BACHELOR OF ENGINEERING IN DATA SCIENCE (HONOURS)

[N/0613/6/0121] 07/28 [MQA/PA14640]

DURATION	INTAKE	MEDIUM OF INSTRUCTION
4 years	February/ April/ September	English

ABOUT THE PROGRAMME

The Bachelor of Engineering in Data Science (Honours) is a new programme offered by the School of Computing and Data Science. The programme is developed to cater to the growing market demand for data science graduates in various sectors, including but not limited to banking, commercial, industrial, medical, and public sectors. The programme aims at cultivating talents with a global mindset and analytical capabilities in the face of the constantly changing world.

The programme is supported by both local and international teams of academicians, including those seconded from the main campus. Our academicians comprise PHD holders in their respective specialities. The programme is also supported by prominent academic leaders from Computer Science and Technology Programme, Artificial Intelligence Programme, Software Engineering Programme, and School of Mathematics. Apart from teaching, our academicians are also very active in research and publication. Their diverse backgrounds in the respective niche fields give them an advantage in teaching in view of the fact that data science is a unique yet cross-disciplinary study.

Our programme provides a strong analytical and statistical foundation for students to apply data science knowledge and techniques in solving a wide array of complex data problems. Students will be well-equipped with the required knowledge and skills to excel in their careers. The solid foundation acquired by the students also opens the door to opportunities for postgraduate studies in top universities around the world.

Note: The degree is not among the fields of engineering in the register of the Board of Engineers Malaysia.

PROGRAMME HIGHLIGHTS

- A problem-based learning approach to solving real-life data science problems

- Comprehensive coverage of mathematical, statistical, and programming approaches essential for solving complex data problems

- An emphasis on the balance between theory and practice in the curriculum design

- An emphasis on cross-specialisation in curriculum design which incorporates courses in Computer Science, Artificial Intelligence, Statistics, and Software Engineering

CAREER OPPORTUNITIES

- Data Scientist
- Data Engineer
- Data Solution Specialist
- Data Architect
- Data Analyst
- Data Mining Specialist
- Applications Architect
- Analytics Manager
- Machine Learning Specialist
- Business Intelligence Developer
- Statistician
- Business Analyst
- Market Research Analyst
- Analyst Programmer
- Database Administrator
- Health Informatics Analyst
- Data Project Manager
- Bioinformatician
- Research Analyst

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ENTRY REQUIREMENTS   *For other equivalent qualifications, please consult our programme counsellor*

STPM (Science Stream)	A pass in STPM with at least a Grade C (GP2.0) in Mathematics AND 1 Science/ICT subject
STPM (Non Science Stream)	A pass in STPM with at least a Grade C (GP2.0) in any 2 subjects AND a credit in Additional Mathematics in SPM or its equivalent
A-LEVEL	A pass in A-Level with at least a Grade D in any 2 subjects
UEC	A pass in UEC with at least a Grade B in 5 subjects
Foundation/Matriculation	A pass in Foundation / Matriculation with at least a CGPA of 2.0 out of 4.0
Diploma	A pass in Diploma in Computing fields (Computer Science/Software Engineering/Information Technology/Information System/Data Science) with at least a CGPA of 2.5* out of 4.0 **OR** A pass in any Diploma in Science and Technology or the equivalent with at least a CGPA of 2.75** out of 4.0
AND	(i) Additional Mathematics*** —a credit in SPM or the equivalent; OR (ii) Mathematics and any 1 Science/Technology/Engineering subject —a credit in SPM or the equivalent AND pass a Mathematics placement test organised by XMUM before joining the programme

NOTES:
 * Candidates with a CGPA of less than 2.5 but more than 2.0 may be accepted subject to a stringent internal evaluation process.
 ** Candidates with a CGPA of less than 2.75 but more than 2.5 may be accepted subject to a stringent internal evaluation process.
 *** The requirement for the Additional Mathematics at SPM level can be exempted if the Foundation/Matriculation or its equivalent offers a Mathematics course that is of a similar or higher level compared to the Additional Mathematics at SPM level.

MAIN COURSES

Year 1
- Calculus
- Linear Algebra
- C and C++ Programming
- Computer Networks and Communication
- Data Structures
- Introduction to Data Science

Year 2
- Python and Tensorflow Programming Language
- Computer Architecture
- Database
- Probability Theory
- Design and Analysis of Algorithms
- Statistics
- Applied Machine Learning
- Software Engineering

Major Elective 1 (Choose 2)
- Time Series
- Principles of Artificial Intelligence
- Introduction to Intelligence Application

Year 3
- Statistical Programming using R
- Data Mining
- Methods and Applications of Deep Learning
- Fundamental Research in Academic Project
- Principles of Operating Systems
- Big Data Analytics

Major Elective 2 (Choose 2)
- Object-Oriented Programming-Java
- Introduction to Cloud Computing
- Bayesian Statistics
- Regression Analysis

Major Elective 3 (Choose 1)
- Natural Language Processing
- Statistical Learning
- Multivariate Statistical Analysis

Year 4
- Data Science Academic Project
- Advanced Machine Learning
- Advanced Data Analysis
- Industrial Training

Major Elective 4 (Choose 1)
- Deep Reinforcement Learning and Control
- Computer Graphics

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