1. Engineering Studies, Preliminary Course, Assessment program

Brainstorming possible tasks

After mapping the course outcomes (step 1) the teachers brainstormed possible tasks (step 2) that could be used to assess each outcome. The possible tasks are shown below.

Preliminary outcome		Assessment tasks and strategies
P1.1	identifies the scope of engineering and recognises current innovations	Engineering report, site visit report, interview report, research report, examination
P1.2	describes the types of materials, components and processes and explains their implications for engineering development	Engineering report, site visit report, interview report, practical applications, experimental work, class tests, examination
P2.1	explains the relationship between properties, uses and applications of materials in engineering	Engineering report, site visit report, interview report, practical applications, experimental work, class tests, examination
P2.2	describes the nature of engineering in specific fields and its importance to society	Engineering report, site visit report, interview report, practical applications, examination
P3.1	uses mathematical, scientific and graphical methods to solve problems of engineering practice	Engineering report, practical applications, experimental work, class tests, examination
P3.2	develops written, oral and presentation skills and applies these to engineering reports	Engineering reports, site visit report, interview report, research report
P3.3	applies graphics as a communication tool	Engineering report, site visit report, practical applications, class tests, examination
P4.1	describes developments in technology and their impact on engineering products	Engineering report, site visit report, interview report, examination
P4.2	describes the influence of technological change on engineering and its effect on people	Engineering report, site visit report, interview report, practical applications, examination
P4.3	identifies the social, environmental and cultural implications of technological change in engineering	Engineering report, site visit report, interview report, practical applications, class tests, examination
P5.1	demonstrates the ability to work both individually and in teams	Engineering report, site visit report, interview report, practical applications, experimental work
P5.2	applies management and planning skills related to engineering	Engineering report, practical applications, experimental work
P6.1	applies knowledge and skills in research and problem-solving related to engineering	Engineering report, site visit report, practical applications, experimental work
P6.2	applies skills in analysis, synthesis and experimentation related to engineering	Engineering report, site visit report, practical applications, experimental work

Assessment program

The teachers worked through steps 3 to 9, pages 11-12, to develop the following assessment program.

Four tasks have been selected to address the 14 preliminary course outcomes. Each outcome is formally assessed at least once. A significant weighting has been given to practical activities and reports to reflect the intent of the syllabus.

Syllabus components, weightings and related outcomes	**Task 1**: Research report on irrigation systems **Module**: Landscape products. **Outcomes**: P2.2, P3.2, P4.2, P4.3, P6.1 **Date**: Week 8, Term 1	**Task 2**: Engineering report **Module**: Braking systems. **Outcomes**: P1.1, P2.1, P2.2, P3.1, P3.2, P3.3 **Date**: Week 6, Term 2	**Task 3**: Practical application **Module**: School-based elective. **Outcomes**: P2.2, P3.3, P5.1, P5.2, P6.2 **Date**: Week 5, Term 3	**Task 4**: Yearly exam **Module**: all. **Outcomes**: P1.1, P1.2, P2.1, P2.2, P3.1, P3.3, P4.1, P4.2, P4.3 **Date**: Week 8, Term 3
Scope of the profession: 10% (P1.1, P1.2)		5%		5%
Knowledge of engineering principles: 40% (P2.1, P2.2)	5%	15%	5%	15%
Communication skills: 20% (P3.1, P3.2, P3.3)	5%	5%	5%	5%
Understanding the impacts of engineering: 10% (P4.1, P4.2, P4.3)	5%			5%
Management and problem solving: 10% (P5.1, P5.2)			10%	
The application of engineering methodology: 10% (P6.1, P6.2)	5%		5%	
Total: 100%	20%	25%	25%	30%

Assessment task 3

The school-based elective module will be addressed in a five-week unit of work. The class will investigate the application of engineering to traffic management in the local area. The teacher, in consultation with the council engineer, has arranged to study two sites, A and B.

Site A is an intersection which has been identified as requiring improved traffic management. The engineer's plans for a roundabout development have been accepted by council and will be implemented in the near future. The class will be able to inspect the current site, view the plans and have discussions with the council engineers. The students will also be able to view the progress of the development during construction.

Site B would benefit from improved traffic management. Site B forms the basis of assessment task 3.

Assessment task:	3
Module:	School-based elective
Nature of task:	Practical application
Due date:	Week 5, Term 3
Weighting:	25%

Outcomes to be assessed:

P2.2 describes the nature of engineering in specific fields and its importance to society

P3.3 applies graphics as a communication tool

P5.1 demonstrates the ability to work both individually and in teams

P5.2 applies management and planning skills related to engineering

P6.2 applies skills in analysis, synthesis and experimentation related to engineering

In assessment task 3, the students will be able to apply their learning in relation to site A, to prepare a site analysis and proposal for site B.

Students, working in groups of 3, are required to:

- develop a management plan which identifies timelines, responsibilities and tasks of team members (P5.1, P5.2)
- analyse the site, with each student taking responsibility for investigating and reporting on traffic flow, pedestrian usage or amenities (drainage, water, electricity, lighting etc.) (P2.2, P3.3, P6.2)
- develop a project proposal, including annotated sketches and drawings, with justifications for the recommendations (P3.3, P5.1, P6.2)
- submit individual diaries which record the involvement of the individual in the team, the management of the project and the development of the proposal (P5.1, P5.2)
- evaluate the teamwork and management practices of the group. (P5.1, P5.2)