School of Photovoltaic and Renewable Energy Engineering

Masters By Coursework

Never Stand Still | Faculty of Engineering | School of Photovoltaic and Renewable Energy Engineering

PHOTOVOLTAICS AND SOLAR ENERGY

Photovoltaics and Solar Energy provides students with the skills to undertake the design, manufacture and implementation of photovoltaic cells and systems as well as other renewable energy technologies such as wind energy and biomass combustion.

A Masters by Coursework in Engineering Science with a specialisation in Photovoltaics and Solar Energy can open up new areas of employment, both locally and overseas, for those who are seeking a career in the rapidly growing solar photovoltaics and renewable energy industries. It can also give students a strong background to prepare for a research program.

The Photovoltaics and Solar Energy specialisation (plan) is designed to build on the previous education of engineers from other engineering disciplines who are attracted to the booming solar photovoltaic energy industry.

Graduate Perspective

After more than 10 years working in the solar industry in process engineering and a cell development role, I enrolled in a Master of Engineering Science program in the School of Photovoltaic and Renewable Energy Engineering in order to extend my knowledge of device physics and characterisation methods. Through the course I gained a broad understanding of different technologies, in-depth knowledge of the operational principles of the solar cell as a device and most of all, a systematic approach to and insight into what I had learnt in my years of industrial experience.

MILICA MRCARICA MEngSc PV BE Chemical
Process Manager Australia, Roth & Rau Australia Pty Ltd

Employer Perspective

A UNSW postgraduate degree in Photovoltaics and Solar Energy will provide graduates with the training, knowledge and network to respond to current and future climate change challenges. Along with many of our employees, I am also a postgraduate alumnus from the School of Photovoltaic and Renewable Energy Engineering. The academic excellence and applied techniques taught by the school have been instrumental in establishing the success of Blue Green Engineering in the areas of sustainable and low energy design and implementation.

VASILIOS GIOTIS MESc PV ME BE Mech
Engineering Manager, Blue Green Engineering

ENGINEERING SCIENCE

The Engineering Science program is a core offering of the Faculty of Engineering with specialisations (plans) in nine of the ten schools of the faculty.

What will you study?

The Photovoltaics and Solar Energy plan is a flexible specialisation with a range of courses that allow students to focus on one of a number of photovoltaics areas or on the renewable energy field in areas such as policy, wind energy and biomass energy.

In the core courses, students gain in-depth knowledge of solar cell devices, systems and applications in manufacturing facilities, the operation of solar cells and advanced designs.

Students have the opportunity to use the school's award-winning stand-alone simulator of a real photovoltaics production facility as well as gain experience from site visits. They benefit from teaching software developed by the school as well as the involvement of industry leaders who participate as speakers.

The EngSc (Photovoltaics and Solar Energy) requires completion of Units of Credit (UOC) in the following components: Professional Development for those with limited background, Engineering and Technical Management and Specialisation.

Students enrolled in the Master or Master Extension can also undertake a project.

Jobs open to graduates

- **Researching new renewable energy conversion devices**
- **Planning, managing and building new renewable energy equipment production facilities**
- **Designing and installing systems in rural areas and developing countries**
- **Training technicians and end-users in the operation and maintenance of systems**
- **Carrying out economic feasibility studies**
- **Implementing energy efficiency audits and providing environmentally sustainable building consultancies**
- **Designing major project infrastructure and managing multi-million dollar projects**
- **Providing high-level technical/ project input to management, financiers and markets**
- **Influencing and developing policies at community, corporate and government levels**
- **Working for major end users of renewable energy, such as communications companies**

Programs available

	Program Code	Program duration (full time equivalent) ^	Total Units of Credit (UOC)	Professional Development (UOC)	Engineering and Technical Management (UOC)	Specialisation (UOC)	Project (UOC)	Other Specialisation (UOC)	Possible Exemptions	Entry Requirements
Master of Engineering Science in Photovoltaics and Solar Energy (MEngSc)	8538	1.5 years	72 UOC	24	12 to 24	At least 24	0 to 12	Maximum 12	Up to 4 courses (24 UOC)	A recognised four-year Bachelor degree in an appropriate area of engineering with Honours 2/2 or equivalent or an average of 65% in performance over the final two years.
Master of Engineering Science Extension in Photovoltaics and Solar Energy (MEngScExt)	8539	2 years	96 UOC	24	12 to 24	At least 24	12 to 24	Maximum 24	Up to 4 courses (24 UOC)	A recognised four-year Bachelor degree in an appropriate area of engineering with Honours 1 or equivalent or an average of 75% in performance over the final two years.
Graduate Diploma of Engineering Science in Photovoltaics and Solar Energy (GradDipEngSc)	5338	1.5 years	60 UOC	24	6 to 18	At least 18	0	Maximum 12	Up to 4 courses (24 UOC)	Same as MEngSc.
Graduate Certificate of Engineering Science in Photovoltaics and Solar Energy (GradCertEngSc)	7338	1 year	48 UOC	24	6 to 12	At least 12	0	Maximum 6	Up to 4 courses (24 UOC)	A recognised three-year Bachelor degree in an appropriate area of engineering with Honours 2/2 or equivalent or an average of 65% in performance over the final two years.

^ All programs are available on a full load (24 UOC per semester) or partial load basis. At a minimum, students must enrol in 18 UOC over three consecutive semesters.

Articulation: Students can apply to articulate from the GradDipEngSc (5338) to the MEngSc (8538); from the MEngSc (8538) to the MEngScExt (8539); and from the GradCertEngSc (7338) to the GradDipEngSc (5338) provided they have a credit average of at least 65 WAM. Full credit will be granted.

Courses available

Engineering Management Courses

- GSOE9017 Managing Energy Efficiency
- GSOE9210 Decision Structures in Engineering
- GSOE9340 Life Cycle Engineering
- GSOE9712 Engineering Statistics and Experimental Design
- GSOE9840 Maintenance and Reliability Engineering
- CVEN9888 Environmental Management
- CVEN9892 Sustainability Assessment
- GSOE9810 Quality in Engineering or CVEN9703 Quality and Quality Systems
- GSOE9820 Project Management or CVEN9731 Project Management Framework
- GSOE9830 Economic Decision Analysis in Engineering or CVEN9701 Engineering Economics and Financial Management

Specialisation Courses

In addition to the courses listed below, students may choose up to 12 UOC of courses from another specialisation list within the Master of Engineering Science**.

- MANF9420 Managing Manufacturing Operations
- SOLA9001 Photovoltaics*
- SOLA9002 Solar Cells and Systems*
- SOLA9003 High Efficiency Silicon Solar Cells**
- SOLA9006 Solar Cell Technology and Manufacturing***

* Compulsory for all programs (Graduate Certificate, Graduate Diploma and Master programs)

** Compulsory for Master program

*** Compulsory for Graduate Diploma and Master programs

Please note that the list of courses is subject to change. For further information on approved courses and academic rules for each program, please visit the online handbook **www.handbook.unsw.edu.au**

Why UNSW?

The Faculty of Engineering at UNSW is the largest faculty of engineering in Australia and is consistently ranked one of the nation's best. It offers the widest choice of disciplines and a research-led curriculum incorporating the latest developments in each field.

With extensive links to key industrial, commercial and professional organisations, the Faculty is keenly attuned to the needs of industry and employers.

Who teaches the courses?

Our academic staff are national leaders with international reputations in their areas of specialisation and incorporate the latest technical and scientific knowledge in their courses.

Associate Professor Alistair Sproul

Associate Professor Alistair Sproul teaches energy efficiency, applied photovoltaics and low energy buildings and photovoltaics. He undertakes research in the latter as well as in energy efficient water pumping systems.

Geoff Stapleton

Mr Stapleton is Managing Director and co-founder of Global Sustainable Energy Solutions (GSES), a renewable energy training and consultancy based in Australia and providing technical training to electricians to design and install Grid Connect PV systems. He has directly been involved with projects in: Sri Lanka, Ghana, Papua New Guinea, Malaysia, China, India, Philippines, Solomon Islands, Vanuatu, Fiji, Ethiopia and Uganda. Mr Stapleton coordinates and lectures in the Stand-Alone and System Design and Installation course.

Application Process

Applications should be made directly to the University using the UNSW Apply Online service at **www.apply.unsw.edu.au**

Links to information on the application process, information for international students including English language requirements, alternative paper based application form to download, and the application tracking service allowing students to check the progress of their application can also be found on **www.apply.unsw.edu.au**

Closing Dates

Applications must be lodged by the **end of October** for students wishing to commence their degree in Semester 1 (March), and by the **end of April** for students wishing to commence their degree in Semester 2 (July). Please note that not all programs have a Semester 2 start date.

Late applications may be accepted after the closing dates subject to the availability of places.

International students

Visit **www.international.unsw.edu.au**

Note that international students wishing to study in Australia must have a valid Australian Student Visa, and that application and processing of this visa may take some time. Please refer to **www.immi.gov.au**

Cost of Study

Visit **https://my.unsw.edu.au/student/fees/FeesMainPage.html** for full details.

Student Life

Information on the UNSW Kensington campus, scholarships, accommodation, support to students and facilities is available at **www.studentlife.unsw.edu.au**

Mode of Delivery

All Photovoltaics and Solar Energy Postgraduate Coursework programs consist of face-to-face teaching by lectures and tutorials and in some cases labs. All course materials are online and lecture notes and audio recordings can be downloaded.

Contact

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