

Graduate Certificate of Engineering Science (GCNS) - Grad Cert Eng Sci

CRICOS code (International applicants): 067687K

| | On-campus* | External |
|------------------------------|---|---|
| Semester intake: | Semester 1 (February) Semester 2 (July) | Semester 1 (February) Semester 2 (July) |
| Campus: | Toowoomba | - |
| Fees: | Commonwealth supported place Domestic full fee paying place International full fee paying place | Commonwealth supported place Domestic full fee paying place International full fee paying place |
| Standard duration: | 1 semester full-time or 1 year part-time | |
| Program articulation: | To: Graduate Diploma of Engineering Science ; Master of Engineering Science | |

Footnotes

* The GCNS is available full-time on-campus commencing in Semester 1 only. International visa holders are only eligible for Semester 1 entry.

Contact us

| Future Australian and New Zealand students | Future International students | Current students |
|---|---|--|
| Ask a question Freecall (within Australia): 1800 269 500 Phone (from outside Australia): +61 7 4631 5315 Email: study@usq.edu.au | Ask a question Phone: +61 7 4631 5543 Email: international@usq.edu.au | Ask a question Freecall (within Australia): 1800 007 252 Phone (from outside Australia): +61 7 4631 2285 Email usq.support@usq.edu.au |

Professional accreditation

The Graduate Certificate of Engineering Science is not accredited by any professional bodies other than the University of Southern Queensland.

Program objectives

On completion of this program graduates should be able to:

- demonstrate an integrated understanding of a relevant body of knowledge in one or more disciplines or areas of practice; and
- apply specialised cognitive and technical skills within a relevant body of knowledge in one or more disciplines or area of practice; and
- collect and reflect upon sources of information to interpret and transmit knowledge, skills and ideas to specialist and non-specialist audiences.

Australian Qualifications Framework

The Australian Qualifications Framework (AQF) is a single national, comprehensive system of qualifications offered by higher education institutions (including universities), vocational education and training institutions and secondary schools. Each AQF qualification has a set of descriptors which define the type and complexity of knowledge, skills and application of knowledge and skills that a graduate who has been awarded that qualification has attained, and the typical volume of learning associated with that qualification type.

This program is at AQF Qualification Level 08. Graduates at this level will have advanced knowledge and skills for professional or highly skilled work and/or further learning.

The full set of levels criteria and qualification type descriptors can be found by visiting www.aqf.edu.au.

Admission requirements

To be eligible for admission, applicants must satisfy the following requirements:

- Completion of an Australian university three or four year Bachelor degree in the area of engineering in the relevant cognate specialisation (major), or equivalent.
Or
Completion of an Australian university four year Bachelor degree in the area of engineering in a non-cognate specialisation (major field) or equivalent.
- English Language Proficiency requirements for Category 3.

The standing of degrees awarded by an overseas institution will be determined by reference to the Sydney Accord, of which Engineers Australia (EA) is a signatory, and the federal government agency, International Education group, an agency of the Department of Education and Training.

All students are required to satisfy the applicable [English language requirements](#).

If students do not meet the English language requirements they may apply to study a University-approved [English language program](#). On successful completion of the English language program, students may be admitted to an award program.

Program fees

Commonwealth supported place

A Commonwealth supported place is where the Australian Government makes a contribution towards the cost of a students' higher education and students pay a [student contribution amount](#), which varies depending on the courses undertaken. Students are able to calculate the fees for a particular course via the [Course Fee Finder](#).

Commonwealth Supported students may be eligible to defer their fees through a Government loan called [HECS-HELP](#).

Domestic full fee paying place

Domestic full fee paying places are funded entirely through the full fees paid by the student. Full fees vary depending on the courses that are taken. Students are able to calculate the fees for a particular course via the [Course Fee Finder](#).

Domestic full fee paying students may be eligible to defer their fees through a Government loan called [FEE-HELP](#) provided they meet the residency and citizenship requirements.

Australian citizens, Permanent Humanitarian Visa holders, Permanent Resident visa holders and New Zealand citizens who will be resident outside Australia for the duration of their program pay full tuition fees and are not eligible for [FEE-Help](#).

International full fee paying place

International students pay full fees. Full fees vary depending on the courses that are taken and whether they are studied on-campus, via distance education/online. Students are able to calculate the fees for a particular course via the [Course Fee Finder](#).

Program structure

The Graduate Certificate of Engineering Science comprises four single unit academic courses as follows:

Schedule A: Two core courses:

- [ENG5001 Professional Skills in Engineering](#)

- [ENG8208 Advanced Engineering Project Management](#)

Schedule B: A two-course specialisation

Required time limits

Students have a maximum of 2 years to complete this program.

Specialisation

The specialisation study provides students with knowledge and skills in a specific discipline. The specialisation study areas in the Graduate Certificate of Engineering Science are:

- Agricultural Engineering
- Civil Engineering
- Electrical and Electronic Engineering
- Environmental Engineering
- Mechanical Engineering
- Power Engineering
- Structural Engineering

IT requirements

Access to an up-to-date computer is necessary. On-campus students can access appropriately equipped laboratories, but should consider acquisition of their own computer. Students should be able to access a computer with the following [minimum standards](#). All students should have access to email and the Internet via a computer running the latest versions of Internet web browsers such as Internet Explorer or Firefox. The University has a wireless network for on-campus students' computers. In order to take advantage of this facility and further enhance their on-campus learning environment, students should consider purchasing a notebook/laptop computer with wireless connectivity. Specialist software is required for some courses.

Articulation

The Graduate Certificate of Engineering Science, the [Graduate Diploma of Engineering Science](#), and the [Master of Engineering Science](#) are a nested suite of programs. Students who have completed the Graduate Certificate of Engineering Science are able to apply to articulate with full credit to the [Graduate Diploma of Engineering Science](#).

Credit

Exemptions/credit will be assessed based on the [USQ Credit and Exemption Procedure](#).

Enrolment

Students should note that some of the courses specify enrolment requirements (prerequisites). Students should therefore refer to the [Course Specification](#) to determine the enrolment requirements for the courses they intend enrolling in. Students should avoid enrolling in courses for which they do not have sufficient pre-requisite knowledge. Students will be expected to rectify any deficiencies in their pre-requisite knowledge by private study, guided if necessary by the examiners of the relevant courses. Students should contact the Faculty of Health, Engineering and Sciences if they encounter problems while enrolling in courses with requisites.

Agricultural Engineering specialisation recommended enrolment pattern

Students are able to enrol in any offered mode of a course (on-campus, external or online), regardless of the program mode of study they enrolled in.

| Specialisation: Agricultural Engineering (Specialisation Study Code: 16197) | | | | | | | |
|---|--|-------|----------------|-----|--------------|-------|--|
| Course | Year of program and semester in which course is normally studied | | | | | | Enrolment requirements |
| | On-campus (ONC) | | External (EXT) | | Online (ONL) | | |
| | Year | Sem | Year | Sem | Year | Sem | |
| Schedule A: Core Courses Students must complete the two courses listed in Schedule A. | | | | | | | |
| ENG5001 Professional Skills in Engineering | | 1,2,3 | | | | 1,2,3 | |
| ENG8208 Advanced Engineering Project Management | | 1 | | | | 1 | |
| Schedule B: Specialisation Courses Students must complete two of the courses listed in Schedule B. | | | | | | | |
| ENG3104 Engineering Simulations and Computations | | 2 | | | | 2 | Pre-requisite: (ENM2600 or MAT2100 or MAT2500) or Students must be enrolled in one of the following Programs: GDET or METC or GDNS or MENS |
| AGR3305 Precision and Smart Technologies in Agriculture | | 2 | | | | 2 | |
| ENV4107 Water Resources Engineering | | 2 | | | | 2 | Pre-requisite: (ENV3104 and ENV3105) or Students must be enrolled in one of the following Programs: GCEN or METC or MEPR or GCNS or GDNS or MENS |
| AGR4305 Agricultural Soil Mechanics | | 1 | | | | 1 | |
| AGR3303 Agricultural Materials and Post-Harvest Technologies | | 1 | | | | 1 | |
| ENV4106 Irrigation Science | | 2 | | | | 2 | Pre-requisite: AGR3304 or Students must be enrolled in one of the following Programs: GCEN or GCSC or GDSI or METC or MEPR or GCNS or GDNS or MENS or MSCN. |

Civil Engineering specialisation recommended enrolment pattern

Students are able to enrol in any offered mode of a course (on-campus, external or online), regardless of the program mode of study they enrolled in.

| Specialisation: Civil Engineering (Specialisation Study Code: 16198) | | | | | | | |
|---|--|-------|----------------|-----|--------------|-------|--|
| Course | Year of program and semester in which course is normally studied | | | | | | Enrolment requirements |
| | On-campus (ONC) | | External (EXT) | | Online (ONL) | | |
| | Year | Sem | Year | Sem | Year | Sem | |
| Schedule A: Core Courses Students must complete the two courses listed in Schedule A. | | | | | | | |
| ENG5001 Professional Skills in Engineering | | 1,2,3 | | | | 1,2,3 | |
| ENG8208 Advanced Engineering Project Management | | 1 | | | | 1 | |
| Schedule B: Specialisation Courses Students must complete two of the courses listed in Schedule B. | | | | | | | |
| ENG3104 Engineering Simulations and Computations | | 2 | | | | 2 | Pre-requisite: (ENM2600 or MAT2100 or MAT2500) or Students must be enrolled in one of the following Programs: GDET or METC or GDNS or MENS |
| CIV3403 Geotechnical Engineering | | 2 | | | | 2 | Pre-requisite: CIV2401 or CIV2403 or Students must be enrolled in one of the following Programs: GCEN or METC or MEPR or GCNS or GDNS or MENS |
| CIV3505 Structural Analysis | | 1 | | | | 1 | Pre-requisite: MEC2402 and (MAT1502 or ENM1600 or MAT1102) or Students must be enrolled in one of the following Programs: |

| Specialisation: Civil Engineering (Specialisation Study Code: 16198) | | | | | | | |
|--|--|-----|----------------|-----|--------------|-----|--|
| Course | Year of program and semester in which course is normally studied | | | | | | Enrolment requirements |
| | On-campus (ONC) | | External (EXT) | | Online (ONL) | | |
| | Year | Sem | Year | Sem | Year | Sem | |
| | | | | | | | GCEN or METC or MEPR or GCNS or GDNS or MENS |
| CIV5704 Road and Street Engineering | | | | | | 2 | |
| CIV5705 Pavement Design and Analysis | | | | | | 1 | Pre-requisite: CIV3703 or Students must be enrolled in one of the following Programs: GCNS or GDNS or MENS or PGCN or G CAE or MEPR |
| ENV3104 Hydraulics II | | 1 | | | | 1 | Pre-requisite: ENV1101 or ENV2103 or Students must be enrolled in one of the following Programs: GCEN or METC or MEPR or GCNS or GDNS or MENS |
| CIV4508 Structural Design II | | 1 | | | | 1 | Pre-requisite: CIV3505 and CIV3506 or Students must be enrolled in one of the following Programs: GCEN or METC or MEPR or GCNS or GDNS or MENS |

Electrical and Electronic Engineering specialisation recommended enrolment pattern

Students are able to enrol in any offered mode of a course (on-campus, external or online), regardless of the program mode of study they enrolled in.

| Specialisation: Electrical and Electronic Engineering (Specialisation Study Code: 16199) | | | | | | | |
|---|--|-------|----------------|-----|--------------|-------|---|
| Course | Year of program and semester in which course is normally studied | | | | | | Enrolment requirements |
| | On-campus (ONC) | | External (EXT) | | Online (ONL) | | |
| | Year | Sem | Year | Sem | Year | Sem | |
| Schedule A: Core Courses Students must complete the two courses listed in Schedule A. | | | | | | | |
| ENG5001 Professional Skills in Engineering | | 1,2,3 | | | | 1,2,3 | |
| ENG8208 Advanced Engineering Project Management | | 1 | | | | 1 | |
| Schedule B: Specialisation Courses Students must complete two of the courses listed in Schedule B. | | | | | | | |
| ELE2504 Electronic Design and Analysis | | 2 | | | | 2 | Pre-requisite: ELE1502 or Students must be enrolled in one of the following Programs: MEPR or GDNS or MENS or GCNS or GCEN or GEPR |
| ENG3104 Engineering Simulations and Computations | | 2 | | | | 2 | Pre-requisite: (ENM2600 or MAT2100 or MAT2500) or Students must be enrolled in one of the following Programs: GDET or METC or GDNS or MENS |
| ELE4605 Fields and Waves | | 1 | | | | 1 | Pre-requisite: (MAT1502 or ENM1600) and ELE2103 and ELE2601 or Students must be enrolled in one of the following Programs: MEPR or MENS or GCNS or GDNS |
| ELE3107 Signal Processing | | 2 | | | | 2 | |
| ELE4606 Communication Systems | | 2 | | | | 2 | Pre-requisite: (ELE2504 and ELE2601) or Students must be enrolled in one of the following Programs: GCEN or METC or MEPR or MENS or GCNS or GDNS |
| ELE5001 Industrial Communications Protocols | | 1 | | | | 1 | Pre-requisite: ELE2601 or Students must be enrolled in the following Program: GCNS, GDNS, MENS or MEPR |

Environmental Engineering specialisation recommended enrolment pattern

Students are able to enrol in any offered mode of a course (on-campus, external or online), regardless of the program mode of study they enrolled in.

| Specialisation: Environmental Engineering (Specialisation Study Code: 16200) | | | | | | | |
|---|--|-------|----------------|-----|--------------|-------|--|
| Course | Year of program and semester in which course is normally studied | | | | | | Enrolment requirements |
| | On-campus (ONC) | | External (EXT) | | Online (ONL) | | |
| | Year | Sem | Year | Sem | Year | Sem | |
| Schedule A: Core Courses Students must complete the two courses listed in Schedule A. | | | | | | | |
| ENG5001 Professional Skills in Engineering | | 1,2,3 | | | | 1,2,3 | |
| ENG8208 Advanced Engineering Project Management | | 1 | | | | 1 | |
| Schedule B: Specialisation Courses Students must complete two of the courses listed in Schedule B. | | | | | | | |
| ENG3104 Engineering Simulations and Computations | | 2 | | | | 2 | Pre-requisite: (ENM2600 or MAT2100 or MAT2500) or Students must be enrolled in one of the following Programs: GDET or METC or GDNS or MENS |
| ENV3104 Hydraulics II | | 1 | | | | 1 | Pre-requisite: ENV1101 or ENV2103 or Students must be enrolled in one of the following Programs: GCEN or METC or MEPR or GCNS or GDNS or MENS |
| ENV4205 Water and Wastewater Treatment | | | | | | 1 | Pre-requisite: ENV4203 and ENV2105 or Students must be enrolled in one of the following Programs: PDEV or GCEN or METC or MEPR or GCNS or GDNS or MENS |
| ENV4204 Environmental Technology | | 1 | | | | 1 | Pre-requisite: ENV2105 or Students must be enrolled in one of the following Programs: PDEV or GCEN or METC or MEPR or GCNS or GDNS or MENS |
| ENV4107 Water Resources Engineering | | 2 | | | | 2 | Pre-requisite: (ENV3104 and ENV3105) or Students must be enrolled in one of the following Programs: GCEN or METC or MEPR or GCNS or GDNS or MENS |
| ENV4203 Public Health Engineering | | 2 | | | | 2 | Pre-requisite: ENV1101 or ENV2103 or Students must be enrolled in one of the following Programs: GCEN or METC or MEPR or GCNS or GDNS or MENS |

Mechanical Engineering specialisation recommended enrolment pattern

Students are able to enrol in any offered mode of a course (on-campus, external or online), regardless of the program mode of study they enrolled in.

| Specialisation: Mechanical Engineering (Specialisation Study Code: 16202) | | | | | | | |
|---|--|-------|----------------|-----|--------------|-------|--|
| Course | Year of program and semester in which course is normally studied | | | | | | Enrolment requirements |
| | On-campus (ONC) | | External (EXT) | | Online (ONL) | | |
| | Year | Sem | Year | Sem | Year | Sem | |
| Schedule A: Core Courses Students must complete the two courses listed in Schedule A. | | | | | | | |
| ENG5001 Professional Skills in Engineering | | 1,2,3 | | | | 1,2,3 | |
| ENG8208 Advanced Engineering Project Management | | 1 | | | | 1 | |
| Schedule B: Specialisation Courses Students must complete two of the courses listed in Schedule B. | | | | | | | |
| ENG3104 Engineering Simulations and Computations | | 2 | | | | 2 | Pre-requisite: (ENM2600 or MAT2100 or MAT2500) or Students must be enrolled in one of the following Programs: GDET or METC or GDNS or MENS |

| Specialisation: Mechanical Engineering (Specialisation Study Code: 16202) | | | | | | | | |
|---|--|-----|----------------|-----|--------------|-----|------------------------|--|
| Course | Year of program and semester in which course is normally studied | | | | | | Enrolment requirements | |
| | On-campus (ONC) | | External (EXT) | | Online (ONL) | | | |
| | Year | Sem | Year | Sem | Year | Sem | | |
| MEC2401 Dynamics I | | 1 | | | | | 1 | Pre-requisite: ((MAT1502 or MAT1102 or ENM1600) and CIV1501) or Students must be enrolled in one of the following Programs: GCEN or GCNS or METC or MEPR or MENS |
| MEC3107 Thermofluids | | 1 | | | | | 1 | Pre-requisite: (MEC2106 and ENM1600) or Students must be enrolled in one of the following Programs: GCNS or GDNS or MENS Students cannot enrol in MEC3107 if they have successfully completed, or are currently enrolled in, MEC2101 or MEC3102 |
| MEC3302 Computational Mechanics in Design | | 1 | | | | | 1 | Pre-requisite: (MEC2304 and MEC2401 and MEC2402) or Students must be enrolled in one of the following Programs: GCEN or METC or MEPR or GCNS or GDNS or MENS |
| MEC3303 Mechanical and Mechatronic System Design | | 2 | | | | | 2 | Pre-requisite: MEC2301 or Students must be enrolled in one of the following Programs: GCEN or METC or GCNS or GDNS or MEPR or MENS |
| MEC3403 Dynamics II | | 2 | | | | | 2 | Pre-requisite: (MEC2401 and (MAT2500 or ENM2600)) or Students must be enrolled in one of the following Programs: GCEN or MEPR or GCNS or GDNS |

Power Engineering specialisation recommended enrolment pattern

Students are able to enrol in any offered mode of a course (on-campus, external or online), regardless of the program mode of study they enrolled in.

| Specialisation: Power Engineering (Specialisation Study Code: 16203) | | | | | | | | |
|---|--|-------|----------------|-----|--------------|-----|------------------------|--|
| Course | Year of program and semester in which course is normally studied | | | | | | Enrolment requirements | |
| | On-campus (ONC) | | External (EXT) | | Online (ONL) | | | |
| | Year | Sem | Year | Sem | Year | Sem | | |
| Schedule A: Core Courses Students must complete the two courses listed in Schedule A. | | | | | | | | |
| ENG5001 Professional Skills in Engineering | | 1,2,3 | | | | | 1,2,3 | |
| ENG8208 Advanced Engineering Project Management | | 1 | | | | | 1 | |
| Schedule B: Specialisation Courses Students must complete two of the courses listed in Schedule B. | | | | | | | | |
| ENG3104 Engineering Simulations and Computations | | 2 | | | | | 2 | Pre-requisite: (ENM2600 or MAT2100 or MAT2500) or Students must be enrolled in one of the following Programs: GDET or METC or GDNS or MENS |
| ELE3307 Real Time Systems | | 2 | | | | | 2 | Pre-requisite: ELE1301 or Students must be enrolled in one of the following Programs: GCEN or GCNS or METC or MENS or MEPR |
| ELE3305 Computer Systems and Communications Protocols | | 1 | | | | | 1 | |
| ELE3803 Electrical Plant | | 1 | | | | | 1 | Pre-requisite: ELE1801 or Students must be enrolled in one of the following Programs: GCEN or METC or MEPR or GCNS or GDNS or MENS |

| Specialisation: Power Engineering (Specialisation Study Code: 16203) | | | | | | | | |
|---|--|-----|----------------|-----|--------------|-----|------------------------|--|
| Course | Year of program and semester in which course is normally studied | | | | | | Enrolment requirements | |
| | On-campus (ONC) | | External (EXT) | | Online (ONL) | | | |
| | Year | Sem | Year | Sem | Year | Sem | | |
| ELE3805 Power Electronics Principles and Applications | | 2 | | | | | 2 | Pre-requisite: (ELE1502 and ELE1801) or Students must be enrolled in one of the following Programs: GCEN or METC or MEPR or GCNS or GDNS or MENS |
| ELE3807 Power Systems Analysis | | 1 | | | | | 1 | |
| MEC4104 Renewable Energy Technology | | 2 | | | | | 2 | Pre-requisite: ((MEC2101 and MEC3102) or MEC2106) or Students must be enrolled in one of the following Programs: GCEN or GCNS or GDNS or METC or MENS or MEPR |

Structural Engineering specialisation recommended enrolment pattern

Students are able to enrol in any offered mode of a course (on-campus, external or online), regardless of the program mode of study they enrolled in.

| Specialisation: Structural Engineering (Specialisation Study Code: 16204) | | | | | | | | |
|---|--|-------|----------------|-----|--------------|-----|------------------------|--|
| Course | Year of program and semester in which course is normally studied | | | | | | Enrolment requirements | |
| | On-campus (ONC) | | External (EXT) | | Online (ONL) | | | |
| | Year | Sem | Year | Sem | Year | Sem | | |
| Schedule A: Core Courses Students must complete the two courses listed in Schedule A. | | | | | | | | |
| ENG5001 Professional Skills in Engineering | | 1,2,3 | | | | | 1,2,3 | |
| ENG8208 Advanced Engineering Project Management | | 1 | | | | | 1 | |
| Schedule B: Specialisation Courses Students must complete two of the courses listed in Schedule B. | | | | | | | | |
| ENG3104 Engineering Simulations and Computations | | 2 | | | | | 2 | Pre-requisite: (ENM2600 or MAT2100 or MAT2500) or Students must be enrolled in one of the following Programs: GDET or METC or GDNS or MENS |
| CIV3403 Geotechnical Engineering | | 2 | | | | | 2 | Pre-requisite: CIV2401 or CIV2403 or Students must be enrolled in one of the following Programs: GCEN or METC or MEPR or GCNS or GDNS or MENS |
| CIV3505 Structural Analysis | | 1 | | | | | 1 | Pre-requisite: MEC2402 and (MAT1502 or ENM1600 or MAT1102) or Students must be enrolled in one of the following Programs: GCEN or METC or MEPR or GCNS or GDNS or MENS |
| CIV3506 Concrete Structures | | 1 | | | | | 1 | Pre-requisite: CIV2503 or Students must be enrolled in one of the following Programs: GCEN or METC or MEPR or GCNS or GDNS or MENS |
| CIV4508 Structural Design II | | 1 | | | | | 1 | Pre-requisite: CIV3505 and CIV3506 or Students must be enrolled in one of the following Programs: GCEN or METC or MEPR or GCNS or GDNS or MENS |
| CIV8802 Advanced Prestressed Concrete * | | | | | | | 2 | |
| CIV8803 Advanced Mechanics and Technology of Fibre Composites | | | | | | | 1 | Pre-requisite: CIV3506 or MEC3203 or Students must be enrolled in one of the following Programs: GCEN or PGCN or METC or MEPR or GCNS or GDNS or MENS or MENC or MAEN |

Consult the Handbook on the Web at <http://www.usq.edu.au/handbook/current> for any updates that may occur during the year.
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Footnotes

* Offered Odd Years Only