

Master of Engineering Science

swinburne.edu.au/international

The Master of Engineering Science is designed to build on students' existing engineering studies and knowledge, expand their professional skills and prepare them to complete independent research work.

Students select a specialisation to develop specialised technical knowledge in their engineering field or expand their expertise into a related engineering discipline.

Course snapshot

Duration	Two years full-time
Campus	Hawthorn (Melbourne)
Fees	A\$36,760*
Intakes	March, August

*Fees displayed are relevant to 2019 and are subject to annual review. Fees are based on a student's study load in each semester. Please see website for more.

Career outcomes

The skills attained in this degree may assist graduates in pursuing employment as a professional engineer in a range of industries including electrical power generation, safety and distribution, renewable energy systems, systems and embedded design, mechanical systems design, manufacturing systems design, telecommunication networks design, civil engineering project management, structural engineering and construction. Alternatively, graduates may wish to progress towards PhD studies in engineering.

Entry requirements

- A recognised bachelor degree in engineering
- English language proficiency (please see website for details)

Scholarship opportunities

Scholarships of up to 25 per cent off tuition fees are available for selected students who apply for and begin this two-year master by coursework program. For more on scholarships, visit swinburne.edu.au/international/scholarships

Why Swinburne?

A world-ranked university in Melbourne, Australia, Swinburne is focused on creating careers. Upon graduation, our students are career-ready professionals who regularly find employment with the world's best companies, including PricewaterhouseCoopers, IBM, Siemens, Mercedes-Benz and more.

Swinburne is proud to be recognised as one of the world's top universities under 50 years, ranked number 45 in the 2018 QS Top 50 Under 50

Situated in Hawthorn, just ten minutes by train from Melbourne's city centre, Swinburne boasts shops, cafes and a train station right on its doorstep. With high-quality teaching and research, state-of-the-art facilities, student accommodation options and a range of support services, Swinburne is the ideal choice for students.

Industry connections

For over 50 years, Swinburne University of Technology has been partnering with leading organisations to offer students practical learning and authentic workplace experiences. Our postgraduate programs are co-designed with industry, and many of our students undertake industry-linked projects or projects with their own employers as part of their studies.



Before she joined Swinburne, Yvonne spent 11 years at BHP, the second largest mining company in the world. As a Senior Research Engineer, she led projects to develop new steel manufacturing processes. Even today, she continues with R&D work for industry and always uses real-life case studies in her classes. She also directs a team that creates work-integrated learning opportunities for students, so that they are better equipped to compete for jobs when they graduate.

Dr Yvonne Durandet

Senior Lecturer (Advanced Manufacturing) and Academic Director (Industry Engagement) in the Faculty of Science, Engineering and Technology.

Course overview

Students must complete units of study as follows:

- 4 engineering core units (as below)
- 10 specialisation-specific units (choose your specialisation)

Core engineering units of study

- Engineering Master Major Thesis
- Research Methods
- Professional Practice in Engineering
- Engineering Project Management

Specialisations

Students complete 10 units of study comprising three units marked with #, six units marked with + and one unit marked with ^ from their chosen specialisation.

Advanced Manufacturing

Gain an understanding of advanced and emerging manufacturing technologies. Learn the skills needed to direct the design, development and implementation of specific technologies and/or processes.

Units of study

- Computer Modelling, Analysis and Visualisation#
- Advanced Manufacturing Processes#
- Additive Manufacturing and Tooling#
- Robotics in Manufacturing+
- Advanced CAD/CAM+
- Sustainable Design and Manufacture+
- Six Sigma+
- Technology Management+
- Nanofabrication Technologies+
- Surface Engineering+
- Intelligent Inspection Systems+
- Resource Planning and Management^
- Work Systems in Manufacturing^
- Maintenance Management of Engineering Assets^

Career outcomes

Graduates may find employment as design engineers, manufacturing engineers, production engineers, engineering managers, systems engineers, or research and development engineers.

Civil Engineering

Gain advanced theoretical and practical knowledge about the design, procurement and asset management of civil infrastructure projects. Develop a comprehensive understanding codes of practice, sustainability issues, environmental issues and risk considerations.

Units of study

- Geotechnical Design#
- Building Design#
- Integrated Water Design#
- Transport Planning, Modelling and Economics+
- Advanced Concrete Design+
- Infrastructure Deterioration Modelling+
- Strengthening and Monitoring of Structures+
- Finite Element Methods and Applications+
- Structural Dynamics and Earthquake Engineering+
- Location-based Management for Construction^
- Environmental Sustainability in Construction^
- Construction Law^
- Bridge Design^

How to apply

Visit our website for step-by-step application instructions: www.swinburne.edu.au/international/apply/

Career outcomes

Graduates may find employment as civil engineers, geotechnical engineers, structural engineers, water or environmental engineers, or asset or project managers

Electrical and Electronic Engineering

Explore power systems design, safety and control; signal processing; microelectronics; and control systems. Develop entrepreneurial thinking to foster innovation in your business, workplace or community.

Units of study

- Analysis Techniques for Large Scale Power Systems# or RF Circuit Design Techniques#
- Linear Systems#
- Operation of Power Systems# or Hardware-Software Codesign#
- Technology Management+
- Renewable Energy+
- Electrical Power Systems Safety+
- Computer Architecture+
- HDL and High Level Synthesis+
- Design of Smart Power Grids+
- VLSI Digital Signal Processing Systems+
- Computer Architecture^
- Internet for Things (I4T)^
- Mobile and Personal Networking^
- Power Electronics^
- Hardware Implementation of Coding and Compression Algorithms^
- Creating Data Driven Mobile Applications^
- Robotics in Manufacturing^

Career outcomes

Graduates may find employment as design engineers, power engineers, product designers, project managers, or research and development engineers.

Mechanical Engineering

Learn how to design items that move in an efficient and effective manner and how to apply this knowledge to any industry, including energy, manufacturing, defence or metal.

Units of study

- Advanced CAD/CAM#
- Computer Modelling, Analysis and Visualisation#
- Surface Engineering#
- Technology Management+
- Renewable Energy+
- Sustainability and Life Cycle Engineering+
- Intelligent Inspection Systems+
- Fluid Waves+
- Nanofabrication Technologies+
- Design of Smart Power Grids^
- Finite Element Methods and Applications^
- Linear Systems^
- Six Sigma^

Career outcomes

Graduates may find employment as design engineers, mechanical engineers, production engineers or project managers.

Network Systems and Telecommunications Engineering

Master practical skills related to network design, management and service provision of private and public network systems, wireless and broadband technologies, and the security and protection of networked and computer systems.

Units of study

- Hardware Implementation of Coding and Compression Algorithms#
- Internet for Things (I4T)#
- Advanced Security#
- Technology Management+
- Wireless Communications Techniques+
- Mobile and Personal Networking+
- Secure Networks+
- Networks and Switching+
- Network Routing Principles+
- HDL and High Level Synthesis^
- Computer Architecture^
- Hardware-Software Codesign^
- Broadband Multimedia Networks^
- Design and Management of Networks^
- Unix for Telecommunications^

Career outcomes

Graduates may find employment as network designers, security analysts, telecommunications design engineers, telecommunications systems managers or telecommunications and network product managers.

Structural Engineering

Gain advanced knowledge and skills for the design and analysis of building and civil structures as well as the advanced uses of traditional and new construction materials. Learn skills relevant to professional practice in organisations of all sizes across the public, private and non-profit sectors.

Units of study

- Advanced Concrete Design#
- Building Design#
- Bridge Design#
- Strengthening and Monitoring of Structures+
- Project Costing+
- Finite Element Methods and Applications+
- Structural Dynamics and Earthquake Engineering+
- Geotechnical Design+
- Infrastructure Deterioration Modelling+
- Location-based Management for Construction^
- Environmental Sustainability in Construction^
- Transport Planning, Modelling and Economics^
- Integrated Water Design^

Career outcomes

Graduates may find employment as structural engineers or project managers.



More information

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swinburne.edu.au/engineering