

## Faculty of Science Learning and Teaching Plan for 2004-2007

**MISSION:** To be a provider of world class *research based* education in science that is valued by the students, their employers, and the general community

The Faculty of Science is the largest of six faculties located in the College of Sciences and Technology. It is also one of the University's largest faculties offering several degree programs: B.Sc., B.Med.Sci., B.C.S.T., B. Psych. and the specially designated B.Sc. degree programs of Advanced, Advanced Mathematics, Molecular Biotechnology, Bioinformatics, Marine, Environmental, Molecular Biology & Genetics and Nutrition. Jointly with the Faculty of Arts, it offers the Bachelor of Liberal Studies and Bachelor of Arts Informatics as well as combined degree programs with Commerce, Law, Arts, Education, Engineering and Nursing. In addition, the Schools<sup>1</sup> within the Faculty perform a service teaching role for Faculties such as Engineering, Agriculture, Food and Natural Resources, Pharmacy, Veterinary Science, Dentistry and Medicine. The Faculty aims to provide a flexible umbrella to support and promote the teaching of science in its widest sense within the University of Sydney, and to service the needs of employers, professional associations and the Australian community at large. The current Faculty of Science Operational Plan for Teaching and Learning has been modeled on that for the University with regard to the main objectives. The strategies within these objectives have been modified in some cases to reflect the particular importance of some teaching and learning areas within science.

**OBJECTIVE 1: Attract, and support the progress of, high achieving students from diverse backgrounds.**

The Faculty of Science has in place a very successful Talented Student Program to nurture top performing students in science. Schools have programs designed to attract students from equity target groups and all incoming students are offered a place in the Transition Workshop. This program is highly rated by students, has provided a model for workshops in other faculties and has research findings documenting its effectiveness.

**OBJECTIVE 2: Ensure students enjoy an outstanding experience as part of a community of learners.**

Students arriving at university have usually moved from a structured and supervised school environment to one where they must take responsibility for their own learning. Additionally, the multi-cultural nature of Australian society, and the increasing numbers of overseas students, means that the experience will be different for each student. For students to learn to the best of their ability, they must settle quickly into university life, to feel part of the community, and the faculty of Science has focused on activities enhancing the first year experience, as well as aspects of peer mentoring

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<sup>1</sup> "Schools" in the context of this document includes the Unit for the History and Philosophy of Science

**OBJECTIVE 3: Emphasise the benefits of a research intensive teaching and learning environment.**

**OBJECTIVE 4: Recognise, support and reward teaching excellence within the Faculty.**

The Faculty of Science has a strong interest in teaching innovation and has consistently demonstrated outstanding performance through receipt of University and external teaching excellence awards. For several years the Faculty has had its own Teaching Development Grant scheme and a Teaching Award scheme for all academics. It has an active Teaching and Learning Committee and a strong teaching portfolio, including external teaching grants and publications in educational research.

**OBJECTIVE 5: Consolidate quality in the management and evaluation of teaching and learning.**

<b>OBJECTIVE 1: Attract, and support the progress of, high achieving students from diverse backgrounds</b>			
<b>Strategy</b>	<b>Initiative</b>	<b>Responsibility and Current Status</b>	<b>Indicators</b>
Strategy 1.1: Explicitly ease students through transition to university	<p>Transition workshop to continue A <i>Welcome to Science</i> information handout for all first year students</p> <p>Bridging courses for students</p> <p>Departmental/ School and student society welcomes</p>	<p>Faculty Publicity Officer - ongoing distributed through Maths 1 - ongoing run in Biology, Chemistry, Maths and Physics- ongoing</p> <p>Departments and Schools - ongoing</p>	<ul style="list-style-type: none"> <li>• Published research outcomes on transition workshop available on FSTL webpages</li> <li>• Attendance records at Transition workshop</li> <li>• Attendance records of bridging courses</li> <li>• Improved SCEQ responses</li> </ul>
Strategy 1.2: Enhance opportunities for high achievers and target students of top academic ability within the community independent of financial or social barriers	<p>Annual awards night for Talented and Special studies program</p> <p>Departmental awards programs</p> <p>Advertising in UAC guide and special events at UniLive day</p> <p>Continue running Gifted and Talented programs, Kickstart program, Olympiad activities for high school students</p>	<p>Dean of Faculty ongoing</p> <p>Heads of Schools/Departments Marketing section</p> <p>Departments/Schools</p>	<ul style="list-style-type: none"> <li>• Increased participation in the Advanced, Talented and SSP programs</li> <li>• Increased awareness of science at USYD</li> </ul>
Strategy 1.3: Attract students from equity target groups	<p>Research study on access to science by indigenous students</p> <p>Programs targeting participation by women in IT degrees</p>	<p>CST project 2004/5</p> <p>Head of School, IT</p>	<ul style="list-style-type: none"> <li>• Monitor for increased participation in science and specialist degree programs by targeted groups</li> </ul>

Strategy 1.4: Support students at risk particularly when they first start at the university	Project studying factors putting students at risk of failing units in science	Teaching development project with first year directors 2004/5	<ul style="list-style-type: none"> <li>• Pilot running in 2004/5</li> </ul>
Strategy 1.5: Develop flexible post-graduate coursework units	See report from the Associate Dean Postgraduate Coursework	Associate Dean postgraduate studies	<ul style="list-style-type: none"> <li>• Increased enrolment in postgraduate course work programs</li> </ul>
Strategy 1.6: Explore industry-sponsored or –linked degrees	<p>B. IT sponsored by industry</p> <p>B. Mol Biotechnology have senior link to industry</p> <p>Summer scholars program run by Physics and Biochemistry</p> <p>Geosciences have contacts for paid experience in Honours</p>	Heads of Schools/Departments	<ul style="list-style-type: none"> <li>• Increased creation of such programs and monitored participation by students</li> </ul>

<b>OBJECTIVE 2:</b>		<b>Ensure students enjoy an outstanding experience as part of a community of learners</b>	
<b>Strategy</b>	<b>Initiative</b>	<b>Responsibility and Current Status</b>	<b>Indicators</b>
Strategy 2.1: Provide adequate IT infrastructure, especially with regard to teaching facilities	Audit of Faculty IT infrastructure	Faculty Teaching and Learning Committee	<ul style="list-style-type: none"> <li>• Availability of information on IT on faculty wide basis</li> </ul>
Strategy 2.2: Incorporate flexible learning techniques into the curriculum, especially on-line resources	Incorporate IT learning materials in to all relevant units	School/Department teaching and Learning committees Associate Dean for IT	<ul style="list-style-type: none"> <li>• Increased use of WebCT or equivalent, monitored by CST ICT team</li> </ul>
Strategy 2.3: Have processes that help students identify with peers and with those of similar academic interest through on campus social and educational experiences	<p>Continue mentoring systems and extend to more schools/departments</p> <p>Encourage students to work together in and out of classes through group work initiatives</p> <p>Encourage activities of student science societies Continue School welcomes and other activities eg graduations, prize giving</p>	<p>SIT mentoring program leading to paid tutoring in higher years TSP students have a 3<sup>rd</sup> year mentor</p> <p>Faculty Teaching and Learning committee – group work TIF project</p>	<ul style="list-style-type: none"> <li>• Analyse SCEQ data for improvement in student perceptions</li> <li>• Disseminate outcomes through seminars/workshops</li> </ul>
Strategy 2.4: Make students aware of the graduate attributes policy and the generic skills in each unit of study	<p><i>Lifelong Earning</i> website available to all science students 2005 onwards</p> <p>Encourage staff to explicitly integrate skills activities and assessment into units</p>	<p>TIF funded project in Faculty of Science/Uniserve</p> <p>School /Department teaching and learning committees</p>	<ul style="list-style-type: none"> <li>• Monitor use of website</li> <li>• Carry out an audit of unit information provided - create a</li> </ul>

			model for UoS descriptions
Strategy 2.5: Provide a better learning experience by communicating expectations to students	All UoS provide clear learning and assessment aims	School/Department teaching and learning committees	<ul style="list-style-type: none"> <li>• Provide sample template for information on website – monitor use</li> </ul>
Strategy 2.6: Know the destination of our graduates	Maintain school/departmental alumni associations eg chemistry, geosciences and encourage more to keep these records	School/Departments	
Strategy 2.7: Have employers review and advise on curriculum	Psychology, Chemistry, IT Nutrition and Geology use external accreditation processes	School/Department in consultation with external advisory groups	<ul style="list-style-type: none"> <li>• Provide reports from these exercises on website</li> </ul>

<b>OBJECTIVE 3:</b>		<b>To emphasize the benefits of a research intensive teaching and learning environment</b>	
<b>Strategy</b>	<b>Initiative</b>	<b>Responsibility and Current Status</b>	<b>Indicators</b>
Strategy 3.1: Audit research-teaching nexus and raise awareness of students and staff of its advantages	Disseminate outcomes of the Research led teaching review for the Faculty (Prof Andrews' report) on website	Faculty Teaching and Learning Committee	<ul style="list-style-type: none"> <li>SCEQ responses on research environment</li> </ul>
Strategy 3.2: Consolidate existing evidence-based teaching practices	Carry out an audit of UoS for examples of good practice Provide these on FSTL web site	Faculty Teaching and Learning Committee	
Strategy 3.3: Further develop and more widely distribute inquiry-based approaches to teaching and learning	Encourage inclusion of RIT into curricula Run workshops on examples of good practice in RIT		<ul style="list-style-type: none"> <li>Monitor evaluations and outcomes of workshops</li> </ul>

<b>OBJECTIVE 4: Recognise, support and reward teaching excellence</b>			
<b>Strategy</b>	<b>Initiative</b>	<b>Responsibility and Current Status</b>	<b>Indicators</b>
Strategy 4.1: Increase the scope of Faculty and University teaching awards, enhance staff awareness of schemes	Continue faculty awards Encourage faculty staff to apply for University awards Increase awareness of links with Scholarship index Encourage more applications for external awards eg ACE, National	Faculty Teaching and Learning Committee ongoing	<ul style="list-style-type: none"> <li>• More applications for awards</li> <li>• Greater uptake of TDG</li> <li>• Scholarship Index finding increased</li> </ul>
Strategy 4.2: Encourage innovations in teaching and learning	Encourage more applications for TDG and TIF grants	Faculty Teaching and Learning Committee	<ul style="list-style-type: none"> <li>• More successful applications</li> </ul>
Strategy 4.3: Examine outcomes of the TIF	Target areas for improvement with these funds Refer to Academic Board review phase 2 recommendations Create a website for Faculty T and L Report from MP on success of TIF funding to faculty and others	Faculty Teaching and Learning Committee	<ul style="list-style-type: none"> <li>• Increased funding to the faculty from TIF</li> <li>• Publications and sustained improvement in project outcomes</li> </ul>
Strategy 4.4: Encourage research and scholarly enquiry into	Continued support of SCIFER Maintain funding for research projects	Dean of Science  SCIFER seminars and publications on	<ul style="list-style-type: none"> <li>• Increased number of successful</li> </ul>

teaching and learning	Disseminate outcomes from projects to faculty	website	applications for funding
Strategy 4.5: Develop programs to enhance academic leadership for teaching and learning generic skills in each unit of study	Run seminars and workshops for faculty academic staff on teaching initiatives and research outcomes	SCIFER Faculty Teaching and Learning Committee	<ul style="list-style-type: none"> <li>Increased participation in forums on T and L ie Showcases, Uniserve conference</li> </ul>
Strategy 4.6: Provide support for casual staff	Continue to run and evaluate tutor training program Encourage further discipline based training Investigate mentoring initiatives for staff	Faculty Teaching and Learning committee with ITL ongoing  Heads of School/Departments	<ul style="list-style-type: none"> <li>Research outcomes from tutor training program</li> <li>Improved attendance and completion of program</li> <li>Improvement in SCEQ results</li> <li>Audit of discipline based training - 2005/6</li> </ul>
Strategy 4.7 Implement policies of recruitment and promotion which encourage engagement and retention of effective teachers	Require evidence of teaching experience and high quality in advertisements for academic positions New members of academic staff attend 3 day ITL training workshops Graduate Certificate required for all new academic staff during probationary period Encourage teaching qualifications with reference to the Scholarship index		<ul style="list-style-type: none"> <li>Increased proportion of teaching related qualifications</li> <li>Improved SCEQ results for teaching related questions</li> <li>Improved funding through Scholarship Index</li> </ul>

<p>Strategy 4.8 Maximise staff resources by encouraging changes in curriculum and more efficient teaching practices</p>	<p>Encourage innovative teaching methods and courseware development.</p> <p>Communicate on curriculum initiatives through seminars, to reduce overlap and duplication – more joint initiatives</p>		<ul style="list-style-type: none"><li>• Changes in teaching loads</li></ul>
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<b>OBJECTIVE 5:</b>		<b>Consolidate quality, among research intensive universities, in the management and evaluation of teaching and learning</b>	
<b>Strategy</b>	<b>Initiative</b>	<b>Responsibility and Current Status</b>	<b>Indicators</b>
Strategy 5.1: Further develop benchmarking of teaching and learning outcomes and processes	First year biology/chemistry project with U. Melbourne Nutrition project Geosciences with Wollongong	Mary Peat and Adrian George	<ul style="list-style-type: none"> <li>• Reports from projects on website</li> </ul>
Strategy 5.2: Inspect and improve current instruments and procedures for student evaluation of teaching courses units and experiences	Currently being reviewed	Associate Dean IT and Assoc Dean T and L	<ul style="list-style-type: none"> <li>• More informative feedback from students across the faculty</li> <li>• Improvements in SCEQ etc responses</li> </ul>