



## School of Mechanical & Aerospace Engineering

## MSc Smart Manufacturing

### Overview

Manufacturing has been recognised as a key industry for both developed and developing economies. It is undergoing another profound transformation towards “Smart Manufacturing”, characterised by Industry 4.0 and digitalisation. The MSc in Smart Manufacturing builds upon NTU’s long and rich history of teaching and research on manufacturing, and brings in new technologies like 3D printing, artificial intelligence, and machine learning into the curriculum. Supported by world-class faculty and facilities, this programme combines academic learning with hands-on training, giving students a comprehensive education to prepare for a professional career in smart manufacturing in the digital age.

### Who should apply

The programme caters to both full-time and part-time students who are seeking employment or advancing their career in advanced manufacturing related roles that include *precision engineering, additive manufacturing (3D printing), production process control and automation, prototyping, fabrication, and mass production.*

Graduates from the programme are expected to find jobs and advance their careers in a wide range of industry sectors that include: *Electronics, Semiconductors, Robotics, Building and Construction, Pharmaceutical and Chemical, Aerospace, Defence, Marine, Oil and Gas.*

# PROGRAMME STRUCTURE

## Option 1: Coursework Only (Default Option)

10 Courses  
4 Core & 6 Electives

## Option 2: Coursework and Dissertation

8 Courses + Dissertation  
4 Core & 4 Electives

# DURATION OF THE PROGRAMME

## Part-Time Study

Minimum Candidature: 2 years (4 semesters)  
Maximum Candidature: 4 years (8 semesters)

## Full-Time Study

Minimum Candidature: 1 year (2 semesters)  
Maximum Candidature: 2 years (4 semesters)

# CORE COURSES

- MA6501:** Manufacturing Control and Automation
- MA6502:** Fundamentals and Advances in Additive Manufacturing
- MA6503:** Lasers and Optics in Smart Industry
- MA6504:** Management of Global Manufacturing

# ELECTIVE COURSES

- MA6511:** Advanced Manufacturing Processes
- MA6512:** Fundamentals of Precision Engineering
- MA6513:** Advanced Design for Manufacturing
- MA6514:** Machine Learning and Data Science
- MA6515:** 3D Printing of Electronics
- MA6715:** Systems Simulation & Modeling
- MA6802:** Engineering Measurements
- MA6803:** Computational Methods in Engineering

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We have a vision for manufacturing, particularly advanced manufacturing, to continue to form about 20 per cent of our GDP in the coming years. We have given ourselves a stretch target of growing the manufacturing sector by about 50 per cent in the next 10 years.

Singapore has established Centres of Innovation (COIs) to develop new Industry 4.0 technologies and solutions across advanced manufacturing and new growth areas such as Agrifood. We have just announced as part of our RIE 2025 plan that we will be investing another S\$25 billion over the next five years in basic and applied research.

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Minister for Trade and Industry,  
Chan Chun Sing, (2021 February 01).  
*Speech by Minister Chan Chun Sing at the company visit to Illumina Singapore.*

Website:



# PROGRAMME DIRECTOR

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