



Graduate Certificate in Engineering (Power Generation) (BX21)

Year offered: 2012

Admissions: Yes

Course duration (part-time): 2 years

Domestic Fees (indicative): \$3480 AUD per unit

Commencement notes: Entry into this program is available throughout the year. For further details, contact sef.enquiry@qut.edu.au.

Additional Requirements: Bachelor of Engineering degree or equivalent as determined by the Faculty. Or Advanced Diploma with industry experience. Students with the degree qualification but who do not have second class honours may transfer after completing the Graduate Certificate provided they achieve a grade point average of 5 or more. Applicants must provide a letter of support from an industry that utilise power generation to be eligible to enter the program. Students who do not meet the entry requirements for the Master of Engineering (Power Generation) may be eligible to enrol in the Graduate Certificate in Engineering (Power Generation) as a pathway to the masters program. Students can also study individual power generation units through CPE

Deferral allowed: No

Total credit points: 48

Course coordinator: Professor Ted Steinberg

Discipline coordinator: Science and Engineering Faculty

Campus: Gardens Point and University of Queensland

External delivery: Online

Attendance: Part-time

Course highlights

- Designed by industry experts and specialist staff at three of Australia's premier universities
- Developed exclusively for employees in the power generation industry
- Study in a number of locations and a variety of formats to enable you to work full time and access the professional development easily
- Enhance your technical competency; increase your knowledge and skill set within the power generation sector
- Tailored program taught by industry experts
- Build a career in the dynamic power generation industry
- Study individual power generation units through CPE

Why choose this course?

This program is ideal for engineers working in other fields who wish to build their career in power generation. Developed collaboratively by industry experts and specialist staff at three partner universities, the program is designed to meet the needs of the Australian power generation industry and its current and future workforce by capturing the knowledge and expertise of power generation engineers working in the Australian power industry.

Taught by industry experts the program will provide a first step towards building a career in the dynamic power industry. Graduates will gain skills and knowledge in a range of areas related to the design, construction, maintenance and management of power generation. The degree offers both theoretical understanding and practical applications of advanced professional practice.

Study mode

This program is delivered in intensive learning sessions at campus and generator sites. Units are delivered in a variety of formats and locations to enable those working in full-time roles to access the professional development easily.

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Select one of:

EPG001 Introduction To Power Plant

EPG005 Project Delivery

PLUS select one unit from the Advanced Power Generation Unit Options, or Power Generation Unit Options.

You will be granted 24cp of advanced standing based on completion of approved units from UQ and CQU.

Power Generation Unit Options

EPG001 Introduction To Power Plant

EPG005 Project Delivery

Advanced Power Generation Unit Options

EPG006 Applied Thermodynamics

EPG011 Industrial Electrical Power Distribution

EPG015 Industrial Electrical Power Systems

Potential Careers:

Energy Consultant, Engineer, Mechanical Engineer.

UNIT SYNOPSES

EPG001 INTRODUCTION TO POWER PLANT

THIS UNIT IS AVAILABLE TO BX20 AND BX21 STUDENTS ONLY.

This unit provides an overview of the operation,

performance and maintenance of large coal-fired boiler-turbine-generator plants. It is intended as an introduction to the whole of the power station plant and systems. Such coal-fired power plants consist of a water and steam cycle, a fuel (coal and air) cycle and control systems to optimise performance. A typical power station burns millions of dollars worth of fuel every week. Maximising plant efficiency in the face of plant problems, operational requirements and changes in fuel supply can save thousands of dollars each week and reduce the environmental impact of power generation.

Electricity is a commodity being traded in a market, but unlike most other commodities it cannot be stored in any significant quantity. Understanding the context of the network and the electricity market is a crucial aspect of operating power plants.

Credit points: 12 **Contact hours:** 40 per week
Campus: Gardens Point **Teaching period:** 2012 5TP2 and 2012 6TP5

EPG005 PROJECT DELIVERY

THIS UNIT IS AVAILABLE TO BX20 AND BX21 STUDENTS ONLY.

This unit provides an overview of the techniques and tools required for the professional development of a project including the generation and submission of viable proposals. The successful development and implementation of such projects and the ability to appropriately manage projects and contracts related to plant equipment, maintenance and life schedules including refurbishment can save vast resources and directly affect the environmental impact within a power generation facility.

Credit points: 12 **Campus:** Gardens Point **Teaching period:** 2012 5TP3 and 2012 5TP8

EPG006 APPLIED THERMODYNAMICS

THIS UNIT IS AVAILABLE TO BX20 AND BX21 STUDENTS ONLY.

Many power station plant processes involve movement of heat from one component to another. This might be for the generation process itself, or simply maintaining equipment within operating temperature limits. Measuring and managing heat transfer processes are crucial for the effective and efficient operation of generating plant. The heat produced by the boiler in a power station is delivered to the turbine. Any heat not extracted from the steam by the turbine is then discharged to the atmosphere through the cooling towers. This unit considers ways of effectively moving the heat generated in the various processes in the power station plant, and extracting that heat to produce electricity.

Credit points: 12 **Campus:** Gardens Point

EPG011 INDUSTRIAL ELECTRICAL POWER DISTRIBUTION

THIS UNIT IS AVAILABLE TO BX20 AND BX21 STUDENTS ONLY.

This unit provides an overview of the aspects of industrial power distribution and earthing systems relevant to a power generation plant. Around 8% of a power station's output is used on plant auxiliaries - power stations are their own biggest customer. The effective design, operation and maintenance of equipment used for distribution of this auxiliary power across a plant site is crucial for its reliable operation. Earthing systems underpin the safety of personnel and plant in any industrial complex. This unit provides the theoretical and practical background knowledge required to understand the design, testing and maintenance of earthing systems in a power plant.

Credit points: 12 **Campus:** Gardens Point

EPG015 INDUSTRIAL ELECTRICAL POWER SYSTEMS

THIS UNIT IS AVAILABLE TO BX20 AND BX21 STUDENTS ONLY.

Electrical protection systems are fundamental to the safe and reliable operation of the generating facility. This unit provides the theory and knowledge to enable review and testing of protection schemes that protect plant items. Emergency Power systems underpin the safety and reliability of industrial facilities. This unit provides the theoretical and practical background knowledge required to understand the design operation and maintenance of Emergency Power systems. Applicable standards, codes and legislation, fundamentals of lighting system design.

Credit points: 12 **Campus:** Gardens Point