

BUILD SOFTWARE SYSTEMS & PLATFORMS FOR A SMART NATION

Master of Technology in
Software Engineering

Available as
Stackable Graduate Certificate Programme
in Smart Systems & Platforms

Master of Technology in Software Engineering

The NUS Master of Technology in Software Engineering programme emphasises the skills required for architecting scalable, secure and smart systems and platforms. The focus will also be exploitation of software technologies, methodologies and management techniques. It focuses on the practical and systematic construction of software systems, using innovative and state-of-the-art techniques.

The programme will equip you with the essential knowledge and practical experience to architect, design, build and manage the delivery of robust software systems for your organisation and customers.

Programme Delivery

MTech SE candidates must successfully complete 2 mandatory graduate certificate from the fundamental area, 2 of 4 graduate certificates from the specialist areas as well as complete a capstone project. Students are evaluated through a combination of course work, project work and examinations.

Recognition:

- Top student is awarded the **Accenture Award and Prize**
- Best Project Prize



Who Should Apply

- Individuals who have a few years of experience in software engineering roles and are looking to further enhance their knowledge and skills in architecting scalable, secure and smart systems and platforms.
- Professionals who are currently in or are looking to enter the careers in the following areas:
 - Software Architecture
 - Data Architecture
 - Software Engineering
 - Product Management

How to apply?

All applicants are required to apply online via the Graduate Admission System (Coursework). Come and find out more about the MTech programmes at our info sessions.

Visit www.iss.nus.edu.sg/graduate-programmes for more details. We conduct in-country entrance tests and interviews in selected countries.



Admission Criteria

1. Bachelor's degree preferably in Science or Engineering and a grade point average of at least B
2. Proficiency in the English Language (written and spoken)*
3. Preferably two years relevant working experience as a software engineer (e.g. programmer, designer, technical team lead).
4. Proficiency in the following areas:
 - Software development lifecycle, including Agile software development methods such as Scrum.
 - Software development using one or more contemporary programming languages, software design including the use of design patterns, software testing and test-driven development.
5. Have passed an entrance test
 - NUS-ISS may, at its discretion, accept GRE general test in lieu of NUS-ISS entrance test in genuine cases e.g. a candidate lives in a country where NUS-ISS does not administer entrance tests or candidate had valid reasons that prevented him/her from attending the NUS-ISS entrance test when it was administered.
6. Have received a favourable assessment at admissions interview conducted by NUS-ISS

*Applicants whose native tongue and medium of university instruction is not in English should submit your TOEFL or IELTS score as evidence of your proficiency in English

TOEFL	IELTS
<ul style="list-style-type: none"> • Paper-based test (580) • Computer-based test (237) • Internet-based test (85) 	<ul style="list-style-type: none"> • Result of 6.0

Semester 1	Semester 2	Semester 3		Semester 4		Part-time	
Semester 1		Semester 2		Semester 2		Full-time	
Foundation Certificates (do both)		Specialist Certificates (pick one)		Specialist Certificates (pick one)		CAPSTONE PROJECT (Full-time) 5 months	
Designing Modern Software Systems Essential Practices for Agile Teams Software Analysis and Design Software Design Patterns DevSecOps Engineering and Automation Practice Module Graduate Certificate in Designing Modern Software Systems	Architecting Scalable Systems Architecting Software Solutions Platform Engineering Cloud Native Solution Design Practice Module Graduate Certificate in Architecting Scalable Systems	Securing Ubiquitous Systems (ISC) ² CISSP CBK Training Seminar Secure Software Development Lifecycle for Agile Design Secure Mobile Architecture Platform Security Practice Module Graduate Certificate in Securing Ubiquitous Systems	Designing and Managing Products and Platforms Service Design Managing Digital Products Digital Product Strategy Architecting Platforms as a Business Practice Module Graduate Certificate in Designing and Managing Products and Platforms	Engineering Big Data Information Architecture for Data-Driven Insights Big Data Engineering for Analytics Architecting Systems for Real-Time Data Processing Practice Module Graduate Certificate in Engineering Big Data	Architecting Smart Systems Architecting IoT Solutions Designing Intelligent Edge Computing Humanizing Smart Systems Practice Module Graduate Certificate in Architecting Smart Systems		
Capstone Project (Part-time, 6 - 12 months)							
Learning Outcomes <ul style="list-style-type: none"> • Design and develop software systems by leveraging on best practices for agile teams • Analyse and design robust software systems for implementation on target technology platforms • Design reusable, maintainable and extensible software systems by applying expert solutions from existing design patterns • Engineer and automate DevSecOps pipelines for agile continuous delivery Job Roles <ul style="list-style-type: none"> • Software Engineer • Software Designer • Software Architect • DevSecOps Engineer 	Learning Outcomes <ul style="list-style-type: none"> • Architect scalable, robust integrated systems • Architect systems as Cloud Native solution with best practices and patterns • Architect platforms and frameworks for building extensible systems and exposing platform functionality to other systems and platforms Job Roles <ul style="list-style-type: none"> • Solution Architect • Platform Architect • Cloud Architect 	Learning Outcomes <ul style="list-style-type: none"> • Understand and apply the basics and concepts of cybersecurity required to incorporate security into systems • Understand and apply key concepts in securing mobile platforms, mobile apps and integration to enterprise, as well as for designing mobile security architecture • Design a secure application platform with servers that provide services to edge devices, systems and those on the cloud • Design systems using "Secure by Design" practices in an agile software development lifecycle Job Roles <ul style="list-style-type: none"> • Security Architect • Cybersecurity Specialist 	Learning Outcomes <ul style="list-style-type: none"> • Apply a product management framework for planning and launching products • Understand and apply the central concepts of design thinking to innovative products • Perform market research, identify the competition, and converse with potential customers to formulate sustainable market positioning and suitable product business model • Identify, design, instrument and instantiate the variable features of software product lines and platforms Job Roles <ul style="list-style-type: none"> • Product/Platform Architect • Digital Platform Product Manager • Product Manager 	Learning Outcomes <ul style="list-style-type: none"> • Design and implement Enterprise Data Lake • Integrate multiple large-scale data sources to derive data-driven insights • Architect scalable, polyglot and intelligent data-driven systems that are responsive to changing business requirements • Architect stream processing systems for a ubiquitously -instrumented world Job Roles <ul style="list-style-type: none"> • Data Architect • Data Engineer 	Learning Outcomes <ul style="list-style-type: none"> • Architect smart, scalable and end-to-end platforms for IoT • Develop, design and integrate systems that perform sense-making from a variety of sensors, edge devices and other systems • Build smart systems that collaborates or cooperates intelligently with humans Job Roles <ul style="list-style-type: none"> • IoT Solution Architect • Wearable Systems Engineer 		

Capstone Project for Software Engineering

Student projects for MTech SE students include 5 months of full-time engagement with the industry for full-time students, and 6-12 months for part-time students. The expected commitment for the project is 45 man-days per student.

Learning outcomes:

- Become software architects capable of architecting and designing systems that exploits major contemporary software platforms, technologies and methodologies
- Become software architects capable of architecting and designing smart and secure systems
- Become data architects equipped with data engineering skills to engineer big data from a variety of sources

Stackable Graduate Certificate Programme in Smart Systems & Platforms

The Master of Technology in Software Engineering is also available as Stackable Graduate Certificate Programme in Smart Systems & Platforms. With this programme, Professionals, Managers and Executives (PMEs) can attain a series of NUS-ISS graduate certificates over a period of five years without disrupting your careers. You have the flexibility of studying at your own pace by taking the required modular courses that make up the graduate certificates to meet your needs. PME's who do not wish to attain a graduate certificate, graduate diploma or degree can continue to attend individual modular courses thus allowing you to gain the skills to meet your career needs.

Visit www.iss.nus.edu.sg/stackable-programmes to find out more.



Testimonial

“

MTech SE allows me to stay relevant in the tech industry and continuously improve. The concepts taught as part of the programme were very useful to my work and the flexible stackable programme allowed me to juggle work and studies.

”

Melcolm Lee

Senior Engineer, Defence Science and Technology Agency (DSTA)
Master of Technology in Software Engineering,
Class of 2022

Other Graduate Programmes by NUS-ISS

Master of Technology in Enterprise Business Analytics

Available as
**Stackable Certificate
Programme in
Business Analytics**

Master of Technology in Intelligent Systems

Available as
**Stackable Certificate
Programme in
Intelligent Systems**

Graduate Diploma in Systems Analysis

Available as
**Stackable Certificate
Programme in
Digital Solutions Development**

About NUS-ISS

Established in 1981, NUS-ISS nurtures digital talent for the industry through graduate education, executive education programmes, consultancy, applied research, and career services. NUS-ISS guides individuals and organisations to bridge future opportunities through a unique portfolio of multiple learning pathways such as blended learning and stackable programmes, leading the way in shaping the next curve of digital excellence.

It offers a wide spectrum of programmes in critical industry disciplines, such as digital leadership, software development, data science, artificial intelligence, cybersecurity, product management, smart health and digital innovation.

To date, over **166,000** digital leaders & professionals, **8,060** corporate clients organisations and **7,600** graduate programmes alumni have benefitted from NUS-ISS' suite of services.

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