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

Year offered: 2011
Admissions: Yes
Course duration (part-time): 4 semesters (2 years)
(Internal and External)
Domestic Fees (indicative): 2011: Full fee tuition $7,375
(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

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.

Limits on grades of 3
A new policy concerning grades of 3 came into effect from 1
January 2009 (QUT MOPP C/5.2). With effect from this date
grades of 3 are no longer considered a conceded or low
pass but are classified as a fail grade. Any grades of 3
awarded prior to 1 January 2009 retain the conceded pass
status and will be counted for graduation purposes up to the
maximum number of grades of 3 permitted for your course.
Grades of 3 incurred in units that commence after 1 January
2009 will not count towards your degree. Further information
is available on the Student Services website

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

Associate Professor Ian Cowling
Phone: +61 7 3138 2592
Email: i.cowling@qut.edu.au

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

PCN222 Advanced Lighting Design

Year 3, Semester 1 (February to June)
PCN221 Best Practices in Lighting
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:
Architect, Electrical Contractor, Electrical Engineer, Energy
Consultant, Industrial Designer, Landscape Architect,
Lighting Designer, Lighting Technician, Luminaire Designer,
Physicist, Sales Person, Scientist, Theatre Lighting.

UNIT SYNOPSES

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: 2011 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: 2011 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: 2011 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: 2011 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: 2011 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: 2011 SEM-1 and 2011 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: 2011 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  Campus: Gardens Point  Teaching period: 2011 SEM-1 and 2011 SEM-2**