SINGAPORE UNIVERSITY OF TECHNOLOGY AND DESIGN

COMPUTER SCIENCE AND DESIGN

CAN YOU DESIGN A COMPUTER SYSTEM THAT UNDERSTANDS OUR NEEDS AND FEELINGS?

WHAT IF MACHINES COULD HELP US DISCOVER WHAT WE CAN'T YET IMAGINE?



CSD

WHAT IF YOUR NEXT DIGITAL INNOVATION COULD CHANGE HOW WE EXPERIENCE THE WORLD?

CAN YOUR ALGORITHMS UNLOCK NEW POSSIBILITIES IN SCIENCE AND DESIGN?

SUTD.EDU.SG/ISTD

TRAILBLAZING A BETTER WORLD BY DESIGN.

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

AI alone is just deep tech. Design·AI at SUTD goes further—a bold integration of AI with a holistic view of design, embracing creativity, ethics, empathy, critical thinking, purposeful action, and a commitment to solve human and societal challenges.

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 solutions that really matter.

DESIGNING INTELLIGENT COMPUTING SYSTEMS POWERED BY Design·AI

HOW IS THE SUTD COMPUTER SCIENCE AND DESIGN (CSD) PROGRAMME DIFFERENT FROM OTHER COMPUTER SCIENCE PROGRAMMES?

We go beyond the fundamentals of computer science, code, and computation. CSD integrates design thinking, advanced computing, and AI, empowering you to engineer intelligent computing solutions that drive meaningful impact.

At SUTD, Computer Science and Design isn't just about programming. Embedded with Design·AI across the curriculum, you'll master the same technical foundations as any computer scientist—algorithms, data structures, systems, and machine learning—while combining them with a multi-disciplinary and systematic design approach that builds agility and fluency for a rapidly evolving AI world. You'll gain skills in design innovation and AI, along with a human-centred mindset—learning to ask not only "Can we build it?" but "Should we?" and "How will it change the way people live, work, and connect?"

Through cross-disciplinary, real-world projects and problem-driven learning, you'll develop both technical depth and creative range—gaining deep expertise in software and hardware systems to design technically sound, industry-relevant computing systems guided by the responsible use of AI for business and society.

CSD graduates enter the workforce with a powerful repertoire that fuses computing mastery, design innovation, and AI fluency—an edge that bridges technology and humanity. Like their peers in other SUTD majors, CSD graduates are not just "bilingual" in expert domain knowledge and AI, but effectively "trilingual"—creating transformative, ethical, and human-centred computing solutions powered by augmented intelligence and Design·AI.

THE FIRST Design·AI UNIVERSITY FOR THE NEW WORLD

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

A COMPUTING SYSTEMS CURRICULUM REIMAGINED WITH Design·AI

Graduate with a Bachelor of Engineering in Computer Science and Design

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 CSD 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 with a stronger focus on engineering applications, or the (S) option for courses with a stronger focus on social sciences applications. CSD students should take the (E) option. *(See CSD Curriculum table for details.)*

The CSD programme focuses on information and computing technologies, and its relationship with the world. It integrates the traditional disciplines of Computer Science and Information Systems. In addition to your CSD subjects, you'll continue to take courses in HASS and Design·AI that will prepare you to be a new type of tech leader—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 CSD and Design·AI to either a client-sponsored industry project or your own entrepreneurial venture, tackling real-world challenges. By graduation, you'll have built an extensive portfolio of industry-inspired work, well-prepared for your career journey.



SUTD equipped me with a **solid technical foundation and practical application of concepts**, allowing me to put them to use when I joined GovTech to develop citizen-centric products. In the increasingly complex world we live in today, multi-faceted problems can no longer be solved within a single area of expertise. SUTD has helped me **broaden my skillsets in collaborating with cross-functional teams, understanding and solving complex problems as well as exploring innovative approaches to meet user needs.** Working on multi-disciplinary projects at SUTD and studying the arts and humanities have provided me with multi-perspective analytical skills.

+++ Janice Tan
Senior Software Engineer, GovTech Singapore
ISTD[1] Alumna

1 The Computer Science and Design (CSD) degree programme was originally named Information Systems Technology and Design (ISTD). It is a programme offered under the ISTD pillar.

CSD CURRICULUM

JAN-APR	MAY-AUG	SEP-DEC
Freshmore Subject Core Subject Humanities, Arts and Social Sciences (HASS) Subject Elective Capstone	Y1 Y2 Y3 Y4	**TERM 1** Innovating with Design & AI 1 Introduction to Programming Calculus Sustainability: Science & System Thinking Introduction to Social Sciences/ Global Humanities
TERM 2 Innovating with Design & AI 2 Algorithmic Thinking & Object-Oriented Programming Linear Algebra & Multivariable Calculus **(E)** Physics Principles & Applications 1 Introduction to Social Sciences/ Global Humanities	**TERM 3** Innovating with Design & AI 3 Introduction to Machine Learning Introduction to Probability & Statistics **(E)** Any Two Electives*	**VACATION**
TERM 4 Information Systems & Programming Computation Structures Algorithms HASS	**TERM 5** Elements of Software Construction Computer System Engineering Elective HASS	**VACATION/ INTERNSHIP/ EXCHANGE**
TERM 6 Elective Elective Elective HASS	**VACATION/ INTERNSHIP/ SUMMER PROGRAMME**	**TERM 7** Capstone Elective Elective HASS
TERM 8 Capstone Elective Elective 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/istd 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 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 & 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, YOUR IMPACT.

To acquire more in-depth human-centred Design·AI expertise, CSD students have the option to pursue the **Human-centred Domain Intelligence (HDI) Second Major**.

REQUIREMENTS

- 2 DAI studios **OR**
  1 DAI studio **+** 1 DAI course
- 2 AI courses (own major)
  + 1 AI course (can be from another major)
- 3 HASS HCD courses

DAI – Design and Artificial Intelligence
HCD – Human-Centred Design
HASS – Humanities, Arts and Social Sciences

SCAN TO FIND OUT MORE

Apart from deep technical skills, at SUTD, **I developed a keen understanding of a universal design methodology that is necessary to tackle large, complex and abstract design problems**. We were trained not to shy away from interdisciplinary problems but to embrace them. It has enabled me to traverse through leading institutions both in business (Citi) and academia (University of Cambridge). It is this **compatibility of SUTD's education with the needs of real businesses** that the SUTD pedagogy shines.

+++ Joshua Cheong
Head of Product,
Mantle Network (Ex-VP of Citibank)
ISTD Alumnus

FUTURE POSSIBILITIES

CAREERS

CSD graduates are prepared for diverse computing and management careers across the same industries that employ traditional computer scientists and information systems engineers—and beyond.

With specialised skills in software design, AI, data analytics, security, computer engineering, and financial technology, you'll be a sought-after technical leader in both the public and private sectors, including telecommunications, e-commerce, FinTech, transportation, and gaming.

SUTD's interdisciplinary and design-oriented training equips you with the agility and creative edge to excel in any field where computing and human experience meet.

POSITIONS HELD BY CSD GRADUATES:

- **AI engineer**
- **Business architecture analyst**
- **Cybersecurity engineer/analyst**
- **Data scientist/engineer**
- **Fullstack developer/engineer**
- **Graduate/Management associate**
- **Research officer**
- **Software engineer/developer**

ENTREPRENEURSHIP

With a solid background in computing systems, Design·AI and technology, a CSD graduate is well-placed to launch start-ups that make a difference.

START-UPS BY CSD GRADUATES:

- Lexi **builds AI-powered associates that help law firms automate administrative work, enabling lawyers to focus on substantive legal tasks. Each tool adapts to a firm's unique standards and continuously improves with every case. Having processed over 135,000 documents across 7,000 cases, and backed by Y Combinator, Google, and Plug and Play, Lexi is transforming legal workflows through intelligent automation.**
- Beep Technologies **provides a low-cost, unified cashless payment system for vending machines. "Making dumb machines smart", it aims to increase merchants' efficiency without investing in additional hardware. During the Covid-19 pandemic, Beep powered more than 100 vending machines island-wide as part of the Ministry of Health's efforts to distribute free ART kits.**
- Affable **is an AI-based influencer marketing platform that has successfully raised $1 million in seed funding. By tapping onto AI and automated technology, Affable allows brands to discover, engage and measure authentic influencers.**

GRADUATE SCHOOL

CSD's rigorous technical training will also prepare you for various post-graduate programmes. Our CSD graduates are enrolled at top universities including:

- **Carnegie Mellon University**
- **Columbia University**
- **New York University**
- **Stanford University**
- **University of Cambridge**
- **University of Illinois Urbana-Champaign**



PREPARE TO TAKE ON THE WORLD

Our department has had the pleasure of hosting several student interns from SUTD, particularly in the roles of DevOps and Software Engineers, and **we've been consistently impressed with their performance**. SUTD has clearly equipped them with the necessary skills to excel in the IT industry, making them quick learners and digital natives who seamlessly integrate into our fast-paced environment. **Their technical expertise, especially in automation and software development, has significantly contributed to our projects**. **Their problem-solving skills and adaptability have been invaluable**. We truly appreciate the partnership with SUTD and look forward to continuing to work with their talented students.

+++ Alberto Resco Perez
Senior Director, Software Engineering, Singtel

Working with the graduates from the SUTD's CSD programme has been a positive experience. **Their dedication, creativity, and technical expertise have shone through, making a meaningful impact on our team**. During their time with us, they **consistently demonstrated strong problem-solving abilities and a solid grasp of both design principles and programming**. They approached each project with enthusiasm and integrated seamlessly with the team, effectively merging technical and functional aspects. Their contributions not only enhanced our projects but also sparked innovative ideas. **The blend of technical proficiency and design insight they offered was invaluable**. I have no doubt they will excel in their future endeavours.

+++ Huang Yong'an
Senior Manager, Business Architecture, Accenture



IOT AND INTELLIGENT SYSTEMS

Build large-scale networked and distributed systems, gaining fundamental knowledge to make them effective, scalable and intelligent. Prepares you for careers in the public and private sectors focused towards distributed data centres, automotive solutions, web services and E-commerce solutions among others.

DATA ANALYTICS

Revolves around three main activities: data capture, data analysis and data exploitation. You will gain the computing skills to develop systems that can extract insights from data and make informed decisions.

FINANCIAL TECHNOLOGY

Understand the core challenges in finance and advanced computing technologies to drive the next generation of financial services.

SOFTWARE ENGINEERING

Acquire skills in designing, developing, testing, evaluating and maintaining software systems. Be trained in software engineering principles, programming language concepts and software testing methods.

8 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

ARTIFICIAL INTELLIGENCE

Focuses on the fundamental mechanisms that enable the construction of intelligent systems that can operate autonomously, learn from experience, plan their actions and solve complex problems.

VISUAL ANALYTICS AND COMPUTING

Develop systems to handle visual data, mainly images, videos and shapes. Using computers to analyse, acquire, synthesise and render visual data.

SECURITY

Designed for students who want to develop state-of-the-art knowledge of computer security, network security and cybersecurity technologies.

CUSTOM SPECIALISATION

Presents you with the opportunity to be an expert in your field of interest and to best realise your career objectives. With the flexibility to select subjects from CSD and other majors, customise an interdisciplinary curriculum that is firmly grounded in computing around a coherent technical theme.

SINGAPORE UNIVERSITY OF TECHNOLOGY AND DESIGN

CSD CORE SUBJECTS

- **Computation Structures**
- **Computer System Engineering**
- **Elements of Software Construction**
- **Algorithms**
- **Information Systems & Programming**

From your very first CSD subjects, Design·AI is woven into how you learn and create.

In courses like Information Systems & Programming and Elements of Software Construction, you'll use AI-powered and Generative AI (GenAI) tools such as Android Studio with Google Gemini integration, VS Code with Copilot, and Cursor—not just for coding, but also to explore how to partner with AI in software design and development for real-world applications, while learning responsible AI use so your solutions remain ethical, reliable and uniquely yours.

LEARNING OUTCOMES OF CSD CORE

DEVELOP PROBLEM-DRIVEN COMPUTING SOLUTIONS

A strong mathematical grounding, algorithmic thinking and intense exposure to design empowers you to tackle challenges the right way, instead of simply focusing on tech-driven solutions.

DESIGN MACHINES OF THE FUTURE

Develop machines with augmented intelligence to solve complex problems.

ADAPT TO THE RAPIDLY CHANGING TECHNOLOGY LANDSCAPE

Adept at mastering new computing technologies that constantly emerge through hands-on projects.

GAIN REAL-WORLD PROJECT MANAGEMENT SKILLS

Gain insights into the practical issues of building products, systems and services through interdisciplinary projects.

MIX
Paper | Supporting responsible forestry
FSC® C104132

Printed on eco-friendly paper & ink.