Three National University of Singapore (NUS) Engineering Science Programme (ESP) students tell us more about their education in a degree that is the perfect hybrid of both engineering and scientific theory.

By Gerald Goh

The disciplines of engineering and science may stand apart in other universities, but not so at NUS, where ESP students are given a rigorous and practical education in both fields. The four-year degree is designed to educate future engineers and scientists to be equally adept at multiple fields, and all ESP students are provided with core ESP modules that provide them with a strong foundation in the disciplines of engineering, science, mathematics and computing.

HANDS-ON LEARNING

This versatility is what attracted current ESP undergraduate Eric Cheung, 23, to the course. He explains, “The ESP programme has exposed me to many content-heavy modules related to science, which will certainly be useful for my future career. ESP is very research-oriented and all about solving real-world problems.”

To illustrate his point, Eric describes a second-year project where he and his team had to design a dryer intended for foodstuffs, such as potatoes. “We faced not only budget constraints but also could only use certain materials, and my group and I spent many weeks and late nights to think out of the box to finally come up with a novel design that was both practical and effective!” he says proudly.

Through the ESP, Eric also applied for and obtained an internship with local research institute A*STAR last year, where he learnt much about optical fibres and decided he wanted to specialise in Photonics and Optics during the latter part of his ESP education. “It was a real eye-opener in reinforcing how important it is to be able to solve real-world problems,” he adds.

REAL-WORLD APPLICATION

The ESP’s relevant curriculum was also what appealed to 24-year-old ASEAN Scholar and ESP graduate Melvin Ang, who’s now a Manufacturing Engineer at Schlumberger, the world’s largest oilfield services company. He explains, “My passion for engineering stems from how I love to build exciting things and get my hands ‘dirty’.

“The ESP initially ‘breaks’ you down real hard, albeit in a good way, and builds you up again as someone who is able to learn and excel in any field that you choose to pursue. As ESP graduates, we are able to see the big picture and connect the dots to solve problems that will require a multi-disciplinary set of skills.”
“This is especially relevant in my work at Schlumberger, where my main goal is to ensure smooth production to meet customer demand. We strive to continuously improve the manufacturing process while reducing costs, mitigating the risk of defects and maintaining the machines. The ESP has taught me that continuous learning is crucial to keep up with the latest technology and that we should never be afraid of the unknown in learning new knowledge!”

FOUNDATION FOR FURTHER EDUCATION

26-year-old Choo Min, who’s currently in her third year of medical school at Duke-NUS Graduate Medical School after completing the Master of Science in Biomedical Engineering with Duke University, certainly agrees with this thirst for knowledge that has been instilled in her by the ESP.

She says with a laugh, “When I was fresh out of Junior College, many of us didn’t know what we wanted to do in the future, and the ESP turned out to be a perfect choice as the broad-based, interdisciplinary education would allow us to launch into any career we desired.

“The ESP provided me with a solid theoretical background, thus I had no problems grasping new material during my Master’s programme, where I found myself with classmates who had graduated from other top universities. Even now as a medical student, I find myself falling back on skills I learnt in the ESP, such as programming and 3D modeling for my current research projects. Last but not least, the curriculum in ESP functions as a link between my engineering background and current medical training, which will certainly help in my future aspiration to design medical devices.”

Choo Min also shares how being enrolled in the ESP in NUS gave her a wonderful overseas experience as part of the Student Exchange Programme (SEP) at the University of British Columbia in Vancouver, Canada. She gushes, “Those four months were a life-changing period for me! It was the longest I had been away from home and family and it was so liberating to be immersed in an entirely new environment, realising that I was free to and capable of pursuing my dreams.”

A CLOSE-KNOT COMMUNITY

Back home in Singapore, Eric also talks more about the unity of the ESP undergraduates. He chips in, “In ESP, the whole cohort has many classes together and we all know each other very well – we’re very good at helping each other to relieve stress! As part of the ESP sub-club committee, I helped to organise the previous year’s Chinese New Year celebrations for the ESP students, It was a ‘bridging’ role where I acted as the middle-man between different cohorts; which gave me good exposure to my seniors and also helped introduce the Year Ones to the ESP.

“Every day in ESP is memorable as we all truly understand one another and have built strong and meaningful bonds. Be prepared to be challenged and be open-minded about learning new concepts – a lot of learning in ESP is self-driven,” Eric notes.

Melvin agrees, adding, “The important thing is not to give up! The first year in the ESP might be really tough and stressful, but soak it all up and enjoy the learning process. Trust me, the working world isn’t only about working hard. The important part is to bring in fresh ideas, be able to evaluate critically and be able to gel with your team, and being in the ESP will certainly help you achieve that.”

Choo Min concludes, “Most other courses do not provide opportunities for the shaping of such a close-knit group. University life, and especially in ESP, isn’t all about obtaining First-Class Honours; it’s also about learning of life-long skills such as time management, leadership and independence.”