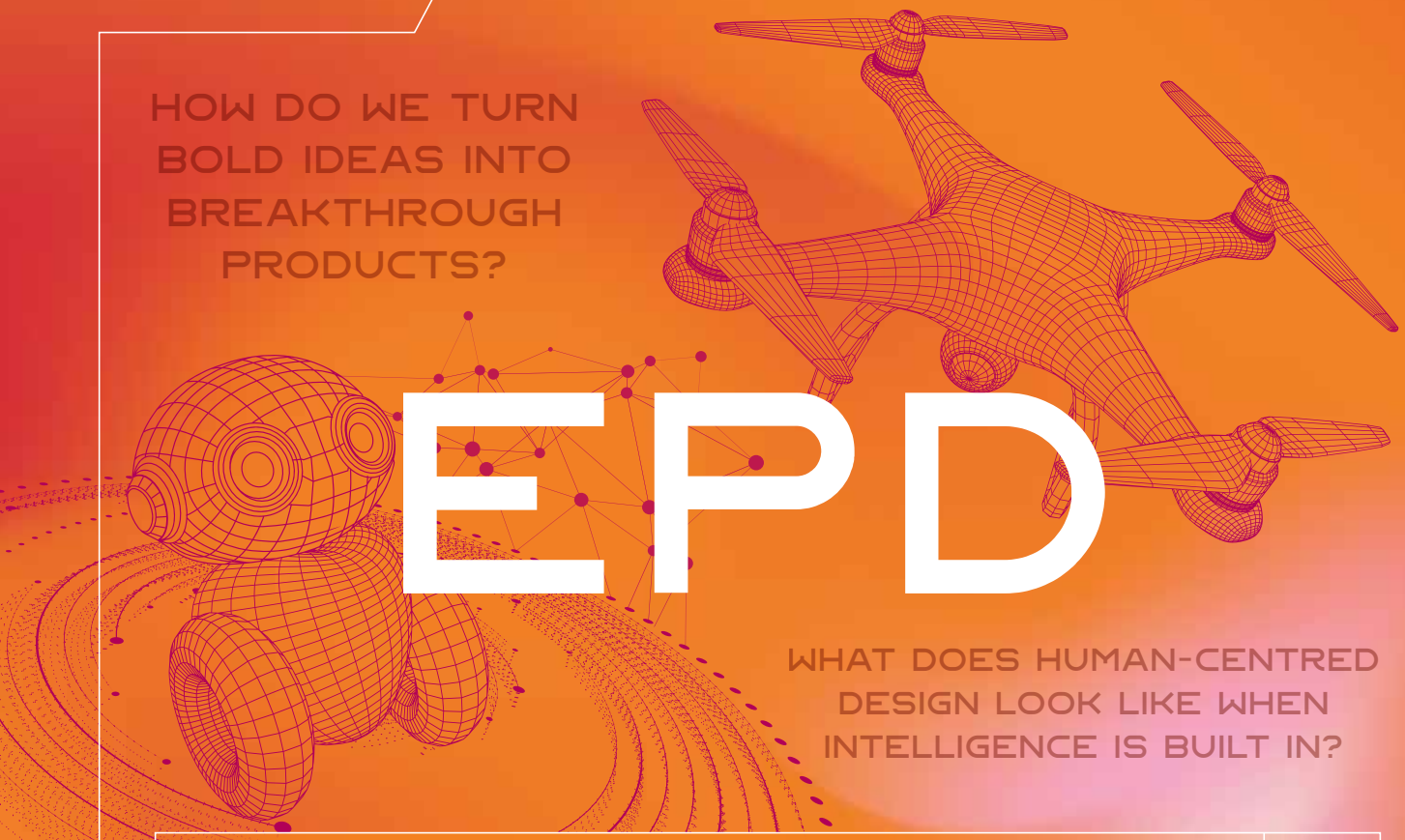
SINGAPORE UNIVERSITY OF TECHNOLOGY AND DESIGN



ENGINEERING PRODUCT DEVELOPMENT

HOW DO WE TURN BOLD IDEAS INTO BREAKTHROUGH PRODUCTS?



# EPD

WHAT DOES HUMAN-CENTRED DESIGN LOOK LIKE WHEN INTELLIGENCE IS BUILT IN?

WHAT IF THE PRODUCT YOU DESIGN COULD CHANGE HOW THE WORLD WORKS?

HOW DO WE CREATE PRODUCTS THAT ARE INTUITIVE AND INCLUSIVE?

SUTD.EDU.SG/EPD

**TRAILBLAZING A BETTER WORLD BY DESIGN.**

# OTHERS TEACH AI AS A TOOLSET. WE TEACH AI AS A MINDSET.

The AI future that used to be called Science Fiction, is Here. Is Now.

At the world's first Design·AI university, built for the new AI world, AI isn't just a skillset—it's a mindset.

Our students don't just find innovative solutions to problems—they design solutions for new-world problems using new-world skills!

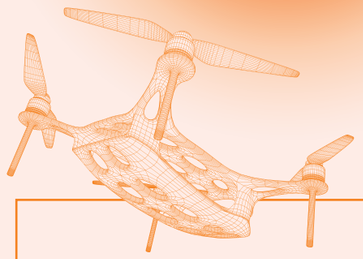
At SUTD, you'll learn when to harness AI, when to refine it, and when to rethink it—guided by human-centred design. Because real innovation isn't just about smarter tech—it's about designing practical, human-centred solutions that make a real impact.

## BEYOND FORM AND FUNCTION

Design·AI drives innovations that enhance lives. From the next lifestyle-changing gadget to the systems powering tomorrow's digital platforms, the world will never lose its appetite for meaningful product innovation.

**All organisations need design engineers. Our EPD graduates are highly sought after for their versatile skillsets and expertise in design innovation, computational and data-driven engineering, and systems and control. With AI technologies and the ability to translate concepts into effective products, services, and systems, they can tackle even the most complex challenges. This unique combination of design thinking and AI capabilities makes them invaluable contributors—and employers know it.**

**THE FIRST Design·AI UNIVERSITY FOR THE NEW WORLD**



Design·AI IS IN ALL SUTD PROGRAMMES —SPANNING EDUCATION, RESEARCH, AND ENTERPRISE.

# A DESIGN AND PROJECT-BASED CURRICULUM REIMAGINED WITH Design·AI

EPD graduates enter the workforce equipped with a powerful combination of design thinking, engineering analysis, and AI-driven problem-solving—a powerful repertoire that's needed to tackle open-ended challenges. Like their peers in other SUTD majors, EPD graduates are not just "bilingual" in expert domain knowledge and AI capabilities. They are effectively "trilingual", integrating expert domain knowledge, AI skills, and design innovation. This trilingual fluency enables them to solve problems creatively and deliver practical, impactful solutions for real-world challenges.

Over your first three Freshmore terms, you'll build a strong foundation in Science, Mathematics and Technology (SMT), Humanities, Arts and Social Sciences (HASS), and Design·AI through our reimagined Freshmore curriculum. From day one, courses integrate Design with AI to strengthen both technical depth and human-centred skills, giving you the solid foundations and readiness not only for your EPD major but also for life beyond graduation.

New options in key freshmore courses let you tailor your journey to match your interests: the (E) option for courses leading to the Bachelor of Engineering, or the (S) option for courses leading to the Bachelor of Science. EPD students should take the (E) option. *(See EPD Curriculum table for details.)*

**Graduate with a Bachelor of Engineering in Engineering Product Development**

In the EPD programme, you are given ample opportunities to engage in active hands-on learning and leverage AI to solve challenges faced by industry partners, to work on projects set by faculty, and also to develop your own products to address gaps in the market. In addition to your EPD subjects, you will continue to take courses in HASS that will prepare you to be a new kind of engineer—one that embraces the cultural and social context of technology in the new world.

Every undergraduate works on at least 20 design projects at SUTD, culminating in a two-term Capstone project in the final year. This allows you to collaborate with students from other majors and apply the skills you've mastered in EPD and Design·AI on either a client-sponsored industry project or your own entrepreneurial venture to solve real-world challenges. By graduation, you'll have built an extensive portfolio of industry-inspired work, well-prepared for your career journey.

EPD has equipped me with essential technical and soft skills, enabling me to solve complex real-world problems in a controlled and safe environment. The many **hands-on projects provided me with the experience of interacting with different stakeholders, understanding their interests, and finally, coming up with the best solution.** Additionally, EPD also allows for the mix and match of modules to cater to my interests in different engineering domains and yet cater to industry demands.

**+++ Tong Hui Xiang**
**Graduate Design Engineer, Dyson**
**Class of 2022, EPD Alumnus**

# EPD CURRICULUM

| JAN-APR | MAY-AUG | SEP-DEC |
|---|---|---|
| Freshmore Subject<br>Core Subject<br>Humanities, Arts and Social Sciences (HASS) Subject<br>Elective<br>Capstone | Y1<br>Y2<br>Y3<br>Y4 | **TERM 1**<br>Innovating with Design & AI 1<br>Introduction to Programming<br>Calculus<br>Sustainability: Science & System Thinking<br>Introduction to Social Sciences/Global Humanities |
| **TERM 2**<br>Innovating with Design & AI 2<br>Algorithmic Thinking & Object-Oriented Programming<br>Linear Algebra & Multivariable Calculus **(E)**<br>Physics Principles & Applications 1<br>Introduction to Social Sciences/Global Humanities | **TERM 3**<br>Innovating with Design & AI 3<br>Introduction to Machine Learning<br>Introduction to Probability & Statistics **(E)**<br>Any Two Electives* | **VACATION** |
| **TERM 4**<br>Computational & Data-Driven Engineering<br>Circuits & Electronics<br>Structures & Materials<br>HASS | **TERM 5**<br>Systems & Control<br>Fluid Mechanics / Electromagnetics & App<br>Engineering Design Innovation<br>HASS | **VACATION/ INTERNSHIP/ EXCHANGE** |
| **TERM 6**<br>Elective<br>Elective<br>Elective<br>HASS | **VACATION/ INTERNSHIP/ SUMMER PROGRAMME** | **TERM 7**<br>Capstone<br>Elective<br>Elective<br>HASS |
| **TERM 8**<br>Capstone<br>Elective<br>Elective<br>HASS | | |

***Term 3 Electives:**
- Designing Sustainable Energy Solutions
- Introduction to Discrete Mathematics
- Introduction to Healthcare Technology
- Physics Principles & Applications 2

Students are guided on electives that match their learning interests, while retaining the flexibility to chart their own path.

- In addition to all subjects in Term 1 being grade-free (Pass/No Record), students can choose up to four more subjects from Terms 2 and 3 to be grade-free.
- Students will declare their choice of major at the end of Term 3.

Information is subject to change. Visit sutd.edu.sg/epd for latest updates.

## MINORS

Our range of minors offers you more choices and flexibility in pursuing your broader interests.

- **Minor in Analytics and AI (AAI)**
- **Minor in Computer Science (CS)**
- **Minor in Design and Artificial Intelligence (DAI)**
- **Minor in Design, Technology and Society (DTS)**
- **Minor in Digital Humanities (DH)**
- **Minor in Healthcare Informatics (HI)**
- **Minor in Human-Centred Design (HCD)**
- **Minor in Psychology and Business Management (PBM)**
- **Minor in Sustainability by Design (SD)**

Students will indicate their choice of minor at the end of Term 3. Information is subject to change. Visit sutd.edu.sg/minors for latest updates.

## DOUBLE YOUR MAJOR. DOUBLE YOUR IMPACT.

EPD students can now pursue a **Second Major in Design and Artificial Intelligence (DAI)**—combining your primary discipline in EPD with AI and human-centred design. This pathway builds greater technical depth and design insight, equipping you to apply AI responsibly and creatively to deliver impactful solutions—giving you a distinct edge in tackling complex, real-world challenges.

SUTD students are self-starters and well-rounded engineers. **They have a good mix of theory and hands-on experiences, and are enthusiastic about engineering.**

**+++ Mr Peter Ho**
**Executive Chairman, HOPE Technik Pte Ltd**

# FUTURE POSSIBILITIES

## CAREERS

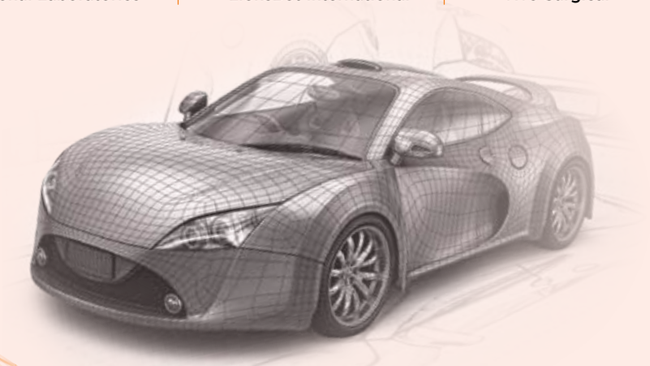
EPD graduates are prepared for a wide range of engineering, design and management careers. Your skills and capabilities for leading the development of new products, systems, processes or methodologies prepare you for both the private and public sectors, including healthcare, consumer electronics, robotics, future transportation, semiconductors, information communication technology, IoT, aerospace, defence, and energy and power.

### POSITIONS HELD BY EPD GRADUATES:

- Design engineer
- Management consultant
- Product engineer
- Project engineer
- Project manager
- Research engineer
- Technical consultant

### WHERE EPD GRADUATES ARE MAKING AN IMPACT:

- 3M
- AMD
- GlobalFoundries
- DSO National Laboratories
- Dyson
- GE Aerospace
- IBM
- LionsBot International
- National Instruments
- NVIDIA
- Rolls-Royce
- Vivo Surgical



Meiban is a full turnkey contract manufacturer for global brand owners. We need engineers who have innovative thinking, passion for excellence and giving value-added engineering. SUTD's engineering students have the **adaptive engineering mindset that makes them versatile in various problem-solving skillsets**. In addition, they are also **strong in communication and presentation skills**. We believe they will fit well into our engineering precision industry and smart digital factory.

**+++ Carol Goh**
**Deputy Chair, Meiban Corporation Pte Ltd**

## ENTREPRENEURSHIP

Adept at working on cross-discipline projects and bringing tech out of the lab into the real world, an EPD graduate is well-prepared to initiate start-up ventures.

### START-UPS BY EPD GRADUATES:

- **(these)abilities designs inclusive products to 'Disable Disabilities' such as Keyguard 2.0 which makes any keyboard accessible. (these)abilities has worked with Grab to simplify the ride-hailing process for hearing and visually impaired users and also helped Japan's Nippon Closures explore inclusive bottle packaging designs for the 2020 Tokyo Paralympics.**

- **Lord of the Chords is a card game that sprung from the difficulties of learning music theory. Initially launched on Kickstarter, Lord of the Chords reached their goal of $15,000 in just 75 minutes. At the end of the campaign, they raised a total of $313,494, with over 4,000 backers from around the world.**

## GRADUATE SCHOOL

The rigorous technical training from EPD will also prepare you for various post-graduate programmes. Our EPD graduates are enrolled at top universities including:

- Cornell University
- ETH Zürich
- Imperial College London
- Massachusetts Institute of Technology
- University of California, Berkeley

# PREPARE TO TAKE ON THE WORLD

**I chose SUTD mainly because of its interdisciplinary and project-based approach.** Theoretical teaching is often accompanied by projects that require you to apply your learning from class to something that must work in real life. I enjoyed this because it provided direct and unbiased feedback on whether I understood a concept. The curriculum has also taught me how to **scope a problem, deconstruct it into smaller manageable parts, and chart a path towards a possible solution.** I learnt how to look at the practical points of implementation, how and when to pivot projects since things always turn out different from first conceptualisation.

**+++ Leong Hei Kern**
**Software Engineer, Open Government Products**
**Class of 2019, Valedictorian, EPD Alumnus**

## MECHANICAL ENGINEERING

Be equipped with mechanical concepts, thermal fluid systems, materials science, principles of design and control, and apply them to creative solutions for modern mechanical systems.

## ELECTRICAL AND COMPUTER ENGINEERING

Be equipped with core concepts in electronics, signal processing, control systems, computing, and embedded design—and apply them to create smart devices, intelligent machines, advanced networks, and modern digital systems across sectors such as energy, robotics, and information systems.

# 5 SPECIALISATIONS

**HAVE THE FLEXIBILITY TO CUSTOMISE YOUR CURRICULUM WITH ONE OR MORE SPECIALISATIONS*. YOUR SPECIALISATION WILL BE REFLECTED ON YOUR TRANSCRIPT SO THAT EMPLOYERS RECOGNISE YOUR ADDITIONAL EXPERTISE.**

*Specialisations offered in a given year are subject to change. Choosing a specialisation is optional.

**SCAN TO FIND OUT MORE**

## HEALTHCARE ENGINEERING DESIGN

Apply the design concepts and principles of engineering to healthcare products and applications.

## ROBOTICS

Gain knowledge of robotics fundamentals, skills in the modelling, design and development of robotic platforms, insights into their theoretical essentials and the expertise to apply these methods to real-world problems.

## INTERDISCIPLINARY ENGINEERING

Design a personalised study plan that will arm you with the necessary knowledge (e.g., Alternative Energy Systems, Materials Science) and skills to pursue unique or non-traditional careers aligned with your personal interests.

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# EPD CORE SUBJECTS

- Circuits & Electronics
- Computational & Data-Driven Engineering
- Engineering Design Innovation
- Fluid Mechanics/Electromagnetics & App
- Structures & Materials
- Systems & Control

# LEARNING OUTCOMES OF EPD CORE

### INTERDISCIPLINARY EXPERTISE

Master a combination of technology and design skills. Be well-geared in the full value chain of engineering product development that cuts across traditional disciplinary boundaries.

### ADVANCING TECH OUT OF THE LAB

Extensive exposure to the translational process needed to advance technology out of the lab to create new product-solutions that live in the real world.

### PROJECT MANAGEMENT

Gain exposure to different industries and disciplines, learn and practise project management including leading a team, budget management and presentation of your ideas.