ASD

ARCHITECTURE
AND SUSTAINABLE
DESIGN
Design goes beyond aesthetics – it transforms the way we live. The power of design is deeply rooted in understanding the human experience and needs, and then creating innovative products, services and systems to meet and improve them. That’s why forward-thinking companies and nations are investing heavily in design to drive innovation and growth.

Architecture is currently undergoing fundamental changes as it transitions into the digital era. Constraints on resources, environmental changes and the rapid urbanisation of the world require innovative methods and new forms of practicing architecture.

Architecture and Sustainable Design’s (ASD) innovative curriculum focuses on this changing reality, as it prepares you for the immediate and future needs of architecture.

Our particular geographic position in Asia and interdisciplinary collaboration with the other SUTD programmes provide a unique platform for addressing some of the most pressing design problems in architecture and urbanism today.

ASD is characterised by:

- hands-on approach
- holistic understanding of the way technology is changing our design and building processes
- inclusive approach to the cultural and historical aspects of designing buildings and cities

ASD students are the architects and urban designers of the future. They don’t just build structures – they build better communities and a better tomorrow through the power of design and technology.

**RESOURCE CONSTRAINTS**

Necessitates a radical rethinking of the traditional skills and trade-based production of the built environment. Advances in digital design and fabrication, such as 3D and 4D printing, numerically controlled milling, nano-materials, composite materials and additive fabrication, combined with digital mass-customisation techniques provide resource-efficient opportunities and lower production costs.

**ENVIRONMENTAL CHANGES**

Demands a more ecological approach to the sustainable design of architecture and cities: digital data harvested from local sensor networks, satellites and crowd sourced information will feed the simulation of environmental forces and conditions such as wind flows, sun orientations, topographies and human traffic.

**RAPID URBANISATION**

The coming decades will add three billion people to urban populations, an amount equal to all city dwellers today. This calls for sustainable architectural and urban solutions at an unprecedented speed and scale, demanding the use of digital tools in architectural and urban design.
A Forward-Looking Curriculum

You will develop solid skills in the most cutting-edge digital tools, applying computational thinking, parametric design and AI to architecture in order to solve increasingly complex design challenges.

In your first three Freshmore terms, you will be introduced to architecture tools and concepts, beginning a “virtual studio” right from the start with the advantage of a multi-disciplinary perspective.

On top of your ASD subjects, the exposure to engineering disciplines and the courses you will take in Humanities, Arts and the Social Sciences (HASS) lead to a unique technological imagination.

The Design Studio sequence is at the heart of the programme and distinct to architectural education. Subjects fall into four areas of focus:

- Studio
- Building Technology
- Design Computation
- History, Theory & Culture

Learning Outcomes of ASD Core

- Think critically
- Design through enquiry, reflection and invention
- Directly experience construction
- Understand the technical demands of building
- Think digitally and physically through drawing, making, writing and speaking
- Be socially, sustainably and ethically responsible

ASD Curriculum

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SUTD Core: Freshmore subjects + Capstone


The first term for AY2022 will start in September. Please refer to the AY2022 calendar on sutd.edu.sg/academic-calendar.
In Terms 6, 7 and 8, you will be able to choose from a number of Option Studios and Capstone Studios. They represent culminating projects for the Bachelor of Science in Architecture and Sustainable Design programme, offering you the opportunity to work on real world problems individually and in interdisciplinary cross-pillar teams.

Several electives are offered to address emerging challenges such as critical resource constraints, the need for energy-efficient and livable housing, rapid urbanisation, transportation planning, historical conservation and land use transformations.

Upon completing eight terms, you will graduate with a Bachelor of Science (Architecture and Sustainable Design). Our unique programme structure and hands-on approach to architecture equip you with the necessary mix of hard skills and creative thinking to face future challenges in society and architecture.

ASD’s rigorous technical training prepares you for various post-graduate programmes. Other than the SUTD Master of Architecture programme, our ASD graduates are also enrolled at top universities such as:

- École Polytechnique Fédérale de Lausanne
- Harvard Graduate School of Design
- Massachusetts Institute of Technology
- Yale University
MASTER OF ARCHITECTURE

The Master of Architecture consists of a structured internship and two additional terms comprising an advanced design and research studio, an elective, thesis preparation and thesis.

ASD is accredited for the Master of Architecture as a professional degree programme by the Singapore Board of Architects. The intent is to equip ASD graduates and qualified students from other architecture schools with the best foundation for practising architecture nationally and internationally, providing a high level of technical competency and scientific knowledge while being attuned to the business opportunities and cultural contexts that will make their design projects meaningful and sustainable.

ASD graduates will be prepared for positions in:

- Architecture
- Urban design
- City planning
- Digital fabrication and design
- Computational architecture and design
- Environmental design
- Construction management
- Real estate development
- Architecture research and design
- Future cities research and design
- Post-professional masters
- PhD programmes

THESIS RESEARCH

Every student’s journey leads to an end with an independent Master’s Thesis, where the student examines a specific thesis and envisions its architectural specificity.

The Master’s Thesis represents an opportunity for you to pursue design research within a project of your passion. The ultimate goal, to challenge and make an intellectual contribution to the future of the architectural and urban discipline, with all the tools, technologies, arts and sciences knowledge acquired during your studies at SUTD.

The Thesis starts during the Structured Internship with the identification of a thesis topic and continues in Term 9 with the Thesis Preparation module, where you will research and formulate your individual proposal under the guidance of advisors, related faculty members and/or industrial partners.

Thesis continues in Term 10 and evolves from the refinement of the thesis proposal to its translation into an architectural project within a specific site and programme.

Each final thesis project is publicly reviewed in a final jury consisting of ASD and visiting faculty, eminent practitioners and industry representatives.

INTERNSHIP AND EXCHANGE

You will have the opportunity to intern in architecture and urban design firms, and apply your knowledge in real situations. SUTD provides you with the connection to a vast network of local and international architectural firms. There is also an Architect-in-Residence programme at SUTD.

You are encouraged to spend an academic term in our partner international universities and be immersed in a design-focused environment from a global perspective. You will have opportunities to take selected courses in architecture, design and the humanities, arts and social sciences.

Master Thesis. New attitude towards transformation in HDB by Ong Li Yen.
"My deep interests in computation design and digital fabrication was seeded in my first term of ASD. I realised how new digital tools and technologies can be used to not only create smarter and more data informed designs but also to augment new expressions of space and materials.

This is critical as the environment we live in becomes increasingly volatile, uncertain and complex. Through this foundation, I progressed to design and develop my own research experiments, even as an undergraduate, and in the process, developed new novel material processes with advanced industrial robotic arms.

SUTD’s multi-disciplinary approach to design and architecture is, in my view, its key differentiator. Working together with other programmes extends the toolkit and repertoire of an architect beyond just merely contenting with architectural and design concerns in silo, to one that begins to understand technical constraints of engineering and the salient potentials of digital technologies to create tightly integrated and innovative new solutions. All these have helped me to approach problems with a multi-disciplinary mindset and discipline.

For my final year capstone project, together with friends from ISTD and EPD, we designed Hyperbands. It’s a 20-metre-long interactive light ribbon that was exhibited at Singapore Night Festival 2018. We used algorithms in its architectural design and digital fabrication, and deployed new technologies such as machine learning and computer vision to create an installation that offered new and more engaged interaction potentials.

Jonathan Ng
Class of 2018, ASD Alumnus

Design, especially in architecture, is more than just problem solving. It is about creating value for the users as we endeavour to balance their needs with every site’s constraints and potential. SUTD’s multi-disciplinary education has enabled me to be technically grounded, while at the same time develop the empathy to approach issues from multiple perspectives through evidence-based design.

Kelley Cheng
Creative Director, The Press Room
Editor-in-Chief, Singapore Architect (2009-2016)
The building and construction industry today is fast-changing, with the implementation of new software, systems and innovations such as Building Information Modelling (BIM), environmental sustainability, computational design and new materials. SUTD has also prepared me for this, by inculcating a future-ready mindset through its hands-on collaborative culture and industry-centric approach.

This has enabled me to be more receptive and prepared to undertake new challenges, while always being open to new ways of thinking and creating with others.

Leon Cher
Project Executive,
Far East Organization
Class of 2015, ASD Alumnus

GLOBAL EXPOSURE

In January each year, students are free to pursue their personal interests. During this Independent Activity Period (IAP), some ASD students choose to use their skills to contribute to the world or to gain more exposure through overseas workshops. In Terms 6 and 8, certain Option Studios provide you with international opportunities to broaden your horizons.

- **SWISS IAP: SWISS INNOVATIONS**
  - Studied Swiss innovations in Basel’s distinctive spaces.
  - Explored potential sites for a hospitality space through the use of data.

- **JAPAN STUDIO: INUJIMA LIFE BOTANIC GARDEN**
  - Collaborated with Sejima and Nishizawa Architecture Atelier (SANAA) and Japanese architect Kazumi Kudo.
  - Conducted research on Pritzker Laureate Kazuyo Sejima’s “Inujima Life Botanic Garden”, a project that focused on new ways of living in the small island community of Inujima.

- **JAPAN IAP: MEASURING THE UNMEASURABLE**
  - Examined and analysed different types of data to better understand the utility of spaces in the Kansai region.
  - Explored various sites including an observatory building, restored machiya guesthouses and art house projects on Inujima guided by the architect herself, Kazuyo Sejima.

- **VENICE STUDIO: ANDREA PALLADIO**
  - Learned about the great Renaissance architect Andrea Palladio (1508 – 1580) and experienced his architecture in Venice.
  - Studied the relevance of Palladian architecture in our modern context, and how to apply the values of scale, proportion and hierarchy to meet the needs and challenges of architecture.

- **VIETNAM IAP: COMMUNITY DESIGN AT HANOI**
  - Building on an earlier community design project in Ho Chi Minh City (2014-2015), SUTD OLab embarked on a new community design project in Hanoi, in partnership with World Vision and CapitaLand.
  - Designed a safe learning and playing compound for a new kindergarten in Le Xa, encouraging local children to go to pre-school and receive proper nutrition and education.
  - Conducted research and a co-design workshop with teachers and residents.
  - CapitaLand constructed the final design in May 2018.

- **VIETNAM STUDIO: BAMBOO IN FORMATION**
  - Investigated the creative uses of bamboo in architecture.
  - Analysed examples of bamboo architecture, met the architects, and visited the villages where the material is farmed and processed.