

# **JOINT MASTER OF SCIENCE IN DEFENCE SYSTEMS ENGINEERING AND TECHNOLOGY**

## FORTIFYING KNOWLEDGE EMPOWERING DEFENCE



SIGNING CEREMONY BETWEEN NUS AND NPS — 23 JULY 2025  
LAUNCH OF THE JOINT MASTER OF SCIENCE IN DEFENCE SYSTEMS  
ENGINEERING AND TECHNOLOGY (MDSET)

Established in July 2001, the Temasek Defence Systems Institute (TDSI) is a strategic alliance between the National University of Singapore (NUS) and leading global defence institutions.

TDSI brings together military officers, defence engineers, and defence scientists in a multidisciplinary environment, building the systems-thinking capabilities needed to plan, design, and operate complex military systems.

### The Flagship Legacy

For over two decades, the Master of Defence Technology and Systems (MDTS) served as TDSI's flagship double-degree programme, producing more than 500 graduates and forging an international network of defence leaders. Students first spend 6 months at NUS before continuing overseas for another 12 at one of TDSI's partner institutions. Since its inception, the programme continues to evolve to meet the changing demands of modern warfare and digital engineering.

### The Strategic Transition

As defence technologies increasingly shift toward software-defined systems, autonomy and cyber warfare, TDSI launched the Joint Master of Science in Defence Systems Engineering and Technology (MDSET) in partnership with the U.S. Naval Postgraduate School (NPS). This collaboration leverages world-class innovation to develop new courses and deepen Asia-Pacific geo-strategic exposure.

## WHY MDSET

Flexible, relevant, and lean, MDSET preserves the academic rigour TDSI is known for, while delivering greater flexibility and direct relevance.

### Prestigious Joint Degree

Gain global recognition across international defence sectors with a joint degree awarded by both NUS and NPS.

### Digital Transformation Core

Prepare for today's defence environment with updated modules in Next-Gen technologies like AI, Data Analytics, Cybersecurity, and Cloud Platforms.

### Streamlined Curriculum

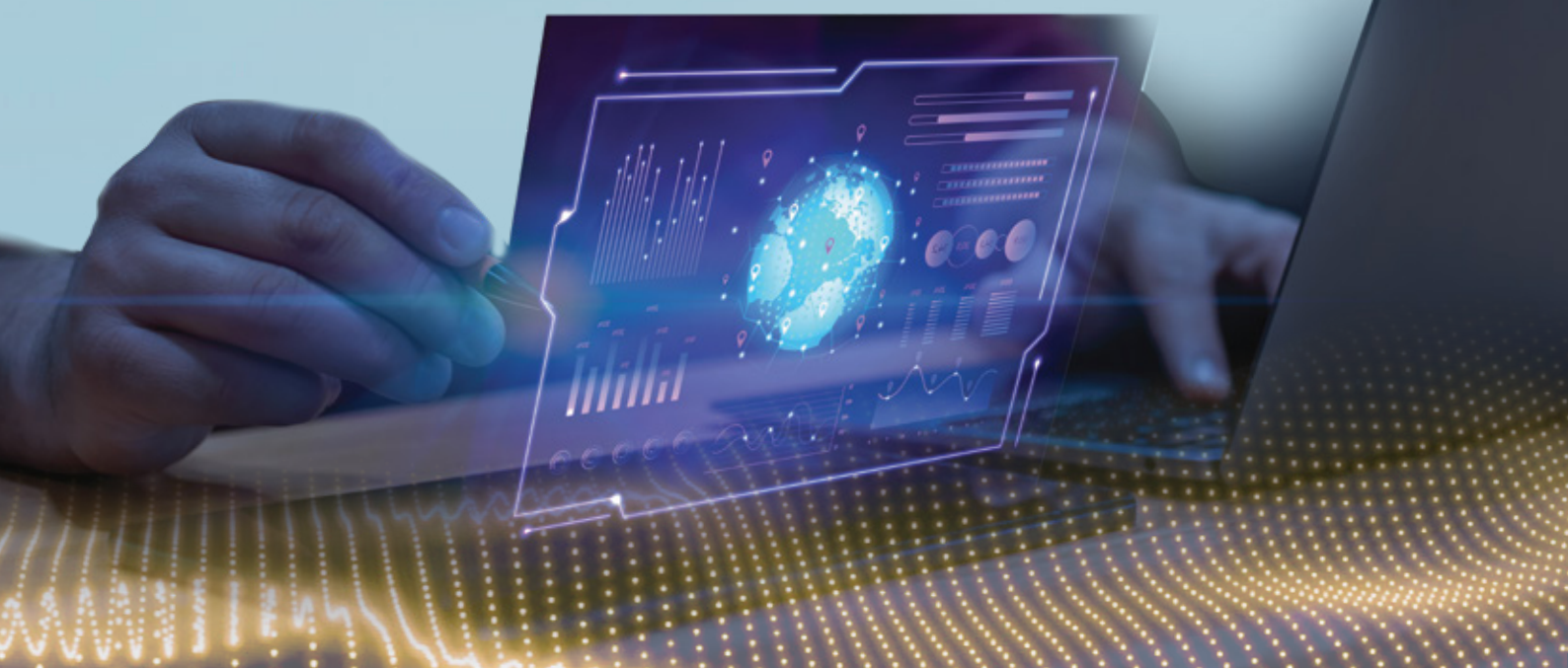
Devote greater attention to practical mission capability with a 60-unit requirement and an enhanced integration project in place of an individual thesis.

### Greater Curricular Flexibility

Tailor studies to professional roles and organisational priorities with MDSET's modular structure.

### Unrivalled Professional Networks

Forge lifelong connections with senior engineering peers and military leadership globally.



# JOINT MASTER OF SCIENCE IN DEFENCE SYSTEMS ENGINEERING & TECHNOLOGY WITH NAVAL POSTGRADUATE SCHOOL (NPS)

## Programme Overview

This 18-month Joint Master of Science in Defence Systems Engineering and Technology, offered in partnership with NPS, equips defence professionals with advanced systems engineering expertise for today's evolving defence landscape.

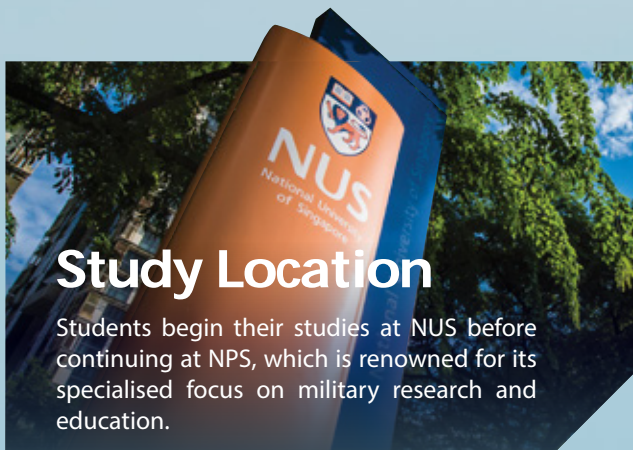
Built on TDSI's world-class foundation, the programme combines rigorous technical training with flexible electives spanning digitalisation and the strategic application of AI. Through a practice oriented curriculum and an international learning experience, students develop the technical depth, systems thinking, and leadership capabilities needed to tackle complex, data-driven, and technology intensive operational challenges.

## Key Takeaways

Students gain advanced expertise in systems engineering, with the flexibility to specialise across a broad range of cross-disciplinary electives such as Combat Systems, Space Technologies, Cybersecurity, and Electrical and Mechanical Engineering. Studies can be shaped to align with professional interests and evolving operational needs.

The integrated curriculum bridges engineering theory and operational practice, combining core systems engineering principles with specialised technical tracks. Graduates develop the ability to assess risk, enhance system resilience, and make informed capability trade-offs in complex defence environments.

Beyond technical expertise, the programme prepares graduates to lead technology development initiatives and manage multidisciplinary teams in an increasingly complex geopolitical landscape, culminating in the prestigious Joint Master of Science in Defence Systems Engineering and Technology.



## Study Location

Students begin their studies at NUS before continuing at NPS, which is renowned for its specialised focus on military research and education.

# JOINT MASTER OF SCIENCE IN DEFENCE SYSTEMS ENGINEERING & TECHNOLOGY

## Future-Ready Digital Systems and Industry Content

The MDSET curriculum is aligned with emerging trends across commercial technology and military enterprise, structured around four integrated technology pillars that underpin next-generation edge systems, autonomous capabilities, and platform resilience.

### Artificial Intelligence & Analytics

Machine learning and NLP tools support multi-target tracking, threat analysis, and faster decision-making.

### Cloud Computing

Scalable architectures and low-latency processing support seamless data sharing and faster response across distributed operations.

### Cybersecurity

Secure protocols and zero-trust architectures help protect edge systems, validate mission-critical platforms, and strengthen network resilience.


### Large Scale Digital Engineering

Systems-of-systems integration and digital twin modelling support lifecycle management and the simulation of complex defence environments before deployment.


## Our Alumni



**MS REGINE OH**  
HEAD, CAPABILITY DEVELOPMENT (ELECTRONIC SYSTEMS), ADVANCED SYSTEMS, DEFENCE SCIENCE AND TECHNOLOGY AGENCY  
**MDTS2006**



**BG(NS) ADRIAN TENG**  
SINGAPORE ARMED FORCES  
**MDTS2006**



**MR WILLIAM GOH**  
VICE PRESIDENT, HEAD INTERNATIONAL BUSINESS, DIGITAL SYSTEMS, ST ENGINEERING  
**MDTS2014**



**ME6 SU JUNCUN**  
HEAD, AERO-STORE CERTIFICATION BRANCH, AERODYNAMICS CENTRE, AIR ENGINEERING AND LOGISTICS DEPARTMENT SINGAPORE AIR FORCE  
**MDTS 2022**



**BUILD PROFESSIONAL AND PERSONAL NETWORKS THAT LAST**



**GAIN TRANSFORMATIVE EXPERIENCE**



**LEVERAGE DIVERSE SKILLSETS**



**TACKLE REAL-WORLD CHALLENGES**



**A BALANCED COURSE WORKLOAD AT NUS AND NPS**



**FUTURE-READY CURRICULUM FOR THE DIGITAL AGE**

## Curriculum Overview

### NUS Core Courses

**DTS5701**  
Large Scale  
Systems  
Engineering

**DTS5703**  
C3 Systems

**DTS5732**  
Artificial  
Intelligence &  
Data Analytics

**DTS5735**  
Cybersecurity

**DTS5737**  
Cloud  
Computing

### NPS Core Courses

**SE3302**  
System  
Suitability

**SE3250**  
Capabilities  
Engineering

**SI3400**  
Fundamentals of  
Engineering  
Project  
Management

**SE4354**  
System  
Verification  
and Validation

**SE3011**  
Engineering  
Economics and  
Cost Estimation

## Technology Tracks\*

1. Artificial Intelligence
2. Cybersecurity
3. Electrical and Computer Engineering
4. Information Sciences
5. Mechanical Engineering  
(Autonomous Systems)
6. Modelling and Simulations

7. Network Science
8. Operations Research
9. Scientific Computing
10. Secure Communications
11. Space Systems
12. Systems Engineering (Combat)

\*Subject to change as new technology tracks become available.  
Please visit our website for the latest updates.

## Customise Your Journey

MDSET's 8-course Technology Track gives sponsored defence professionals the flexibility to pursue either a deep technical focus or a cross-disciplinary systems pathway.

### In-Depth (1 Track + Electives)

Example A

#### An In-depth focus Study in Systems Engineering

##### Combat Systems

SE3112 Combat SE I - Sensor Fundamentals  
SE4112 Combact SE II - Sensor Systems  
SE3113 Combat SE III - Weapons  
SE4115 Combat Systems Intergration



##### 4 Systems Engineering Electives

### Cross-disciplinary (2 Tracks)

Example B

#### Cross Disciplinary Study in Systems Engineering and Artificial Intelligence

##### Combat Systems

SE3112 Combat SE I - Sensor Fundamentals  
SE4112 Combact SE II - Sensor Systems  
SE3113 Combat SE III - Weapons  
SE4115 Combat Systems Intergration



##### Artificial Intelligence

CS3315 Introduction to Machine Learning and Big Data  
CS4321 Deep Learning  
CS4340 Trustworthy and Responsible Artificial Intelligence  
CS4326 AI on the Edge: Enabling Physical Intelligence

## WHERE LEARNING MEETS THE WORLD



Visiting the Urban Redevelopment Authority of Singapore



Bringing International Friends Closer to Local Culture



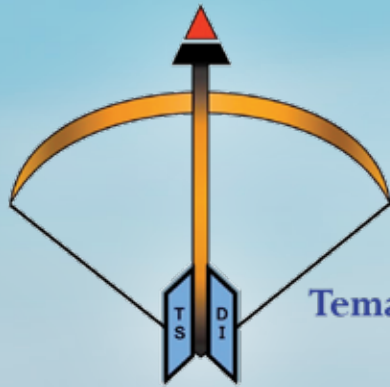
Attending the NPS Graduation Ceremony



Embarking on the NPS Field Studies Programme in Washington D.C.



Celebrating International Day in NPS



# TDSI

Temasek Defence Systems Institute

## ARE YOU READY FOR THE FUTURE OF DIGITAL DEFENCE?

Embark on your learning journey with TDSI today!  
<https://tdsi.nus.edu.sg/mdset/>

**Contact TDSI's Master's Programmes Team**

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