BACHELOR OF ROBOTICS AND AUTOMATION ENGINEERING WITH HONOURS

[N/0713/6/0054] 01/32 [MQA/PA17916]

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

ABOUT THE PROGRAMME

The XMUM Robotics and Automation Engineering with Honours programme (ERA) is meticulously designed to equip students with cutting-edge skills and knowledge in one of the most dynamic and impactful fields of engineering. Approved by the Board of Engineers Malaysia (BEM), this programme ensures that graduates are eligible to register as professional engineers, opening doors to global opportunities. With a hands-on curriculum that balances robotics, mechatronics, and Artificial Intelligence (AI) applications, students gain practical experience in designing and implementing intelligent automation systems. Featuring state-of-the-art labs, real-world projects, and strong industry connections prepare the graduates of this programme prepares its graduates to tackle challenges in industrial robotics, smart manufacturing, healthcare, automotive, aerospace, and beyond.

Students will dive deep into essential elements of robotics and automation, including programming, system design, AI integration, and sustainability. Opportunities for internships with leading companies, participation in national and international robotics competitions, and involvement in groundbreaking research ensure a competitive edge in the job market. Beyond technical skills, the programme fosters innovation and future-proof thinking, training students to create AI-augmented solutions that enhance human potential rather than replace it. Whether building smart robots or developing autonomous systems, our graduates are prepared to lead the way in shaping a collaborative, tech-driven future.

PROGRAMME HIGHLIGHTS

- Equipping students with cutting-edge robotics and automation skills to design AI-driven solutions that enhance human potential and create a future where technology works alongside us, not in place of us.

- A hands-on curriculum providing extensive practical experience in robotic systems, automation technologies, and AI integration. The curriculum is aligned with current and emerging trends in automation, Industry 4.0, and smart robotics.

- Strong industry partnerships that offer internship opportunities with leading companies in robotics and automation.

- The ERA programme, approved by the Board of Engineers Malaysia (BEM), ensures the degree meets high-quality standards. Graduates are eligible to register as professional engineers with the BEM.

CAREER OPPORTUNITIES

Graduates can work as:

- Robotic Process Automation Engineer
- Industrial Automation Engineer
- Robotics Consultant
- Robotic Systems Integration Specialist
- Manufacturing Optimisation Specialist
- Automation Consultant
- Medical Robotics Engineer
- Logistics Automation Engineer
- Warehouse Robotics Engineer

- Drone Technology Specialist
- Intelligent Agricultural Robotics Engineer
- Precision Agriculture Solutions Developer
- AI and Machine Learning Specialist
- Autonomous Vehicle Engineer
- Lecturer in education and training
- Professional responsible for overseeing engineering projects and policies within government sectors
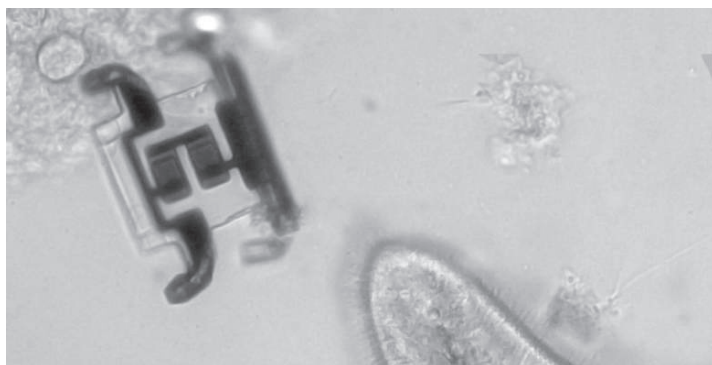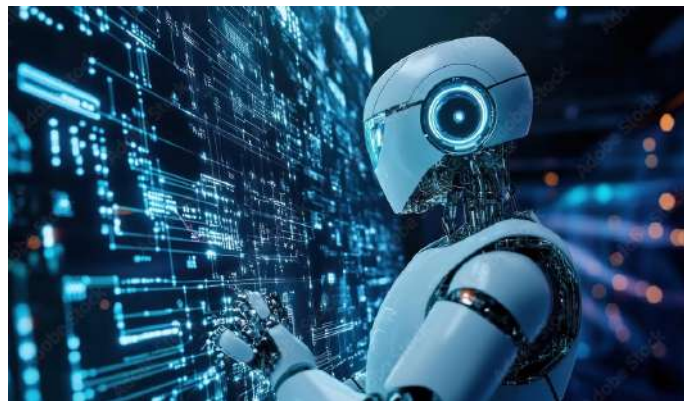
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ENTRY REQUIREMENTS   *For other equivalent qualifications, please consult our programme counsellor*

STPM	A pass in STPM with at least a Grade C (GP 2.0) in Mathematics and Physics/Chemistry
A-level	A pass in A-level with at least a Grade C in Mathematics and Physics/Chemistry
UEC	A pass in UEC with at least a Grade B in 5 subjects including Mathematics and Physics/Chemistry
Foundation/Matriculation	A pass in Foundation/Matriculation with at least a CGPA 2.0 out of 4.0 and passes in Mathematics and Physics/Chemistry
Diploma	A pass in Diploma with at least a CGPA 2.0 out of 4.0 and passes in Mathematics and Physics/Chemistry
International Qualification	Any other academic qualification equivalent to or higher than the above as stipulated by MQA.

MAIN COURSES

Year 1
- Principles of Artificial Intelligence
- Python and Tensorflow Programming
- Computer Architecture
- Programming C
- Electronics
- Machines and Power

Year 2
- Engineering Mechanics
- Machine Learning
- Deep Learning
- Computer Aided Design
- Control Theory
- **Major Electives** (choose 2)

Year 3
- Integrated Design Project
- Industrial Automation
- Robot Kinematics and Dynamics
- Microcontrollers and Embedded Systems
- Power Technology
- **Major Electives** (choose 2)

Year 4
- Final Year Project (FYP)
- Mobile Robotics
- Computer Vision
- Advanced Robotics
- Manufacturing and Operations Management
- **Major Electives** (choose 2)

Major Electives
- Augmented Reality and Digital Twins
- Drones and UAVs
- Exoskeletons, Prothesis, and Medical Robotics
- Automation and Controls in Semiconductor
- Cyber Security
- Deep Reinforcement Learning and Control
- Natural Language Processing
- Large Language Model
- Strategic Reasoning for AI
- Big Data Analytics
- Technology and Application of Internet of Things
- Planning Techniques for Robotics

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The information in this brochure is correct at the time of publication. Xiamen University Malaysia (XMUM) reserves the right to change the information in line with updates from time to time. Please check the website (www.xmu.edu.my) for latest information.

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