Graduate Diploma in Lighting (on-shore) (PH72)

Year offered: 2010
Admissions: Yes
Course duration (part-time): 4 semesters (2 years) (Internal and External)
Domestic fees (indicative): 2010: Full fee tuition $7,250 (indicative) per semester
Domestic Entry: July
Total credit points: 96
Standard credit points per part-time semester: 24
Course coordinator: Associate Professor Ian Cowling
Campus: Gardens Point

Overview
The Graduate Diploma in Lighting (PH72) is designed primarily for people working in all areas of the lighting industry and engineers or architects whose work includes some aspects of lighting.

The Graduate Certificate in Lighting (PH62) provides an overview of all aspects of lighting, including light measurement, lamp properties and luminaire design, design of lighting installations, daylighting and the human factors associated with lighting.

The Graduate Diploma (PH72) then provides, through electives, the opportunity for some degree of specialisation appropriate to the student's needs and interests.

Finally the Master of Lighting (PH82) provides the opportunity for graduates of the above programs to undertake a Masters in the form of a project with some coursework.

Entry Requirements
(a) Bachelor level degree in an appropriate field

OR

(b) Successful completion of PH62/PH63 Graduate Certificate in Lighting or equivalent.

Note: Students with relevant experience in the lighting industry or recognised educational qualifications in lighting may be granted credit to a maximum of 36 credit points.

Course Design
Graduate Diploma students will undertake 24 credit points (two units) of advanced lighting design and applications studies and two other units (24 credit points) which could include at least one unit in Project Management, Project Cost and Risk Management or Quality Management.

Further Information
For further information about this course, please contact:

Associate Professor Ian Cowling
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Course structure - Part-time

Year 1, Semester 2 (July to October)
PCN121 Vision Colour and Photometry
PCN124 Lamps and Luminaires

Year 2, Semester 1 (February to June)
PCN122 Lighting Design
PCN123 Sustainability and Human Factors

Year 2, Semester 2 (July to October)
PCN223 Lighting Applications
Elective - One unit from:
PCN222 Advanced Lighting Design
PCN224 Applied Lighting

Year 3, Semester 1 (February to June)
PCN221 Best Practices in Lighting
Elective - One unit from:
CNP520 Project Management
PCN224 Applied Lighting

NOTES: PH72 is offered part-time internally and externally. The course comprises a lecture/tutorial format, and where appropriate practical and field work. Some units will have a significant computer-design type component and all units will incorporate learning through assignment work, all of which will be incorporated into the assessment program. Most units in the internal mode will be offered in block format on weekends. Students enrolling in the external mode will be required to attend QUT for 4 to 5 days per semester for intensive practical and tutorial work.

Domestic students in the Graduate Diploma in Lighting (PH72) will be invited, on successful completion of 96 credit points, to continue with studies in the Master of Lighting (PH82).

Students in the Graduate Diploma in Lighting (PH72) wishing to exit with the Graduate Certificate in Lighting (PH62) are required to
submit an Application to Graduate Early with an Approved Exit Course (SRX) Form in their final semester of study. International students wishing to change courses should consult International Student Business Services.

Potential Careers:

UNIT SYNOPSIS

CNP520 PROJECT MANAGEMENT
This unit is an introduction to project management as a growing discipline/profession. The unit will focus on theories related to project definition, project scope, project tools and implementation. Key aspects covered include professional development, organisation design and project structure, communication, managing change and performance measurement (time, cost and quality).

Contact hours: offered in block mode
Campus: Gardens Point

PCN121 VISION COLOUR AND PHOTOMETRY
This unit includes the following: measurement of luminous flux; luminous intensity; illuminance; luminance; reflectance; transmittance; diffuse surfaces; inverse square law; cosine law; Munsell and CIE Colour System; chromaticity coordinates Yxy, L^*A^*B^*, Luv, correlated colour temperature, colour rendering indices; the integrating sphere; goniophotometry; distribution photometry; graphical representation of photometric data; measuring instruments; accuracy; repeatability; the physiology of the eye and light detection; contrast sensitivity; colour vision; adaptation; brightness and lightness; image detection and recognition including edge detection; lightness determination; the association of the characteristics of patterns.

Credit points: 12      Campus: Gardens Point
Teaching period: 2010 SEM-2

PCN122 LIGHTING DESIGN
This unit includes the following: definition of the visual field; the extension of threshold studies to practical task situations; the evaluation of visual tasks; the development of measures of discomfort and disability glare; illuminance and glare scales; methods for the assessment of tasks and environments; experimental techniques of evaluation. It also includes the perception of colour, form, pattern and space, and issues relating to the perception and comprehension of the environment; aesthetics, perception and emotion; the practical methods available for predicting illuminances from daylight and uniform arrays of luminaires; the prediction of discomfort; appraisals; codes of practice; economics; maintenance; integration of daylight and electric light.

Credit points: 12      Campus: Gardens Point
Teaching period: 2010 SEM-1

PCN123 SUSTAINABILITY AND HUMAN FACTORS
This unit will not cover all areas of specialised lighting, but rather will concentrate on the more important and general public lighting situations. Topics covered include emergency lighting requirements, road lighting, pedestrian lighting and sports lighting, with particular reference to standards for specialised lighting situations, equipment, required light distributions and calculation and design techniques. There is a need to fully understand the issues involved in designing for these applications and to be able to build a design that satisfies the requirements with quality and efficient lighting solutions.

Credit points: 12      Campus: Gardens Point
Teaching period: 2010 SEM-1

PCN124 LAMPS AND LUMINAIRES
This unit includes the development of light sources, the practical requirements of light sources including tubular fluorescent lamps, various high and low pressure discharge lamps. Practical lamps are discussed in terms of luminous efficacy, spectral output, colour rendering, life, supply requirements, control gear, cost, etc. The unit also addresses the design, manufacture, testing and the provision of data on luminaires methods of light control; the properties of optical systems; refractors; reflectors and diffusers; luminance control techniques; manufacture of luminaires and auxiliaries; codes and provision of photometric data for indoor and outdoor luminaires; the calculation of utilisation factors; luminaire luminances; computerised testing.

Credit points: 12      Campus: Gardens Point
Teaching period: 2010 SEM-2

PCN221 BEST PRACTICES IN LIGHTING
Electrical energy usage and subsequent energy analysis techniques, advantages and disadvantages of choosing low energy lamps and luminaries, compromising low energy sources and quality lighting, sensors and sensing techniques for lighting control, energy conservation through dimming and lamp switching, daylighting techniques, potential for energy savings through daylighting, daylighting design and calculations.

Credit points: 12      Campus: Gardens Point
Teaching period: 2010 SEM-1

PCN222 ADVANCED LIGHTING DESIGN
This unit includes the latest developments in lamp technologies and sources (including LEDs and lasers), lighting in the mesopic range, a review of factors influencing lighting design; discomfort and disability glare; illuminance and glare scale, methods for the assessment of tasks and environments; in-depth studies of colour, form, pattern and space, issues relating to the perception and comprehension of the environment; the practical effects of daylight, introduction to the integration of daylight and electric lighting. This is a very hands-on unit with a large component of computer design work, group discussions and site visits and evaluations.

**Credit points:** 12  
**Campus:** Gardens Point  
**Teaching period:** 2010 SEM-1 and 2010 SEM-2

### PCN223 LIGHTING APPLICATIONS

This unit builds on the material covered in PCN122 and looks in more depth at some of the applications covered in that unit, namely street lighting and public access lighting, as well as other areas not covered in that unit, including general floodlighting requirements and equipment, light distributions, calculation methods, area floodlighting, building floodlighting, pedestrian lighting, tunnel lighting, vehicle lighting, traffic signals, airport lighting, navigation lighting, display lighting, and advertising.

**Credit points:** 12  
**Campus:** Gardens Point  
**Teaching period:** 2010 SEM-2

### PCN224 APPLIED LIGHTING

There is no set material for this unit. Students undertake an approved project over a semester on any topic relevant to their interest in lighting. The project may be predominantly a reading course, reviewing, comparing or analysing material on a specific topic, or it may be a practically oriented project involving manufacture, measurement or analysis of a particular lighting product or installation. The project may be taken at QUT or within the person's place of employment.

**Credit points:** 12  
**Contact hours:** PH72, PH82  
**Campus:** Gardens Point  
**Teaching period:** 2010 SEM-1 and 2010 SEM-2