

School of Mechanical & Manufacturing Engineering

Overview

The School of Mechanical & Manufacturing Engineering has a diverse and rich history of impactful research in the areas of Mechanical & Manufacturing Engineering. The outputs from this are evident in the many top-ranking journal papers, books, patents, and research award emanating from this research. Most significantly many of the research projects involve close ties with industry, multi disciplinary, international collaboration, and the development of the cutting-edge technologies required for next generation engineering products and services. Specific areas of research strength within the School include Advanced Processing Technologies and Bioengineering. Our structured PhD programmes enable postgraduate students to complete their research with important discipline-specific and generic skills such as communication, commercialisation, and entrepreneurship.

This document details a suggested doctoral pathway for graduate researchers in the School of Mechanical & Manufacturing & Engineering. While the main focus for each research candidate is to complete an original research project, students are also supported in developing a range of skills and competencies through taught modules and other learning opportunities.

Selection and Registration

During registration, all research students may take a mix of credit-bearing modules (Graduate Training Elements, GTEs). Other non-accredited educational opportunities such as seminars, workshops, and short courses are also available. First-year students are required to take the Online Research Integrity Training module during year one of their studies.

These opportunities provide both discipline-specific and transferable skills and knowledge to support students in their research and enhance their research qualification. Engagement in these activities is an important aspect of the graduate research experience. Students should register for their approved GTE modules during the online registration process.

Students who complete a minimum of 20 GTE credits, in addition to the 270-ECTS thesis, will be recognized as having completed a structured PhD. At least one module should be from the list of discipline-specific modules and one from the list of transferable skills modules.

Progression

The modules chosen on the structured pathway should be discussed and agreed in the first instance with the supervisor and progress reported on the annual PGR2 form.

Induction and Training

Research students are also encouraged to take advantage of additional training opportunities offered by the Graduate Studies Office as appropriate throughout their period of study. Year One students are expected to attend orientation sessions, the GSO- and library-run programmes and other relevant induction sessions at the time of initial registration.

Structured Doctoral Pathway 2022-23

Core Discipline Specific Modules

MM523: Product Design, Development & Value Analysis - 7.5 ECTS (Sem 1)

MM530: Surface Engineering & Tribology - 7.5 ECTS (Sem 1)

MM584: Manufacturing System Simulation - 7.5 ECTS (Sem 1)

MM532: Computational Thermo-Fluid Dynamics - 7.5 ECTS (Sem 2)

MM524: Advanced FEA - 7.5 ECTS (Sem 2)

MM555: Manufacturing Process Analysis & Tool Design - 7.5 ECTS (Sem 2)

MM600: LabVIEW, Data Acquisition, Analysis & Control - 7.5 ECTS (Sem 2)

CA684: Machine Learning - 7.5 ECTS (Sem 2)

MM409: Adv. Eng. Materials & Manufacturing Process - 5 ECTS (Sem 1)

MM421: Finite Element Analysis - 7.5 ECTS (Sem 1)

MM432: Heat and Mass Transfer - 7.5 ECTS (Sem 1)

MM453: Manufacturing Automation - 5 ECTS (Sem 1)

MM451: Design for Manufacture and Assembly - 7.5 ECTS (Sem 2)

MM459: Robotics - 5 ECTS (Sem 2)

MM485: Operations Research Methods - 7.5 ECTS (Sem 2)

MM602: Additive Manufacturing - 7.5 ECTS (Sem 2)

EE613: Advanced Topics in Machine Learning - 7.5 ECTS (Sem 2)

Core Transferable Skills Modules

GS602/A: Postgraduate Tutoring Principles and Practice - 5 ECTS (Sem 1 & 2)

TP602: Research Ethics - 5 ECTS (Sem 2)

EE611/A: Enterprise Experience for Graduate Researchers - 10 ECTS (Sem 1 & 2)

EE507: Entrepreneurship for Engineers - 7.5 ECTS (Sem 2)

LC600: English for Academic Purposes - 5 ECTS (Year Long)

MM533: Research Practice & Methodology - 7.5 ECTS (Sem 1)

CA637: Advanced Scientific Communication Skills - 5 ECTS (Year Long)

MT610: Qualitative Research Methods - 5 ECTS (Year Long)

MT611: Quantitative Research Methods - 5 ECTS (Year Long)

Non-accredited Training, Workshops and Masterclasses

Graduate Studies Office
Orientation Programme

Online Research Integrity
Training Module
(Engineering and Technology
stream) (non - accredited)

Students are also encouraged
to engage with centrally- and
locally-offered workshops
and seminars that align with
their development needs