



## 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.

### School of Mechanical & Aerospace Engineering

### 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

**MA6086:** Systems Engineering Fundamentals

**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

**MA6516:** Manufacturing in the Circular Economy: Processes, Technologies and Design

**MA6715:** Systems Simulation & Modeling

**MA6802:** Engineering Measurements

**MA6803:** Computational Methods in Engineering

# QUOTE

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The Smart Manufacturing Programme has revolutionised our visions by incorporating a comprehensive advanced curriculum. This programme is a transformative experience that will undoubtedly drive innovation, efficiency, and success in any manufacturing setting and academic journey.



Gao Xinchao  
(Class of 2022)

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The MSc Smart Manufacturing Programme has provided me with valuable insight into the convergence of traditional and cutting-edge manufacturing technologies, specifically in the context of Industry 4.0. The programme's curriculum has equipped me with the necessary skills and knowledge to adapt and excel in the dynamic landscape of modern manufacturing.



Zhao Xuhe  
(Class of 2023)

Learn more



# PROGRAMME DIRECTOR

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