

POSTGRADUATE study is an area where students are expected to be able to open up their minds to be more critical and acquire analytical thinking, contributing to the world of knowledge and human capital development.

At Universiti Tun Hussein Onn Malaysia (UTHM) the significant characteristics and features of master's and doctorate degrees are that they require students to be able to separate themselves from being a technician to a researcher.

"Our tradition is to produce graduates who are not only engineers with research knowledge but also with the skill to practice and implement it," says Professor Madya Dr Mohd Idrus Mohd Masirin, deputy dean of development and marketing at UTHM.

Postgraduate candidates must be able to contribute to new knowledge in their relevant fields. Engineers have to go through adequate fundamental training that focuses initially on theoretical exposure, which happens at the undergraduate level. In contributing knowledge to their industries through postgraduate study, engineers will necessarily need to reach a certain high level of competency.

"Postgraduate studies also help students to specialise in areas that they want to build their career," says Professor Dr Sulaiman Hassan, dean of the faculty of mechanical & manufacturing engineering. "Upon graduation engineers must have a clear career progression," says the Dean of the Faculty of Electrical and Electronic Engineering, Professor Ayob Johari.

"Engineers can escalate in their career path by being actively involved in training and career development programmes, or by pursuing a postgraduate degree."



Varsity explores engineering wisdom



"Postgraduate studies also help students to specialise in areas that they want to build their career in the future."

Prof. Madya Dr Mohd Idrus Mohd Masirin

Dr Zawawi Daud, a deputy dean research and development from the faculty of civil and environmental engineering, says that engineers must also look at their function in a broader way. For example, civil engineering is about community service, development, and improvement. Civil engineers are problem solvers, meeting the challenges of pollution, traffic congestion, drinking water and energy needs, urban redevelopment, and community planning.

"Mega cities have evolved based on technologies from the mid-20 century. Advances in new materials, information technology, communications, sensors, distributed control systems, renewable energy resources, and energy efficiency provide unique

opportunities. Civil engineers are well-placed to lead the effort to incorporate these advances into future growth," he adds.

According to Professor Ir Dr Amir Hashim Mohd Kassim, a professor at the university, engineers as a group have the expertise that can contribute and must contribute towards nation-building especially when infrastructure is concerned.

"Current trends showed that engineers are versatile and even hold top company posts. This indicates that engineers need to enhance their competencies and acquire additional knowledge not only to be experts in their fields but also to handle organisations and human resources," he adds.

As for UTHM, it offers many postgraduate programmes

ranging from pure engineering such as civil, mechanical and electrical to some technical-related programmes such as technical education, technology management and information technology and multimedia. The programmes are also open to fresh graduates.

The Dean of the Centre for Graduate Studies, Professor Dr Ahmad Shakri Mat Seman, says that UTHM aims to increase its postgraduate student enrolment by actively promoting and marketing its programme to its potential candidates rather than waiting for them to apply.

"Bringing the products to potential clients is more effective than waiting for them to ask and apply," adds Professor Shakri.

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Electrical and Electronic Engineering

THE postgraduate programmes at UTHM's Faculty of Electrical and Electronic Engineering offer extended study for those who are willing to further their studies for many reasons.

"It gives opportunities for matured students including working people to enhance and upgrade their knowledge in areas of their specific

interest," says Professor Ayob Johari, the dean of faculty of electrical and electronic engineering.

Areas such as wireless communication, cellular communication, renewable energy, industrial control automation, nanotechnology, medical electronic instrumentation, electromagnetic compatibility,

protection and safety, are examples of areas of postgraduate levels offered in the faculty.

The faculty offers Master's of Electrical Engineering (majoring in electronic, power, mechatronics, communication, computer engineering) and PhDs in Electrical Engineering (wireless, renewable energy, power, radio frequency,

control system and robotics).

The taught master's programme is conducted full-time and the research programmes has the option to be conducted on full time or part time modes. The faculty's part time programmes are also opened to working people. All postgraduate students are also welcomed to use the facilities provided

by the centre of excellence established by the university for electrical and electronic engineering students namely the EMC (Electromagnetic Compatibility Centre), WARAS (Wireless and Radio Science Centre) and MNT-SRC (Microelectronics and Nanotechnology — Shamsuddin Research Centre).



Professor Amir Hashim

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Taught programmes are offered across all the engineering faculties, though the current trend in postgraduate engineering students is to pursue their masters or doctoral degrees by research. The university's entrance qualification is a CPA of 2.3 and above for a master's programme by coursework and a CPA of 2.7 and above for a master's programme by research. Those with lower CPA with appropriate working experience may be considered.

"Courses are offered on full-time and part-time basis," explains Professor Dr Mohd Idrus. "All potential postgraduate students are welcomed to apply for a place in UTHM through its online application system at <http://www.uthm.edu.my/os>. UTHM's engineering faculties have some of the most current equipment as well as the presence of some international lecturers who are highly specialised.

UTHM is confident that its aim to become a world renowned university will be achieved. With hard work and assistance from their strategic partnership programmes as well as its strategic positioning and blueprint, UTHM will be able to place itself in the world map and achieve recognition from its peers.

The current Vice Chancellor, Professor Datu Dr Mohd Noh Dalimin, in his annual address this year, encouraged his staff to continuously establish links with the community and industries. He has put priority to developing human capital as the core of UTHM in its pursuance to become a world class university.

"In order for us to achieve this [world class university], UTHM has to focus on management excellence, strategic alliance, teaching and learning excellence and also technology and innovation excellence. All this will contribute towards better graduate competency and satisfaction thus, increasing recognition from the community around us."

With its motto, "With Wisdom We Explore", UTHM is on the right track to fulfil its dreams and hopes to produce the next generation of competent engineers when Malaysia becomes a developed country in year 2020.



UTHM AWARDS

UTHM's engineering faculties have been rewarded for their hard work into innovative and industry-relevant research.

The Faculty of Electrical and Electronic Engineering has received many awards in different competition platforms at national and international levels, including the Malaysian International Invention, Innovation and Technology Exhibition (ITEX), MSC Malaysia-HL Business Plan Competition, Malaysia Technology Expo (MTE), IPTA R&D Expo and International Des Invention De Geneve.

One of the Faculty of Mechanical Engineering's undergraduate students was awarded the IEM gold medal for being the best final year undergraduate student in Mechanical Engineering in the year 2009. Beside this the faculty has also won gold and silver medals in MYTEX, ITEX and other prestigious exhibitions internally as well as the international level.

These competitions are the perfect platforms for staff and students to showcase their inventions and designs to the outside world and that their inventions and designs met international standards. It also encourages application into industry instead of just research for its own sake.

Civil and Environmental Engineering

THE postgraduate programmes at the faculty offer both research-based and taught courses. The programmes include master's in civil engineering (majoring in environment, water resources, structural, geotechnical, transportation, construction and highway), PhD in Civil Engineering (environment, water resources, structural, geotechnical, transportation, construction, highway). The taught master's is full time, whereas the research programme can be either full time or part time.

"By enrolling in postgraduate studies in civil engineering, civil engineers can confidently become self-employed, work as contractors, or progress within engineering firms up to a partnership level.

"Civil engineers can also progress into specialised roles, in areas such as project management, construction management, planning, estimation and health and safety. Specialists develop skills through postgraduate qualifications, professional exposure or experiences in particular areas of civil engineering," says the Deputy Dean for Research and Development, Dr Zawawi Daud. All postgraduate students are welcome

to use the facilities provided by the centre of excellence established by the university for civil and environmental engineering students — the RECESS Malaysia (Research Centre for Soft Soil) and CECTUS (Centre for Environment, Construction and Transportation Studies).

"Our postgraduate programmes are ideal for broadening and deepening your technical knowledge of specialised civil engineering areas and to develop a wider perspective and understanding of the issues facing the civil engineering industries.

"It provides a distinctive educational platform to encourage the development of articulate, numerate, literate, imaginative, versatile, confident and inquisitive postgraduates who are able to link the theoretical with the practical," adds Dr Zawawi.

Other than participating in invention and innovation competitions locally and internationally, the faculty has invented products that include the Lightweight Concrete (Quik Wall), Sand3-Siever, Modified Grouting Polymer, Bio-Metclan, NeuSoil and traffic safety focused products.

Mechanical and Manufacturing Engineering

AT UTHM postgraduate degrees in mechanical and manufacturing engineering are offered as both research-based and taught course. The faculty will also offer a master's degree by research related to aeronautics very soon. This is the new research and programme area where the faculty will emphasise its future direction by providing opportunities to potential commercial pilots to be a qualified flyer with an engineering degree. This will be a value added feature for pilots upon completion of their studies.

"A postgraduate degree in mechanical engineering will enable the graduate to attain a deeper understanding of their field of interest, for example manufacturing or control or even design aspects in mechanical engineering," says Dean Professor Dr Sulaiman Hassan. "It will help to enhance the employment prospects especially in specialised areas such as in advanced engineering material, advanced machining and advanced manufacturing."

The faculty specialises in vibrations, advanced machining, rapid prototyping,

internal environment, thermal comfort, energy and advanced material. It has just completed building a pilot plant in biodiesel which will lead to more research in the faculty.

In the Master's in Mechanical Engineering course, the student will study advanced engineering mathematics, advanced mechanics and electives relevant to the student's preferred areas. The student will also have to complete their postgraduate project within two semesters. The project will be related to the student's elective and should preferably be industry related.

The taught course Master's in Mechanical Engineering takes three semesters. It can also be done by research either on a full time or part time basis. The minimum duration for a master's degree by research is two years. The minimum qualification for entrance into this programme is a CPA of at least 2.3 at bachelor level in Mechanical Engineering or related programmes. This faculty also established a few excellence centers to



assist postgraduate students during their studies. Among others are the AMMC (Advanced Material and Manufacturing Centre), TTC (Technology Transfer Centre) and ADTEC (Advanced Textile Technology Training Centre).

The doctoral programme in mechanical engineering can be pursued either on a part time or full time basis. The minimum duration for full time study is three years and five years for part time study. The PhDs are only offered by research. Current areas of interest are in the Faculty of Mechanical Engineering are thermodynamics, manufacturing, advanced materials, mechanics and aerodynamics.