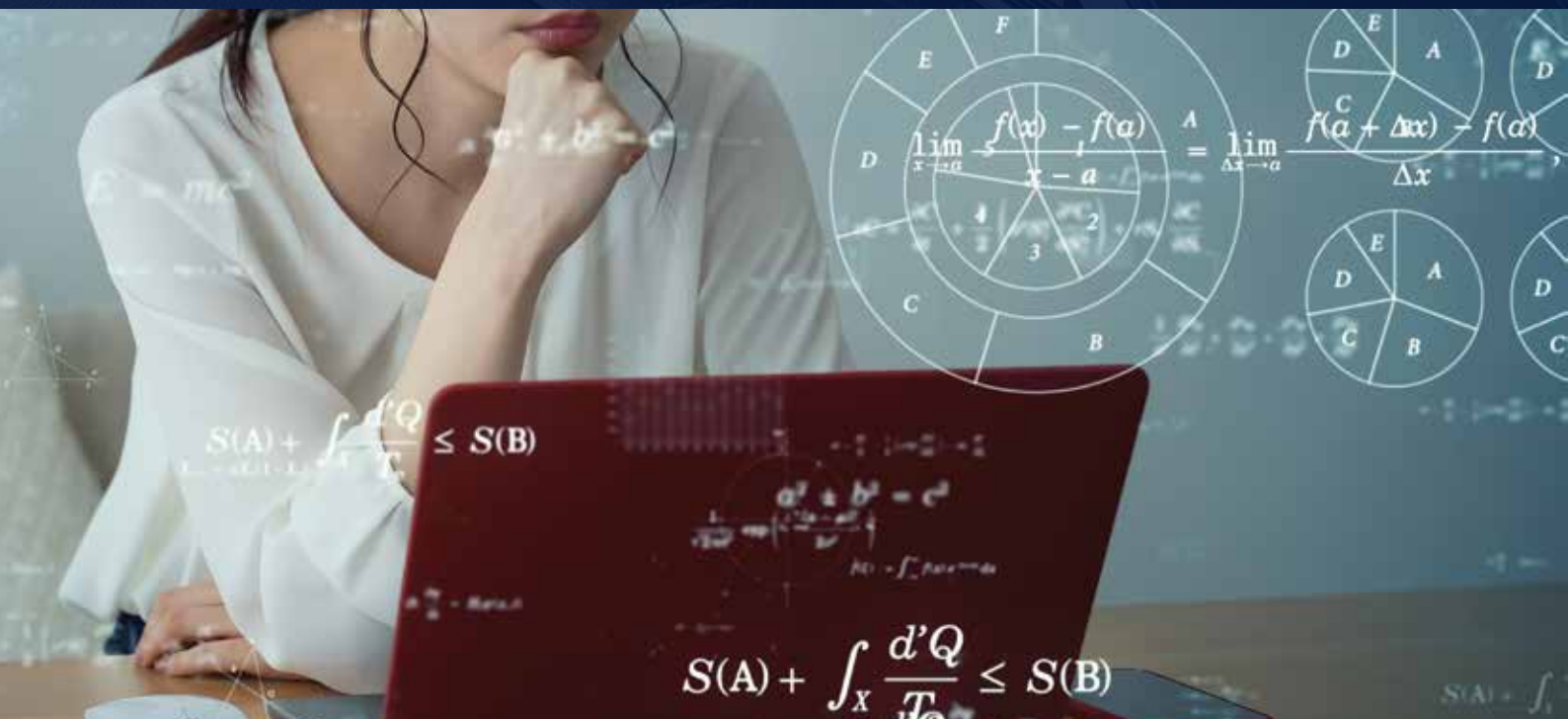
At the School of Mathematical and Computer Sciences, students have access to state-of-the-art facilities and cutting-edge technology, enabling them to develop their analytical and problem-solving skills. The school comprises of highly qualified and experienced academics who are dedicated to delivering quality education and mentoring students to achieve their full potential.

The school offers a wide range of undergraduate programmes in statistical data science, computer science, actuarial science and information systems with data analytics. These programmes are designed to equip students with the necessary knowledge and skills to excel in their chosen fields.

In addition to academic excellence, the School of Mathematical and Computer Sciences fosters a supportive and inclusive community, encouraging collaboration and interaction among students and faculty members. Various extracurricular activities and student organisations provide opportunities for personal growth and networking.

By studying at the School of Mathematical and Computer Sciences at Heriot-Watt University Malaysia, students can expect a rigorous academic curriculum, access to world-class resources, and a supportive learning environment that prepares them for successful careers in mathematics and computer science.

# BSc (Hons) Actuarial Science

KPT/JPS (R2/0542/6/0012) (MQA/FA4167) 06/29

## Intake: September

Actuaries manage risk and uncertainty, and evaluate the likely impact of future events. Heriot-Watt University's Actuarial Science programme is world-famous for its excellence. It contains all the courses that are essential for ensuring a flying start to a career as an actuary whilst at the same time fostering highly transferable mathematical skills.

If you excel at mathematics, enjoy problem solving, and are looking for a degree that will prepare you for a rewarding career – both intellectually and financially – Actuarial Science could be the programme for you.

### ACCREDITATION

Professional actuarial exams are essential for students pursuing a career in actuarial science. The Institute and Faculty of Actuaries (IFoA) offers these exams which assess the knowledge and skills of aspiring actuaries and are recognised globally as a benchmark for professional competence in the field.

The programme is designed to prepare students for these exams and equip them with the knowledge and skills needed to succeed in the actuarial profession. Heriot-Watt University offers Actuarial Science students the opportunity to obtain exemptions for a maximum of 11 papers* from the Institute and Faculty of Actuaries' (IFoA's) professional exams, allowing them to streamline their academic journey by recognising their prior coursework and providing a pathway towards achieving their actuarial qualifications. The degree is also accredited by the Royal Statistical Society.

*This relates to our MSc Actuarial Management programme. We are also recognised by the Society of Actuaries (SOA) under Universities & Colleges with Actuarial Programs-Advanced Curriculum (UCAP-AC), which is the highest level of recognition in Malaysia.*

Accredited by:

## YEAR 1

- Probability and Statistics A & B
- Multivariable Calculus
- Real Analysis
- Actuarial and Financial Mathematics
- Linear Algebra
- Algorithmic and Scientific Programming
- Data Science Life Cycle

## YEAR 2

- Life Insurance Mathematics A & B
- Stochastic Processes
- Survival Models
- Statistical Models A & B
- Economics for the Professions
- Finance and Financial Reporting

## YEAR 3

- Financial Markets and Investments
- Financial Derivatives
- Time Series & Machine Learning
- Risk Theory

**Optional and elective courses available for Year 3 include:**
- Further Statistical Methods
- Climate Change and Sustainability
- International Bonds & Currency Markets
- Optimisation
- Bayesian Inference & Computational Methods
- Database Management
- Advanced Machine Learning
- Taxation (Malaysia)

## Testimonial

**Nicholas Chong Ing Hooi**

*BSc (Hons) Actuarial Science (Class of 2016), Vice President of Commercial and Product at pitchIN*

I am proud of the impact that Heriot-Watt University Malaysia has created over the last decade - helping students be more resilient with positive education, empowering them to create their impact and more recently, enabling the underserved community through the Leaders with Impact Scholarship, just to name a few.

# BSc (Hons) Computing Science

KPT/JPS (N/481/6/0833) (MQA/PA14530) 06/26

## Intake: January, September

In today's era of digitisation, computer scientists and software engineers are leading the way in driving the latest advancements across a wide range of fields such as artificial intelligence, cybersecurity, bioinformatics, healthcare, and data informatics. Our BSc (Hons) Computing Science degree focuses on software development and algorithms, with the aim of creating robust and user-friendly systems for industry and commerce.

This programme is designed to provide a well-balanced mix of theoretical knowledge and practical experience, with a strong emphasis on the latest tools and techniques, to help you develop the next generation of software tools that other system contractors will use. Our curriculum is strongly supported by our academic staff's research expertise and industrial linkages, ensuring that students receive an all-rounded education.

### ACCREDITATION
We have obtained the initial full accreditation from BCS, The Chartered Insitute of IT, UK.

Accredited by:



### YEAR 1
• Software Development A and B
• Mathematics for Computer Science
• Introduction to Interaction Design
• Introduction to Computer Systems
• Introduction to Software Engineering
• Data Structures and Algorithms
• Database Management Systems

### YEAR 2
• Software Engineering
• Data Communications and Networking
• Foundations 1 & 2
• Programming Languages
• Professional Development
• Operating Systems and Concurrency
• Hardware-Software Interface
• Industrial Training (Summer Internship)

### YEAR 3
• Research Methods and Requirements Engineering
• Computer Network Security
• Artificial Intelligence and Intelligent Agents
• Design and Implementation
• Project Testing and Presentation

**Optional courses available for Year 3 include courses from the Artificial Intelligence, Data Science or Cybersecurity streams:**
• Data Mining and Machine Learning
• Big Data Management
• Data Visualisation and Analytics
• Applied Text Analytics
• 3D Graphics and Animation
• Advanced Network Security

## Testimonial



**Sze Kah Shen**
*BSc (Hons) Computing Science (Class of 2024), Software Engineer at JurisTech*

The programme is structured in such a way that students have the opportunity to explore various areas in computing science. This has been incredibly enlightening for me because, initially, I had the impression that the programme would solely focus on programming. However, it has turned out that I am able to delve into networking, database management, user interface design, and more. This exposure has proven to be highly advantageous for career planning purposes.

# BSc (Hons) Statistical Data Science

KPT/JPS (R/462/6/0018) (MQA/FA8513) 06/27

## Intake: September

The applications of statistical data science range from economics and medicine to social and environmental sciences. Our BSc (Hons) in Statistical Data Science provides a blend of both theoretical and applied elements of modern statistics, and aims to give students the training in modelling, analysing and interpreting real data that is required in the economy, industry and research.

The first year of the programme covers basic mathematics, probability and statistics. The final two years focus on specialist topics of statistical modelling and advanced courses in mathematics and data science. A variety of statistical computer packages are used.

Our programme is accredited by the Royal Statistical Society. It is possible for students who have completed the programme to apply for some exemptions from the Institute and Faculty of Actuaries (IFoA) professional examinations.



Accredited by:



ROYAL
STATISTICAL
SOCIETY

DATA | EVIDENCE | DECISIONS

**YEAR 1**
- Probability and Statistics A & B
- Multivariable Calculus
- Real Analysis
- Actuarial and Financial Mathematics
- Linear Algebra
- Algorithmic and Scientific Programming
- Data Science Life Cycle

**YEAR 2**
- Statistical Models A & B
- Further Statistical Methods
- Stochastic Processes
- Bayesian Inference and Computational Methods

Optional and elective courses available for Year 2 include:
- Artificial Intelligence and Intelligent Models
- Interactive Design
- Survival Models
- Database Management Systems
- Ordinary Differential Equations

**YEAR 3**
- Statistics Dissertation A & B
- Time Series & Machine Learning

Optional and elective courses available for Year 3 include:
- Data Assimilation
- Optimisation
- Financial Markets and Investments
- Sustainability
- Risk Theory
- Database Management Systems
- Big Data Management
- Statistics Special Topic
- Financial Derivatives
- Advanced Machine Learning

## Testimonial



**Miracle Wong**

*BSc (Hons) Statistical Data Science
(Class of 2023),
Data Scientist (Product Analytics) at Grab*

Even though I chose to study at Heriot-Watt due to the course, what astonished me was the high quality of teaching and academic support. The lecturers are responsive to feedback, eager to address my numerous queries, and motivate me to delve deeper into my degree. With their assistance, I was able to actively participate in shaping my education, gain a thorough comprehension of the course material, and maintain an inquisitive approach to learning about Data Science and its intricacies.

# BSc (Hons) Information Systems with Data Analytics

KPT/JPS (N/0611/6/0092) (MQA/PA17527) 07/29

## Intake: January, September

The Bachelor of Science (Hons) in Information Systems with Data Analytics programme is intended to provide students with a strong grasp of information systems while also increasing their competence in data analytics. The curriculum emphasises the critical skills of data collection, management, and analysis, ensuring that students can handle and analyse data efficiently. The programme trains graduates to face real-world commercial and technological challenges by developing critical thinking and problem-solving skills. Furthermore, this degree seeks to generate professionals who are prepared to flourish in data-driven decision-making jobs across a variety of industries.

**The Programme aims to**
- Equip students with foundational knowledge in information systems.
- Develop expertise in data analytics, including data collection, management, and analysis.
- Foster critical thinking and problem-solving skills applicable to real-world business and technology environments.
- Prepare graduates for careers in data-driven decision-making roles.

*Not available for Go Global programme.*

## YEAR 1
- Introduction to Programming 1
- Introduction to Interaction Design
- Management in a Global Context
- Fundamentals of Marketing
- Introduction to Computer Systems
- Introduction to Software Engineering
- Database Management Systems
- Data Science Life Cycle

## YEAR 2
- Project Management
- Software Engineering
- Knowledge Management
- Human Resource Management
- Organisational Behaviour
- Professional Development
- Sociotechnical and Soft Systems
- Visual Analytics
- Industrial Training (Summer Internship)

## YEAR 3
- Research Methods & Requirements Engineering
- Information System Methodologies
- Data Mining and Machine Learning
- Design & Implementation
- Project Testing & Presentation
- Big Data Management

**Optional courses (Choose 1 for Semester 1):**
- Information Technology Master Class
- Software Engineering Foundations
- Statistical Modelling and Analysis

**Optional courses (Choose 1 for Semester 2):**
- Advanced Human Computer Interaction
- Digital and Knowledge Economy
- Applied Text Analytics

## SKILLS ACQUIRED
- Proficiency in Programming Languages
- Competence in Data Analysis Tools
- Strong Analytical and Quantitative Skills
- Ability to Design and Manage Information Systems
- Effective Communication and Teamwork Abilities

## CAREER OPPORTUNITIES
- Data Analyst
- Business Analyst
- Information Systems Manager
- Data Scientist
- IT Consultant
- Big Data Engineer

# About Our Go Global

At Heriot-Watt University, the world is your classroom. Immerse yourself in a truly international learning experience with students from diverse backgrounds. Unlock the world's possibilities through our seamless inter-campus transfer programme to the **Edinburgh** or **Dubai campuses** and enjoy a **20% discount***.

*\* Subject to the degree programme running at your chosen campus.*

## 20%
tuition fee discount when you transfer to our Edinburgh or Dubai campuses

## 99%
of Go Global students said they would recommend it

Heriot-Watt University Student Survey 2020

## 80%
of surveyed employers actively seek out graduates with international experience

QS Global Employer Survey Report

# HOW TO APPLY

Heriot-Watt University Malaysia accepts applications all year round.

## APPLY ONLINE

You can apply online for our programmes at **https://bit.ly/HWApply** You must create an account to use the online application form. You don't have to complete the application in one session; you can save the information you have already entered and return to complete it at a later date. There is a help facility on each page of the online form.

## SUPPORTING DOCUMENTS

Please remember to upload supporting documents so that we can make a decision on your application. This includes proof of English language proficiency and original or certified copies of academic transcripts.

Please refer to the supplemental item checklist on the Online Application form:
▶ **http://bit.ly/hwumaccount**

See website for details of fees:
▶ **http://bit.ly/hwum_fees**

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