

Teaching and Learning Strategic Plan 2007-2010

Faculty of Engineering & Information Technologies

September 2007

Introduction

This document describes the Strategic Plan for enhancing the Learning and Teaching in the Faculty of Engineering & Information Technologies. The plan is informed by the broad strategies and goals set out in the University of Sydney Learning and Teaching Plan 2006-2010.

Overarching Vision, Values and Principles

The Faculty's vision for Learning and Teaching follows the University: a vibrant and well-resourced learning environment that supports high quality, inclusive learning experiences.

The specific priorities include:

- Improve students experience so that we are ranked in the highest band in CEQ surveys
- Attract the best students and provide them with appropriate support and a challenging academic environment
- Encourage independent learning, peer interaction, effective skill development and a sense of enjoyment in learning
- Review our postgraduate coursework programs to ensure that they are academically challenging and professionally relevant.
- Develop a new system to recognize and reward excellence in Learning & Teaching.

Goals

Goal 1: Ensure the distinctiveness of the Sydney Graduate

Strategy 1: To attract and support high achieving students.

- The Faculty currently has two academic programs designed to support high achieving students. The four Engineering schools offer the Advanced Engineering program. The School of Information Technologies follows the Science model which includes: 1) the Talented Student program, 2) the Bachelor of Computer Science and Technology (Adv) degree; 3) advanced units of study to attract high achieving students from across the university. The Faculty will conduct a review of the benefits of the two models, and explore the benefits of a new integrated model to further improve the experience and opportunities offered to high achieving students.

Action: Faculty L&T committee.

Target: Increased student enrolment in advanced UOS

- The Faculty will increase the number of industry scholarships through a variety of schemes (Major Industry Placement Scheme, Research Industry Placement Scheme, Summer And Research Placement Scheme) for students in the final two years of study.

Action: Executive Director, Engineering Sydney.

Target. Increase in number of industry scholarships

- The Faculty will continue to promote its activities to High Schools and support programs to attract students to Engineering and IT degrees, including ENGG3062 Technology Education, and the National Computer Science School, run by the School of IT on an annual basis

Action: Faculty marketing manager, ENGG 3062 Co-ordinator and PSSU.

Target: Increase the proportion of high UAI students

Strategy 2: Enhancement of the learning community to better support student-to-student learning

- Increase project/team based components in all degree streams

Action: Program Directors/School L&T Directors

Target: Increased project based studies

- Evaluate the effectiveness of the CDIO (Conceive Design Implement Operate) initiative in School of EIE, and if successful extend this model to other schools

Action: Associate Dean (L&T), EIE Director of L&T
Target: Report and recommendations

- Evaluate the possibility of adopting SIT's mentor program to other schools in the Faculty.

Action: Associate Dean (L&T), SIT Undergraduate Director
Target: Report and recommendations

Strategy 3: Embed graduate attributes in teaching and assessment practice

- Ensure that all Engineering degree programs meet or exceed the requirements of Engineers Australia, and that all IT programs similarly meet requirements of ACS, in regards to levels of attainment of GAs.

Action: HOS, School L&T Directors

- Monitor and evaluate changes in student perception of graduate attribute attainment through SCEQ/USE surveys

Action: Associate Dean (L&T), School L&T Directors

- Develop L&T Learning Management System to include maps of GA development that are valid and defensible and integrate SIT units of study into the Learning Management System.

Action: Associate Dean (L&T), School L&T Directors
Target: Fully functioning system for accreditation in 2009

- Assist students to record evidence of GA attainment through the development of an e-portfolio, and its integration within all degree programs

Action: School L&T Directors

- Conduct formal and informal surveys of employers of SU graduates to assess the graduates GA attainment levels, and obtain input from industry advisory boards, which exist in some schools, e.g. SIT.

Action: School L&T Directors

Strategy 4: Promote international accreditation and recognition of programs.

- All the Faculty's Engineering and IT degrees are fully accredited by Engineers Australia and the Australian Computer Society. Through the Washington Accord

EA accredited Engineering degrees are recognised throughout much of the world. Presently there are international moves to make a Master's degree the minimum requirement for Professional Engineers. The Faculty will closely monitor the proposed 4+1 model and develop proposals for Master's programs that will position the Faculty to adjust to any changes required to remain within the Washington Accord.

Action: Dean, Associate Dean (Postgrad coursework)

- The School of IT and EIE (for Software Engineering) will monitor parallel developments in the Association for Computing Machinery (ACM) for changes in its accreditation requirements.

Action: Dean, Associate Dean (Postgrad Coursework), SIT Chair of T&L Committee.

Strategy 5: Identify and promote opportunities for interdisciplinary and interprofessional learning

- The Faculty currently offers combined undergraduate degree programs with the Faculties of Arts, Commerce, Science, Medical Science and Law. The faculty is developing a combined degree program with the Faculty of Architecture.

Action Dean, Associate Dean (Undergraduate)

- Students enrolled in several non-Engineering and IT degrees can major in Computer Science and/or Information Systems. SIT also offers Minors in IT available to all students enrolled in the university.

Action: SIT Undergraduate Director; SIT Chair of T&L Committee
Target: Increase awareness of studying IT units across the university.

- Students enrolled in selected units of study in Architecture, Engineering and IT will collaborate through a technology based teaching project funded by a TIES grant. A collaboration system with Large plasma displays will be located in 3 venues at SIT, Engineering Library and Wilkinson Building.

Action: TIES grant investigators from SIT, EIE and Architecture to build prototype and organize workshop with academics.
Target: Increased awareness of cross-disciplinary collaboration amongst students.

Strategy 6: Establish links with professions and other key stakeholders

- The Faculty has well established links with the profession through Foundations, Alumni Associations, Engineering Sydney, etc. The Faculty will work with these bodies to provide greater industry input into course design and delivery.

Action: Dean, Heads, School L&T Directors

Strategy 7: Develop a model for Postgraduate Coursework that is academically excellent, coherent, accessible, well-planned and efficiently managed

- A major focus of the current plan will be to develop a Master's program that is academically challenging and attractive to postgraduate students and industry. The development of a 4+1 model will position the Faculty well for the international trend towards a Master's degree being the entry level into professional engineering careers.

Action Dean, Heads, Associate Dean (Postgraduate coursework)
Target New Masters program commencing 2010

Goal 2: Support quality innovative teaching

Strategy 1: Maintain systematic Quality Enhancement processes

- The Faculty performs regular reviews of Schools and of programs that cut across Schools. Reviews of Schools of IT and EIE were performed in 2005, and AMME in 2004. Reviews of Schools of Civil Engineering and Chemical and Biomolecular Engineering (CBE) will occur in the 2008/2009. The Faculty has recently completed the process of reviewing the Flexible First Year program and actions will be developed according to the recommendations.

Action: Dean with Associate Deans Undergraduate, First Year, L&T

- The Faculty has processes in place for ensuring quality in individual UOS, and for degree programs making use of survey data (USE and SCEQ). This involves review by Dean and Associate Dean (L&T) and requirements the UOS coordinators to respond to areas of concern. The Faculty will continue to evaluate the effectiveness of this process and modify as necessary.

Action: Associate Dean (L&T), School L&T Directors

- The Faculty has funding put aside (\$100,000 in 2007) to support new initiatives in teaching and curriculum enhancements. Funding is dependent on demonstration of how the projects will impact on key teaching performance indicators

Action: Dean, Associate Dean (L&T)

- The Faculty is involved in a benchmarking exercise with Universities of Melbourne and Queensland. The CDIO initiative involves sharing of material and

alliances with other Universities. These activities will continue to enable the faculty to develop a best practice model.

Action: Associate Dean (L&T)

- SIT is involved in benchmarking its Honours program with ANU in order to calibrate best practice in undergraduate research training.

Action : Associate Dean (L&T) ; SIT Honours Director

Strategy 2: Enhance opportunities for the dissemination of best practice

- The Faculty will hold four seminars a year including a Faculty day devoted to Learning & teaching issues

Action Associate Dean (L&T)

- The Faculty will introduce new L&T awards to encourage good practice and reward innovations. Award winners will be required to speak at Faculty seminars.

Action Dean, Associate Dean (L&T)

- The Faculty will encourage participation in Engineering & IT Education Conferences by providing funds to support conference attendance.

Action Dean, Associate Dean (L&T)

- The Faculty will introduce an L&T newsletter to promote and support activities of staff demonstrating best practice and to showcase innovation

Action Associate Dean (L&T), School L&T Directors

Strategy 3: Continue to promote and support student-centred teaching

- The Faculty will promote project based approaches. Other CDIO recommendations will be evaluated.

Action School L&T Directors

- The Faculty will encourage participation in national and international student competitions, e.g. SIT's participation in national and international programming competitions.

Action: School L&T Directors

Strategy 4: Develop and monitor an optimal staff-student ratio

- The Faculty of Engineering & IT has a very high staff-student ratio, and there is some evidence that this is impacting on student assessment of good teaching. The Faculty will reduce the staff-student ratio, primarily through changing the proportions of junior to senior staff. The Faculty will also conduct a review of UOS to develop models and guidelines of good practice for large classes.

Action Dean, Associate Dean (L&T), School L&T Directors

Strategy 5: Develop and monitor workload guidelines for academic staff

- The Faculty will develop a workload model which fully accounts for research supervision and load, teaching load including the effect of class size, and service both within the University and in the broader community

Action Dean, DAC

Strategy 6: Recognise and support quality teaching

- The Faculty will increase the number of staff with teaching qualifications in higher education. The Faculty has a policy of requiring all new staff to undertake the Graduate Certificate in Higher Education before confirmation. Senior staff will be encouraged and supported to participate in the Graduate Certificate course.

Action Dean, HOS

- The Faculty will support staff in applying for University and External Teaching awards

Action Dean, Associate Dean (L&T)

Goal 3: Promote Internationalisation, Cultural Diversity and Equity

Strategy 1 Expand opportunities for international exchange and internships

- The Faculty has signed Memorandums of Understanding with Universities from all continents. Further agreements will be explored where there is a likelihood of active student interchange.

Action Dean and Associate Dean (International)

- The Faculty will more actively promote study abroad and exchange programs. Feedback from students suggests that lack of funding is a major deterrent to students in participating in these schemes. The Faculty will explore with student representatives opportunities for sponsorship. The Faculty needs to seek funding support from the University and industry for this purpose.

Action Dean, DVC (International) School reps

Strategy 2: Promote the value of diversity in curriculum content and learning experiences

- To meet accreditation requirements all degree programs are required to be flexible in structure, and able to accommodate students with different learning styles. In particular they must include: enabling skills and knowledge, in depth technical competence, practical exercises, problem solving and project based learning, and development of personal and professional capabilities. The Faculty will monitor all degree programs to ensure they maintain and enhance the diversity of learning experience.

Action HOS, School L&T Directors

- The proportion of females in the Faculty is quite steady at 17.9%, 17.4%, 17.7%, 17.5%, and 18% for the years 2003 to 2007. (In general, SIT has a higher proportion of females compared with the other schools in the Faculty). This is very close to the national average and well ahead of some competitors. The Faculty will enhance its promotional activities to attract female students.

Action: Faculty Marketing Manager, Sydney University Women in Engineering (SUWIE)

Target To increase proportion of female students to 25% by 2010

Goal 4: Embed Research Enhanced Learning and Teaching

Strategy 1: Promote and encourage research that reflects Scholarship of Teaching

- The Faculty and Schools will provide support for staff to attend conferences related to L&T
- The Faculty will leverage the e-learning research capabilities in SIT.

Strategy 2: Reward staff who contribute to the Scholarship of Teaching

- As noted previously the faculty will be introducing a new rewards system directed towards L&T.

Strategy 3: Build opportunities for students that reflect the strengths of research-intensive Faculty

- Advanced Engineering program
- More industry related speakers who value research and scholarship
- Scholarships for summer vacation work (SARPS, RIPS)
- Summer Scholarships offered by NICTA and CSIRO promote research opportunities for SIT students

Strategy 4: Promote opportunities for students at the undergraduate and Postgraduate coursework level to be involved in research.

- Staff and students will be encouraged to submit student work for publication in Orbit
- In SIT, postgraduate coursework students have the opportunity to pursue a research path, which can potentially lead to enrolment in a research degree. Eligible undergraduate students may enrol in a research-intensive Honours program.

Goal 5: Enhance Learning in an Information Rich Environment

Strategy 1: Promote a vibrant on-campus experience

- The Faculty will investigate the needs of students for greater learning space including the provision of an Integrated Learning Centre.

Action: Dean

- SIT is already providing 24/7 access to computing lab facilities for its postgraduate coursework students. The possibility of providing similar access for more of the faculties students will be explored

Action Associate Dean(e-learning)

Strategy 2: Support the University approach to blended learning

- Many of the UOS in Engineering & IT involve a range of activities which include the use of e-learning components. The Faculty will conduct a review of all UOS to find the extent to which use is made of e-learning. The expertise in SIT in this area will be leveraged.

Action Associate Dean (e-learning), School L&T Directors

Strategy 3: Ensure the development and maintenance of flexible physical and virtual teaching spaces

- The Faculty provides a range of physical spaces for undergraduate use which include seminar rooms, computer laboratories and laboratories. The faculty will monitor the condition of these spaces to ensure they are maintained and that students are provided with the best possible facilities.

Action Dean, HOS

Strategy 4: Increase the use of quality information resources amongst students

- The Faculty library committee will monitor the impact of the move of the Engineering library to the new central building to ensure that students still obtain guidance and support through UOS and individually

Action Faculty library committee