

MSc (Smart Industries and Digital Transformation)

Important Notes:

- 1) *Course offerings are subject to changes every semester. The University reserves the right to make changes to the Graduate Certificate offerings as necessary without prior notice.*
- 2) *SSG Subsidy: SSG funding for courses is limited in duration and subject to availability.*
- 3) *Only 1 GC will be awarded for the programme.*

Graduation Requirement:

To graduate from the MSc (Smart Industries and Digital Transformation) programme, students must complete the following requirements:

A) 20 Units of core/essential courses

Academic Unit	Course Code and Title	Units	Lab-Based?	SSG Subsidy
BIZ	IND5001 Introduction to Industry 4.0 and Applications	4	N	N
CDE	IND5002 Digital-Physical Integration in Industry 4.0	4	N	N
FoS	IND5003 Data Analytics for Sense-making	4	N	N
SoC	IND5004 Digital Infrastructure and Transformation	4	N	N
SCALE	IND5005A Professional Career Development	0.5	N	N
SCALE	IND5005B Industry Consulting and Application Project	3.5	N	N

B) 20 Units of elective courses:

- 8–13 Units from a Graduate Certificate,
 - [Offered by School of Business \(BIZ\)](#)
 - [Offered by College of Design and Engineering \(CDE\)](#)
 - [Offered by Faculty of Science \(FoS\)](#)
 - [Offered by Institute of Systems Science \(ISS\)](#)
 - [Offered by School of Computing \(SoC\)](#)
- Remaining Units from other elective courses (courses listed under all the Graduate Certificates can be read as elective courses)

C) GPA requirement: Minimum 3.0 (out of maximum 5.0)

List of Graduate Certificates offered by NUS School of Business (BIZ):

Graduate Certificate in Digital Supply Chain (Complete 12 units)

Course Code and Title	Units	Lab-Based?	SSG Subsidy
IND5021/DOS5021 Managing the Digital Supply Chain	4	N	Y
IND5022/DOS5022 Data Analytics for Smart Manufacturing	4	N	Y
DOS5101A Managing the Financial Supply Chain	2	N	Y
IND5024/DOS5024 Strategic Procurement in a Digital World	2	N	Y
DOS5025 Global Industry Insights for Smart Industries	2	N	Y

Graduate Certificate in Financial Management and Analytics (Complete 12 units)

Course Code and Title	Units	Lab-Based?	SSG Subsidy
DBA5105 Fintech, Enabling Technologies, and Analytics	4	N	N
DBA5107 Data Analytics in Banking	4	N	N
DOS5101A Managing the Financial Supply Chain	2	N	Y
IND5024/DOS5024 Strategic Procurement in a Digital World	2	N	Y

List of Graduate Certificates offered by NUS College of Design and Engineering (CDE):

Graduate Certificate in Internet of Things (Complete 10 units)

Course Code and Title	Units	Lab-Based?	SSG Subsidy
EE5020 Data Science for Internet of Things	2	Y	Y
EE5021 Cloud Based Services for Internet of Things	2	Y	Y
EE5022 Cyber Security for Internet of Things	2	Y	Y
EE5023 Wireless Networks	2	Y	Y
EE5024 Sensor Networks	2	Y	Y
EE5025 Intellectual Property: Innovations in IoT	2	Y	Y
EE5026 Machine Learning for Data Analytics	2	Y	Y
EE5027 Statistical Pattern Recognition	2	Y	Y
EE5060 Sensors and Instrumentation for Automation	2	Y	Y
EE5061 Industrial Control and Programming	2	Y	Y

Graduate Certificate in Robotics and Automation (Complete 10 units)

Course Code and Title	Units	Lab-Based?	SSG Subsidy
EE5060 Sensors and Instrumentation for Automation	2	Y	Y
EE5061 Industrial Control and Programming	2	Y	Y
EE5062 Autonomous Systems	2	Y	N
EE5064 Dynamics and Control of Robotic Manipulators	2	Y	N
ME5402 Advanced Robotics	4	Y	N
ME5405 Machine Vision	4	Y	N

List of Graduate Certificates offered by NUS Faculty of Science (FoS):

Graduate Certificate in Quality Assurance and Yield Optimisation⁺ (Complete 8 units)

Course Code and Title	Units	Lab-Based?	SSG Subsidy
ST5203 Design of Experiments for Product Design and Process Improvements ^{&}	4	N	N
ST5212 Survival Analysis	4	N	Y
ST5210 Multivariate Data Analysis	4	N	Y

Graduate Certificate in Statistics for Data Science⁺ (Complete 8 units)

Course Code and Title	Units	Lab-Based?	SSG Subsidy
ST5227 Applied Statistical Learning	4	N	Y
ST5225 Statistical Analysis of Networks	4	N	Y
ST5226 Spatial Statistics	4	N	Y

Other Electives offered under FoS:

Course Code and Title	Units	Lab-Based?	SSG Subsidy
DSA5202 Advanced Topics in Machine Learning	4	N	Y
DSA5203 Visual Data Processing and Interpretation ^{&}	4	N	Y
DSA5204 Deep Learning and Applications [%]	4	N	Y
DSA5102 Foundations of Machine Learning	4	N	Y
PC5228 Quantum Information and Computation [%]	4	N	N

⁺ Graduate Certificate offered only to cohorts AY2023/2024 and before. Cohorts AY2024/2025 and after may opt to take courses under these Graduate Certificates as standalone electives but will be ineligible to be awarded Graduate Certificates.

[&] Offered only to cohorts AY2025/26 and before.

[%] Offered only to cohorts after AY2026/27.

List of Graduate Certificates offered by NUS Institute of Systems Science (ISS):

Refer to NUS-ISS website for more information

ISY5002 Graduate Certificate in Pattern Recognition Systems (Complete 13 units, Lab-based)

- Problem Solving Using Pattern Recognition
- Pattern Recognition and Machine Learning Systems
- Intelligent Sensing and Sense Making
- Practice Module

ISY5003 Graduate Certificate in Intelligent Robotic Systems (Complete 13 units, Lab-based)

Prerequisite: ISY5002 Graduate Certificate in Pattern Recognition Systems

- Autonomous Robots and Vehicles
- Human-Robot System Engineering
- Robotic Systems
- Practice Module

ISY5004 Graduate Certificate in Intelligent Sensing Systems (Complete 10 units, Lab-based)

- Vision Systems
- Spatial Reasoning from Sensor Data
- Real time Audio-Visual Sensing and Sense Making
- Practice Module

ISY5005 Graduate Certificate in Intelligent Software Agents⁺ (Complete 10 units, Lab-based)

Prerequisite: ISY5002 Graduate Certificate in Pattern Recognition Systems

- Intelligent Process Automation
- RPA and IPA – Strategy and Management
- Self-Learning Systems
- Software Robots – Best Practices
- Practice Course

⁺ *Graduate Certificate offered only to cohorts AY2023/2024 and before. Cohorts AY2024/2025 and after may opt to take courses under these Graduate Certificates as standalone electives but will be ineligible to be awarded Graduate Certificates.*

List of Graduate Certificates offered by NUS School of Computing (SoC):

Graduate Certificate in Digital Business (Complete 12 units)

Course Code and Title	Units	Lab-Based?	SSG Subsidy
IS5007 Strategising for Global IT-enabled Business Success	4	N	Y
IS5116 Digital Entrepreneurship	4	N	Y
IS5117 Digital Government	4	N	Y
IS5151 Information System Security Policy and Management	4	N	Y

Graduate Certificate in Computing Foundations II (Complete 12 units)

(Choose ONE course from Group A and TWO courses from Group B)

Group A: Course Code and Title	Units	Lab-Based?	SSG Subsidy
IT5002 Computer Systems and Applications	4	Y	Y
IT5003 Data Structures and Algorithms	4	Y	Y
IT5004 Enterprise Systems Architecture Fundamentals	4	Y	Y

Group B: Course Code and Title	Units	Lab-Based?	SSG Subsidy
IT5005 Artificial Intelligence	4	Y	Y
IT5006 Fundamentals of Data Analytics	4	Y	Y
IT5007 Software Engineering on Application Architecture*	4	Y	N

* Co-requisite is IT5003 Data Structures and Algorithms