The Star

‘Engineers still highly relevant’

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YOUNG talents must be encouraged to explore engineering if Malaysia is to become a developed, high-income nation.

While the demand for science, technology, engineering and mathematics (STEM) professionals is on the rise, Multimedia University Faculty of Engineering Prof Dr Mohamad Yusoff Alias said Sijil Pelajaran Malaysia graduates often question the viability, profitability and relevance of engineering as a career in light of rapid technological advancements.

Students, he said, don’t fully understand what engineering entails and are not clear about the roles and responsibilities of an engineer, which makes it difficult for them to cultivate an interest in the field.

According to Prof Mohamad Yusoff, engineering is at the heart of everything that functions in daily life, from smartphones and infrastructure to medical devices and communication systems.

“Everything you see now will change in the future because of engineering.

“Engineers design, create and innovate. They shape the future and make a difference in our world but often go unrecognised because they work behind the scenes.

“During the enforcement of the movement control order, most people stayed home but engineers continued their essential work in the background.

“Engineers were not frontliners, but vital backliners,” he said.

Bright prospects

Prof Mohamad Yusoff stressed that a key role of engineers is to create innovative designs not only for the immediate present, but for the future.

Engineering is exploring sectors such as aerospace, with a focus on transitioning to a low-carbon economy, he said.



Prof Mohamad Yusoff

“This shift reflects the direction the world is moving towards, aiming to achieve net-zero carbon emissions within the next 30 years.

“Therefore, engineering is not only about dealing with machines, but also about dealing with human needs,” he said.

He added that emerging technologies are creating new opportunities, particularly for engineers, in new fields, such as renewable energy, biotechnology and robotics.

“Engineering graduates are not limited to traditional roles; their skills are applicable across a wide range of industries.

“Telecommunications engineers, for example, can work in sectors as diverse as the military, sales, entrepreneurship and beyond.

“Wherever your interest lies – be it space, sports, apps, fashion or film – engineering is a part of it,” he said.

He asserted that fresh graduates with a diverse skillset can make them highly attractive to employers.

“A successful engineer is characterised by creative thinking and problem-solving abilities.

“While creativity is often associated with the arts, it is equally important in engineering for innovation.

“Engineers must think outside the box, work collaboratively in teams and pay meticulous attention to detail.

“They must be logical thinkers who approach problems methodically as even minor errors can have significant consequences,” he said

Chiming in, Universiti Putra Malaysia School of Business and Economics Accounting and Finance Programme coordinator Assoc Prof Dr Ahmad Fahmi Sheikh Hassan said engineers with a combination of technical and business skills have a broader range of career opportunities and greater flexibility.

He said the varsity regularly sees engineers enrolling in its business courses.



Ahmad Fahmi

“They can take on leadership roles, start their own companies or transition into management positions.

“Having dual skillsets makes them more adaptable to changing job markets and industry demands, increasing their employability and potential for career growth,” he said.

Agreeing that versatility can be an added advantage, Schlumberger technical sales engineer Lim Chia Wei, who is a Universiti Teknologi PETRONAS (UTP) alumna, said as much as technical know-how is important to sell technologies, interpersonal skills are equally crucial.

“Many engineers transition into sales roles, where they communicate technical concepts to clients,” she said.



Lim

Emphasising the lucrative salary, bright future and career advancement potential available in the oil and gas industry, she said most of the time, students – especially women – dismiss the idea of pursuing careers in this industry because their parents deem it unsuitable for females.

“But the perception is wrong,” she said, adding that interest and a desire to explore are important drivers of success.

Prof Mohamad Yusoff said the demand for engineering professionals in the oil and gas industry is high.

“While many associate the oil and gas sector with chemical or petroleum engineering, electrical and electronic engineering is also crucial due to the need for communication and electrical advancements in the oil and gas industry,” he said. The aviation industry

also needs many engineers, said Universiti Kuala Lumpur Malaysian Institute of Aviation Technology Assoc Prof Abu Hanifah Abdullah.

“Those who are competent are licensed by the (local aviation) authority or the company themselves,” he said.



Abu Hanifah

He added that to be considered competent, aspiring talents need to have formal tertiary education or formal skills training, and experience working in the industry.He also said those in aviation engineering must have a minimum bachelor’s degree while technical roles would require a Malaysian Skills Certificate or equivalent.

Fresh graduates, said Prof Mohamad Yusoff, typically earn about RM3,000 with less than three years of experience.

“Many companies are experiencing a shortage of engineers, driving demand up for engineering roles.

“Once they become senior managers, they can earn up to about RM30,000 to RM40,000 per month,” he said.

Enter AI, big data

Prof Mohamad Yusoff said with the integration of artificial intelligence and big data into engineering, engineers play critical roles in setting up and maintaining the necessary technological infrastructure.

“This is where you find electric vehicles, solar panels and other engineering-based products.“People often think big data is only part of computer science and information technology (IT), but it’s engineers who set up and maintain the servers. With more

patrons relying on big data, its importance continues to grow – and so does the need for those who maintain them," he said.

As more people store their data on clouds or utilise the Internet of things in their homes and offices, safety and security becomes a bigger concern, said City University Faculty of IT deputy dean Asma Zubaida M. Ibrahim.

She said the security risks faced by cloud computing can be solved using blockchain technology.

"Blockchains are completely transparent with every user knowing if any changes happen to any part of the 'chain'," she said, adding that recent data shows that over 90% of organisations are using cloud services.



Asma

Asma Zubaida said talents with knowledge of blockchain and cloud computing are needed in various industries handling data, including banking, healthcare and supply chain management.

Agricultural technology, Abu Hanifah pointed out, is also a fast-growing market as it is driven by the need to produce more food due to population growth.

"Boosting agricultural output is not just about farming; it also involves technology," he said, adding that in Malaysia, advanced manufacturing is expanding, with factories increasingly using automation and robots designed by engineers.

Consider this

It is crucial, said Prof Mohamad Yusoff, that educational institutions impress upon students how important engineers are and how they can help Malaysia achieve its STEM target.

A strong foundation in science-related subjects such as physics, mathematics, chemistry, biology and computing is essential for students aspiring to become engineers, he said.

“Engineering degrees usually include internships, providing students with practical experience and an overview into the industry.

“This hands-on approach is vital as engineering evolves with technological advancement,” he said.

Many students are choosing to pursue engineering programmes abroad as foreign institutions offer unique opportunities for exploration, collaboration and personal growth, said iEduCare Services managing director Subrinna Chiew.

“Different countries may have universities that excel in specific engineering fields.

“Studying abroad allows you to tap into this expertise and potentially gain a leading edge in a particular area,” she said.

Lim advised those considering an engineering degree to ask about internship opportunities.

Internships that are too short, she said, makes it difficult for one’s performance to be assessed.

As engineering is an important field, UTP registrar Mohd Fadil Mohd Ariff said it is vital to continue evolving the learning curriculum for engineering programmes.

“There also needs to be continuous learning for engineers in all facets of the profession,” he said.

Note: The academics were speakers at the Star Education Fair 2024, which was held at IOI Grand Exhibition and Convention Centre, Putrajaya, from May 4 to 5.