



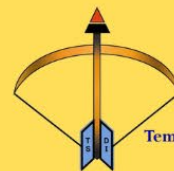
NAVAL
POSTGRADUATE
SCHOOL

National University of Singapore



NUS
National University
of Singapore

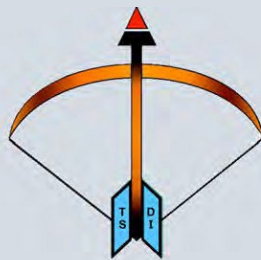
APPLICATION KIT
**JOINT MASTER OF SCIENCE
IN DEFENCE SYSTEMS
ENGINEERING AND
TECHNOLOGY**



TDSI

Temasek Defence Systems Institute

DARE TO
DREAM
DO
DELIVER



TEMASEK DEFENCE SYSTEMS INSTITUTE
National University of Singapore
Block E1 #05-05
1 Engineering Drive 2
Singapore 117576
Tel: +65 6516 7749
Email: mdts@nus.edu.sg
Website: <https://tdsi.nus.edu.sg/>

About the Application Kit

Items in the Application Kit

1. MSc. Defence Systems Engineering & Technology Application Booklet.
2. Enclosures include the following:
 - a) Application Instruction and Checklist.
 - b) Personal Data Notice & Consent.
 - c) Application Form for NUS, Temasek Defence Systems Institute.
 - d) Application Form for NPS, DD Form 2339.

Items to Include in Your Application

1. One set of completed National University of Singapore (NUS) Application form, with a recent colour photograph with white background, affixed on the form.
2. Signed Personal Data Notice & Consent.
3. One set of completed DD Form 2339, with a colour photograph, pasted on top right corner of forms.
4. One set of Curriculum Vitae (CV) with details of your working experiences and specific courses attended that might help in your application for the programme.
5. One set of the following supporting documents in A4 size:
 - a) Singapore NRIC (for Singaporeans) or Passport (International Applicants).
 - b) GCE 'O' level certificate or its equivalent.
 - c) GCE 'A' level certificate or its equivalent.
 - d) Polytechnic transcript and certificate (if applicable).
 - e) Degree scroll / degree certificate / Diploma.
 - f) University results (from 1st year to final/honours year), either in original official transcript or its certified true copies. If these are not available, please request for a copy of your transcripts from your University. NUS graduates should request for their transcripts online at:
<https://www.nus.edu.sg/registrar/student-records>

Submission of Application

**31 October
2026**

The completed application forms must be submitted together with all the relevant supporting documents to be considered complete. Completed applications should be submitted to the following address by 31 October 2026:

The Manager (Masters Programme)
Temasek Defence Systems Institute
National University of Singapore
Block E1, # 05 - 05
1 Engineering Drive 2
Singapore 117576.

Or email the soft copy to MDTS@nus.edu.sg

This kit is supplied purely as a guide to assist applicants in the application process. The University reserves the right to change the courses it offers and any regulations or requirements concerning its programme at any time.

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About Temasek Defence Systems Institute

Vision	A premier educational institute for nurturing systems thinkers and thought-leadership in systems thinking in defence and security
Mission	To nurture systems thinkers and leaders to advance Singapore's defence capabilities

Temasek Defence Systems Institute (TDSI) was established on 11 July 2001 between the National University of Singapore (NUS) and the U.S Naval Postgraduate School (NPS) to provide a platform to bring together military staff and defence technologies in an education and research environment. TDSI aims to produce graduates who understand the complexities of a military force, so as to be able to create maximum leverage by the integration of operations and technology.

About the Programme

Joint Master of Science in Defence Systems Engineering & Technology with Naval Postgraduate School

Objectives

The Joint MSc in Defence Systems Engineering & Technology (MDSET) Programme with Naval Postgraduate School provides postgraduate education in Defence Systems Engineering and Technology. Systems engineering plays a crucial role in the development, integration, and management of complex defence systems. It encourages a cross-disciplinary approach, equipping students with the ability to collaborate across various engineering domains, which is crucial for tackling complex, multifaceted challenges in the industry. By participating in a joint programme with an international partner, students gain a global perspective, understanding diverse defence strategies and technologies, which enhances their ability to work in international and multicultural environments.

Minimum Admission Requirements

1. Bachelor of Engineering (with good honours), Bachelor of Science in Physics or Mathematics (with good honours), or an equivalent qualification acceptable to NUS and NPS;
2. At least 3 years of relevant working experience; and
3. Sponsorship to this Programme by the candidate's employer.

Application and Enrolment Schedule

There is one intake each year for this programme. All applications for the March 2027 Intake must reach Temasek Defence Systems Institute by 31 October 2026.

Applicants will expect to be informed on the outcome of their application sometime in December 2026 or January 2027.

Date	Event
31 July 2026	Application Opens
31 October 2026	Application Closes
January to March 2027	Applicants review Engineering Mathematics (Online course)
19 March 2027	Registration of Students at NUS
22 March 2027	Start of MDSET Programme in NUS
12 September 2027	Students report to NPS
22 September 2028	End of Joint MDSET programme at NPS

Academic Dates

The academic programme is based on quarterly cycles. The dates for these quarters are shown in the below table:

Quarter	Dates	Venue
Q1	22 Mar 2027 to 4 Jun 2027	NUS
Q2	7 Jun 2027 to 27 August 2027	NUS
Q3	27 Sep 2027 to 17 Dec 2027	NPS
Q4	3 Jan 2028 to 24 Mar 2028	NPS
Q5	27 Mar 2028 to 16 Jun 2028	NPS
Q6	3 Jul 2028 to 22 Sep 2028	NPS

Structure of Programme

The Programme is structured into two phases:

NUS Curriculum	Core courses conducted at NUS
NPS Curriculum	- Core courses conducted at NPS - Technology track courses at NPS - Integration Project conducted at NPS

The structure of this programme is illustrated in ANNEX A.

Curriculum

1. Candidates are required to complete a programme of study comprising the NUS Core Courses, NPS Core Courses and a Technology Track of the candidate's choice.
2. A brief description of the course under is shown in ANNEX B.
3. Candidates are expected to take 18 months to complete this programme under normal circumstances.

Examinations

1. Candidates will be examined at the end of each quarter of their study for the coursework.
2. The Board of Examiners of the respective universities will decide the examination results of the modules offered at each university. Each university will issue the examination results to candidates reading their respective modules.
3. The universities will exchange results of the students.

Further Information and Contact

1. Students need to provide for their own meals, lodging, transportation, entertainment, books and stationeries.
2. Please visit TDSI's website for more information and updates at <https://tdsi.nus.edu.sg>
3. If you need further clarification, you may contact:
Ms Wong Hsiao-Szu
tdswhs@nus.edu.sg
Or
Ms Stephanie Quek
squek@nus.edu.sg

Annexes

Annex A	Master Joint MSc in Defence Systems Engineering & Technology Structure
Annex B	NUS Core Curriculum Course Description
Annex C	NPS Core Curriculum Course Description

Joint Master of Science in Defence Systems Engineering & Technology Programme Structure

MSc. DSET Programme Structure

The Joint MSc. DSET programme is divided into two phases, the first phase at NUS and the second phase at NPS. Upon completing the programme successfully, students will be awarded the following:

- Master of Science (Defence Systems Engineering & Technology) degree, jointly awarded by NUS and NPS.

MDTS Programme Structure				
Quarter		Venue	NUS Courses	NPS Courses
Q1	Mar to Jun	NUS	Coursework	–
Q2	Jun to Aug	NUS	Coursework	–
Q3	Sep to Dec	NPS		Coursework Integration Project
Q4	Jan to Mar	NPS		Coursework Integration Project
Q5	Apr to Jun	NPS		Coursework Integration Project
Q6	Jul to Sep	NPS		Coursework

Msc. DSET Programme – Curriculum Overview

The core courses are shown in the table below.

NUS	
Pre-programme Course	
Engineering Mathematics (refresher course)	
Probability and Statistics (refresher course)	
Quarters 1 and 2 (Mar to Aug) at NUS Singapore	
DTS5701	Large Scale Systems Engineering
DTS5702	C3 Systems
DTS5732	Artificial Intelligence & Data Analytics
DTS5735	Cyber Security
DTS5737	Cloud Computing
NPS	
Quarters 3 to 6 (Sept to Sep the following year)	
SE3302	System Suitability
SE3250	Capabilities Engineering
SI3400	Fundamentals of Engineering Project Management
SE4350	System Verification and Validation
SE3011	Engineering Economics and Cost Estimation
1 Technology Track*	
4 Elective Courses or 2 nd Technology Track	
Integration Project	

* Refer to table below

NPS Technology Tracks^

Artificial Intelligence	Cybersecurity	Combat Systems Engineering	Electrical and Computer Engineering	Mechanical and Aerospace Engineering - Robotics	Modeling and Simulations
CS3315 Intro to Machine Learning and Big Data	CS3690 Network Security	SE3112 Combat SE I – Sensor Fundamentals	EC3400 Digital Signal Processing	ME2801 Introduction to Control Systems	MV3025 Artificial Intelligence for Simulations
CS4321 Deep Learning	CS4684 Cybersecurity Incident Response and Recovery	SE4112 Combat SE II – Sensor Systems	EC4450 Array Signal Processing	ME3801 Dynamics & Control of Autonomous Vehicles I	MV4025 Cognitive and Behavioral Modeling for Simulations
CS4340 Trustworthy and Responsible AI	CS4678 Advanced Cyber Vulnerability Assessment	SE3113 Combat SE III – Weapons	EC3730 Cyber Network And Physical Infrastructure	ME4800 Machine Learning for Autonomous Operations	MV4001 Human Factors of Virtual Environments
CS4326 AI on the Edge: Enabling Physical Intelligence	CY4700 Defensive Cyberspace Operations	SE4115 Combat Systems Integration	EC3615 Radar Fundamentals	ME4828 GNC Algorithms of Autonomous Robotics	MV4460 Management of Modeling and Simulation Development

Data Science	Stochastic Modeling and Simulation	Optimisation	Space Systems	Scientific Computing	Network Science	Secure Communications
OA3802 Computational Methods for Data Analytics	OA3301 Stochastic Models I	OA 3201 Linear Programming	SS3011 Space Technology & Applications	MA4245/ MA4248 Galerkin/Computational Linear Algebra	MA4027 Graph Theory and Applications	MA4560 Intro to Coding and Information Theory
OA3103 Data Analysis	OA3312 Simulation Modeling and Analysis	OA 4202 Network Flows and Graphs	SS3400 Orbital Mechanics, Launch and Space Operations	MA3046 Matrix Analysis	MA4404 Structure & Analysis of Complex Networks	MA3560 Abstract Algebra and Number Theory
OA4106 Advanced Data Analysis	OA4301 Stochastic Models II	OA 4201 Nonlinear Programming	SS3600 Space Systems Modelling & Simulation	MA4261 Scientific Computing	MA3494 From Theory to Practice Transferability of Knowledge or	MA4570 Cryptography : Foundations and Practice
OA4118 Statical and Machine Learning	OA4655 Joint Combat Modeling	OA 4801 Spreadsheet Modeling for Military Operations Research	AE4830 Spacecraft Systems	MA3232 Numerical Analysis	OA4202 Networks Flows and Graphs	

^Subject to updates

NUS Core Curriculum

Course Description

Engineering Mathematics (Online Refresher Module)

- Introduction to vector fields, vector algebra and partial derivatives of vector and scalar fields.
- Gradient, divergence and curl.
- Introduction to line, surface and volume integrals; Green's Divergence.
- ODE classification and general solutions.
- First and second-order homogeneous and non-homogeneous ODEs.
- Introduction to error and sensitivity analyses.
- Matrix algebra: introduction and notation; rank, determinants, transpose and inverse; simple elementary row operations and linear independence; eigenvalues and eigenvectors.
- Complex numbers: introduction and geometrical representation; Argand diagram; complex algebra; Euler's representation and De Moivre's theorem.
- Fourier analysis: concept of transforms; Fourier series and orthogonality relations; Fourier transforms and applications.
- Probability axioms and event probability.
- Random variables and their probability distributions.
- Hypothesis testing, conditional probability and expectation.

Probability & Statistics (Online Refresher Module)

Topics include:

- Descriptive Statistics
- Probability Concepts
- Conditional Probability
- Discrete Distribution
- Continuous Distribution, Non-normal, Multivariate

DTS5701 Large Scale Systems Engineering

Large Scale Systems Engineering deals with the complexities of large-scale systems. The Systems Approach and Systems Engineering methodologies are used to understand and conceptualize the key issues in the planning, design and management of large scale systems.

The module aims to help students learn about Large Scale Systems Engineering (LSSE) with theories, stories and case studies on how systems are planned and implemented.

By the end of the module, students are expected to be able to analyse and synthesise systems and design large-scale projects using the LSSE framework taking into consideration their goals, boundaries, stakeholders, complexities, trade-offs, risks and unintended consequences.

DTS5702 C3 Systems

This module provides the key underlying principles and concepts of C3 engineering and their application in the design, development and integration of C3 systems in modern armed forces.

Using a systems engineering approach, the module will also enable participants to have a good appreciation of the key considerations and challenges as well as good engineering practices associated with C3 design and integration with sensor and weapon systems.

Topics related to emerging trends, concepts and technologies will also be covered.

DTS5732 Artificial Intelligence and Data Analytics

This is an introductory module to artificial intelligence (AI) and data analytics (DA). It covers various topics of AI and DA.

The AI topics include heuristic search, constraint satisfaction, logic and inference, and natural language processing. The DA topics include data pre-processing, data visualization, classification, model evaluation, decision trees, neural networks, deep learning, association analysis, and clustering.

DTS5735 Cybersecurity

This module introduces cybersecurity concepts and their applications. It aims to illustrate how systems can fail under malicious activities, and how the threats can be mitigated and managed.

Topics include cryptography, communication channel security, system security, trusted computing, policy making, human factors, etc. Applications such as cloud security, IOT security, security operations centre, AI in cybersecurity, and case studies on well-known attacks will be used to reinforce the learning of various foundational concepts.

DTS5737 Cloud Computing

This course is designed to provide students with the knowledge and skills necessary to manage modern hybrid multi-cloud IT infrastructures, which serve as the backbone of systems and processes that support a company's business strategy, technological innovation, and digital capabilities. Additionally, students will learn about the key components and requirements of modern cloud infrastructure, enabling them to design, deploy, and manage cloud services and enterprise solutions effectively.

