ARCHITECTURE AND SUSTAINABLE DESIGN

PILLAR OVERVIEW

Architecture is currently undergoing fundamental changes as it transitions from the industrial era, epitomised by Cartesian rationality and the Bauhaus legacy, into the globalised reality of the information age.

The Architecture and Sustainable Design (ASD) pillar is one of four pillars at SUTD that focuses on this changing reality, and prepares students for the immediate present and future needs of architecture through an innovative approach that concentrates on technology and design, design creativity and cultural sensitivity.

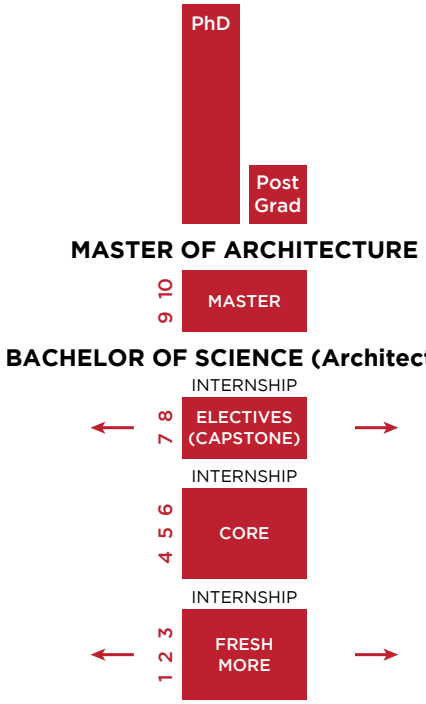
The ASD pillar is characterised by a hands-on approach to architecture and sustainable design, a holistic understanding of the ways in which technology is changing our design and building processes, and an inclusive approach to the cultural and historical aspects of designing buildings and cities.

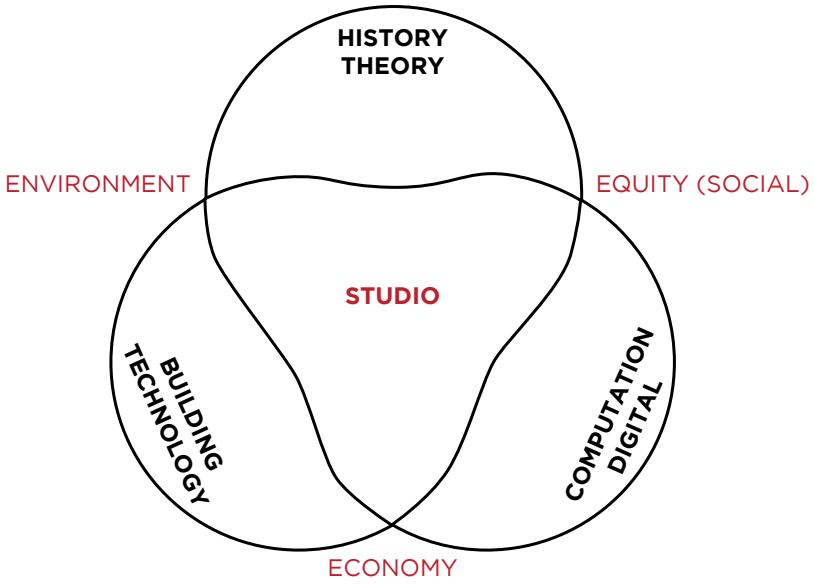
Our particular geographic position in Asia and our intimate collaboration with the other pillars at SUTD provide the ASD pillar with a unique platform for addressing some of the most pressing design problems in architecture and urbanism today. We offer a competitive edge in tackling emerging design challenges such as those related to the rapid urbanisation in Asia, the digitalisation of design practice, or the transformation of fabrication by algorithms and robots.

Programme Structure

In the last few decades, the number of building construction and real estate development projects has exploded in Singapore and Asia. Still, only very few projects of true intensity and visionary power have seen the light.

The ASD pillar is educating the next generation of architects to go beyond the busy pre-occupation with ever faster deadlines, that banalises the architectural profession, instilling the desire and knowledge for unique voices of true foresight and courage to emerge and stand up. SUTD seeks to develop architectural leaders for a better tomorrow.





ASD PILLAR CORE SUBJECTS
The ASD pillar core encompasses Terms 4, 5 and 6. The Design Studio sequence is at the heart of the programme and is unique to architectural education. Subjects revolve around the Design Studio sequence and fall into four areas of focus: Studio; Design Computation; Building Technology; and History, Theory and Culture.

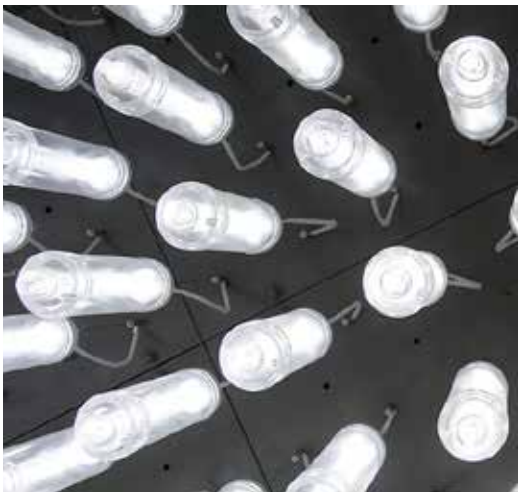
The ASD core is structured to expose students to think critically; to design through enquiry, reflection and invention; to directly experience construction; to understand the technical demands of building; to think digitally and physically through drawing, making, and writing and speaking – and to be socially, sustainably and ethically responsible.

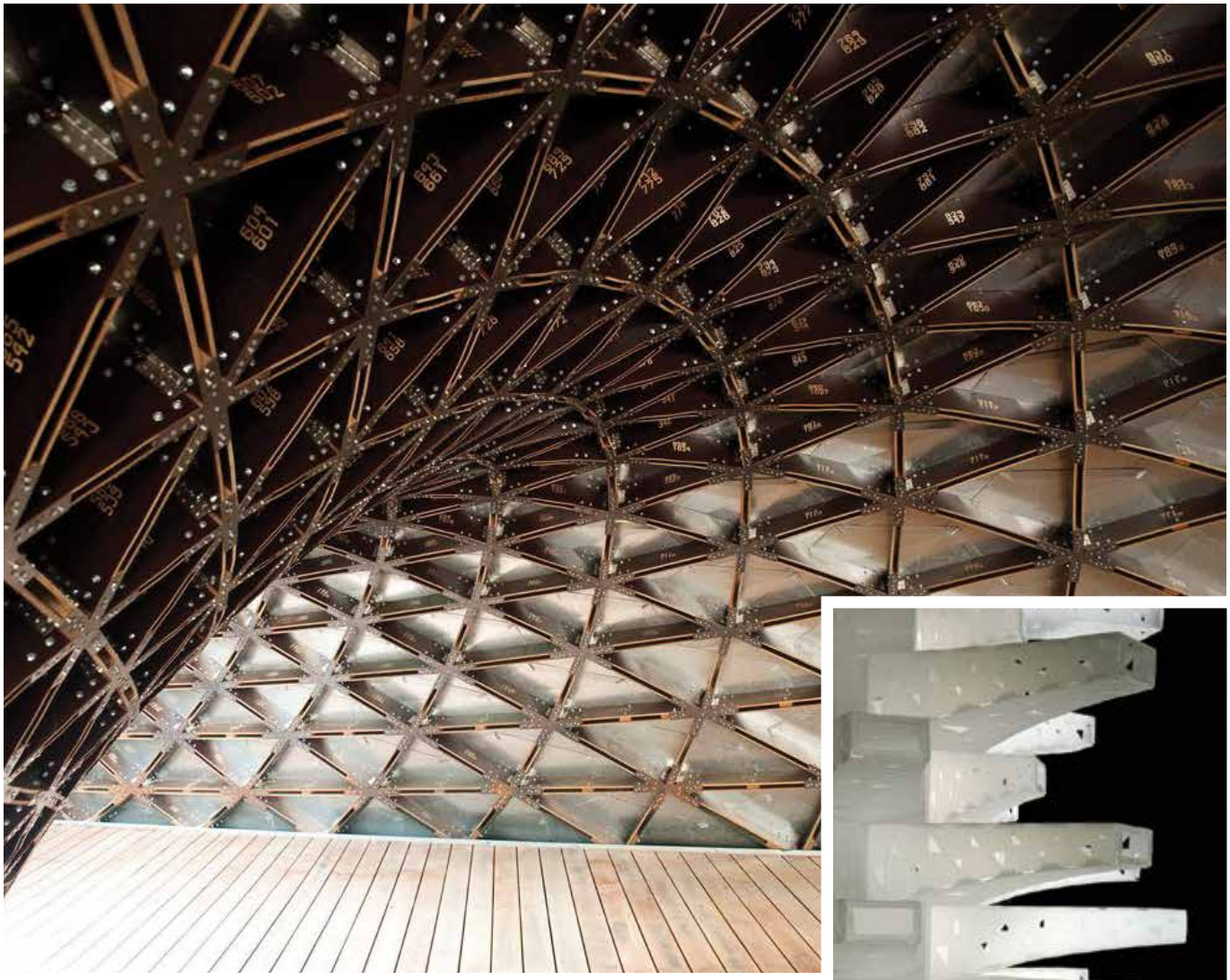
In addition to the traditional course framework, ASD students will be exposed to the economics of architecture - real estate valuations, finance, environmental studies (Term 6) - as well as to the humanities, arts and social sciences (Terms 4 and 5).

The ASD core subjects are led by both professionals and academics actively engaged in contemporary architectural practice and research. Teaching will comprise a hands-on, industry-oriented approach that is thoroughly rooted in the economic, technical, and social frameworks of contemporary society. Active learning with strong emphasis on learning-by-doing permeates every class offered. In addition to studio and class work, ASD organises Distinguished Lecture Series featuring distinguished academics and leading practitioners.

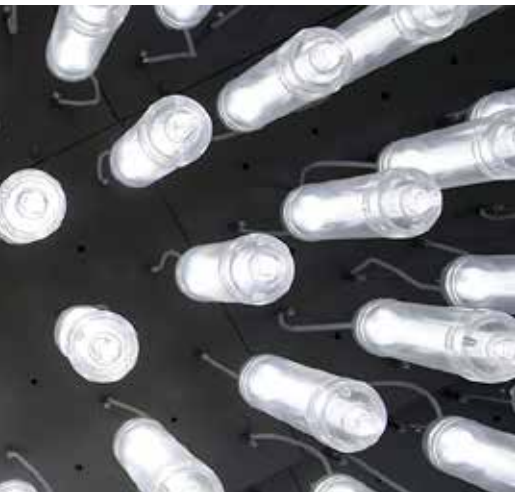
CAPSTONE
Students in the capstone year (Terms 7 and 8) will be able to choose from a number of capstone studios and electives. The capstone studio represents a culminating project for the Bachelor of Science in Architecture and Sustainable Design programme, offering students the opportunity to work on real world problems in interdisciplinary and cross pillar teams.

The ASD pillar has targeted teaching and research in the urban context for special attention. The urbanisation of the world in the coming decades will add three billion people to urban populations, an amount equal to all city-dwellers today. Several elective classes will be offered to address the need to educate the architect to be able to deal with the important issues of future cities including critical resource constraints, the need for energy efficient and liveable housing, rapid urbanisation, transportation planning, and land use transformations.





INTERNSHIP
Throughout the ASD curriculum, students will have the opportunity to intern in architecture, urban design and real estate firms and apply their knowledge in real situations. SUTD provides students with the connection to a vast network of local and international architectural firms. There is also an Architect-in-Residence programme in the SUTD campus.



MASTER IN ARCHITECTURE
Students completing eight terms will graduate with a Bachelor of Science with a major in Architecture and Sustainable Design. The Master of Architecture, our professional degree, consists of two additional terms comprising an advanced design and research studio, thesis preparation, two electives, and the actual thesis work. The ASD pillar will be accredited for the Master in Architecture as a professional degree programme by the Singapore Board of Architects and equivalent international accrediting boards. The intent is to equip ASD pillar graduates with the best foundation for practicing 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
- Environmental Design
- Construction Management
- Real-estate Development
- PhD Programmes
- Post-professional Master's programmes in urban design and planning, landscape design, real estate and business administration.

MAJOR SHIFTS

ASD's distinct geographical situation in Asia, the collaboration with MIT and Zhejiang University, and the particular intellectual position among the engineering pillars and the humanities, arts and social sciences at SUTD, gives ASD a unique edge for anticipating and contributing to the fundamental shifts happening in contemporary architecture and urbanism today. Here are our beliefs:

EAST AND WEST

The concentration of worldwide architectural production has shifted from the west to the east: Asia is the new centre of gravity for global construction. The rapid urbanisation in Asia calls for sustainable architectural and urban solutions at an unprecedented pace and urgency, at a global scale, demanding the combined arts and technologies, knowledge and philosophies from both the west and the east.

MULTI-DISCIPLINARY LEADERSHIP

Emerging architectural and urban problems are becoming increasingly complex, challenging the traditional disciplinary boundaries of architecture, and inevitably requiring the joining of multi-disciplinary forces. In a climate of hyper-specialisation, the architect's future destiny as a traditional generalist seems clear. At ASD, we believe that the role of the architect must be: to not only collaborate with other disciplines, but also, and foremost, to provide the vision and leadership for multi-disciplinary initiatives towards a sustainable built future.

BIG DATA

Larger ever data sets – from local sensor networks, from the satellites, from the collection of mobile users' information – are becoming instantly available at the architect's fingertip, enriching but also overloading the serene architect at the early stages of design. At ASD we believe that the capacity and sensibility to control and manipulate big and small data through algorithms, programmes and scripts will be a key complement to the traditional skills and define the successful architect of the future.

COMPLEX GEOMETRIES

The computer is expanding the traditional formal horizon of the architect towards complex geometries. Empowered by recent advancements in digital tools, such as parametric modelling, Nurbs, morphogenetic simulations, the contemporary architectural scene is increasingly shaped by an architectural avant-garde who is embracing non-standard forms and non-Euclidean geometries exuberantly as central elements for architectural expression. Iconic buildings such as the Olympic stadium in Beijing by Herzog & De Meuron, the Rolex Learning Center by Saana, or the Jeddah International Airport by OMA are testimonies of projected and built complex forms that would be impossible to conceive and execute without digital tools. At ASD, we believe that a fine mastery of emerging digital tools and a critical reflection upon the meaning of their use will be indispensable for graduating architects.

ECOLOGICAL URBAN ARCHITECTURE

Focusing on both qualitative and quantitative aspects of ecological design, we in ASD believe that the exploration of areas in which architects can use their creative skills and methods to achieve sustainable results on the urban scale is key for addressing some of the most pressing challenges of our time. These include research on strategies of materialisation in architecture, the extensive use of computational tools for environmental simulations, as well as new methods of transformation of existing urban environments.

DIGITAL FABRICATION

Machines and robots are challenging the traditional skills- and trade based production of architecture. Advancements in digital fabrication, such as 3D and 4D printing, numerically controlled milling, nano-materials, composite materials and additive fabrication, combined with mass-customisation techniques are simultaneously providing new formal freedom to the designer, while at the same time lowering production costs. At ASD, we believe that only direct, hands-on explorations with machines and robots will provide the necessary experience for learning and innovating in a digitally fabricated world. As part of SUTD's immersive curriculum, architecture students will experience and be versed in the theory and practice of digital design and fabrication equipment.

SINGAPORE UNIVERSITY OF TECHNOLOGY AND DESIGN

Established in collaboration with MIT