



THE UNIVERSITY OF
WESTERN AUSTRALIA

Faculty
of
Engineering, Computing and Mathematics

Strategic Plan 2004-2009

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Introduction

The Faculty of Engineering, Computing and Mathematics consists of seven Schools, plus an ARC Special Research Centre (the Special Research Centre for Offshore Foundation Systems). The seven Schools comprise:

- ❑ School of Civil & Resource Engineering
- ❑ School of Computer Science and Software Engineering
- ❑ School of Electrical, Electronic and Computer Engineering
- ❑ School of Mathematics and Statistics
- ❑ School of Mechanical Engineering
- ❑ School of Oil and Gas Engineering
- ❑ School of Water Research

The goals of the Faculty are:

- ❑ *To create a University environment where new ideas may be generated and/or developed, interpreted and tested, for and on behalf of the wider community.*
- ❑ *To maintain a University environment that attracts and develops high quality staff.*
- ❑ *To strive for high international standing in our selected range of disciplines, and to select discipline areas taking account of:*
 - *Significance to professions*
 - *Community interests*
 - *Industry and government objectives*
 - *Academic strengths and interests of staff*
 - *Demand for undergraduate and postgraduate programmes*
 - *Technology trends, mindful of their long-term viability*
- ❑ *To establish a balance between teaching and research and between the numbers of undergraduates, postgraduates, postdoctoral fellows and junior and senior academic staff which ensures excellence in teaching and research, with an emphasis on maintaining strong links between teaching and research.*

The University Context

The Faculty operates within one of Australia's leading universities. UWA is a high quality, medium-sized University with a broad and balanced coverage of disciplines in the arts, sciences and major professions. It is characterized by a strong research and postgraduate emphasis linked to a high quality undergraduate education, across the range of its disciplines; by selected areas of research concentration; and by international focus for its

activities and standards. Established in 1913, UWA is recognised as one of Australia's leading institutes of higher education and holds an international reputation for excellence and enterprise. UWA caters to over 16,000 students within 9 faculties and has nearly 3,000 international students enrolled.

UWA Vision Statement

In the 21st Century The University of Western Australia will be recognised internationally as an excellent, research-intensive university and a leading intellectual and creative resource to the communities it serves.

It will provide a broad and balanced coverage of disciplines in the arts, sciences, and the professions at internationally recognised standards. It will be characterised by a strong research and postgraduate emphasis across the full range of its disciplines and it will be noted for concentrations of particular research excellence in selected areas of strength, opportunity and importance.

The University's research and postgraduate strength will be linked to and sustained by a high quality undergraduate programme in which teaching and learning takes place in an atmosphere of research and scholarship. The University will foster an international focus for all its activities and standards as an integral part of its overriding commitment to excellence and high quality. It will be valued above all, for its enduring commitment to improving society through learning and discovery.

UWA Mission

To advance, transmit and sustain knowledge and understanding through the conduct of teaching, research and scholarship at the highest international standards, for the benefit of the international and national communities and the state of Western Australia.

UWA Six Priority Strategic Objectives

- ❑ To recruit, develop and retain the highest quality staff.
- ❑ To attract, develop and graduate the highest quality students.
- ❑ To increase and diversify the University's funding base.
- ❑ To develop, and direct resources preferentially to areas of particular strength, importance and opportunity.
- ❑ To build strategic partnerships and alliances.
- ❑ To improve collaboration within the University.

Faculty Vision Statement

The vision of the Faculty of Engineering, Computing and Mathematics is to create an exciting environment for enquiry in which students and staff are motivated to research, teach and learn with a view to performing at internationally recognised best practice, and to contribute to the development of their local, national and international communities.

Faculty Mission

The mission of the Faculty of Engineering, Computing and Mathematics is to strengthen and unite the disciplines of engineering, computer science and mathematics in the development of international excellence in research, teaching and innovation, and promote interdisciplinary collaboration with a clear strategic focus.

In achieving this mission the Faculty will:

- ❑ Provide an environment that attracts and retains people of the highest quality and inspire them to achieve excellence in their chosen fields;
- ❑ Create within students a capacity for life long learning through the development of high level technical, analytical and problem solving abilities;
- ❑ Undertake research and disseminate its findings at the highest international level;
- ❑ Lead innovation through education and applied research in order to enhance the capabilities of industry;
- ❑ Develop its international linkages in order to attract overseas students of the highest ability and strengthen its collaboration with overseas research partners;
- ❑ Foster innovation and best practice through interdisciplinary collaboration in research and teaching;
- ❑ Maintain a working environment defined by open communication, mutual respect, diversity, shared problem solving and teamwork;
- ❑ Sustain an environment in which access and reward for students and staff is based upon merit.

Values

The key values held by the University have been adopted by the Faculty in guiding its actions to achieve its vision and mission.

The University's values are:

❑ ***Academic Freedom***

The University is committed to the belief that freedom of intellectual thought and enquiry and the open exchange of ideas and evidence are essential to the achievement of its mission, and it will seek to protect staff and students from any attempts to remove or reduce this freedom.

❑ ***Excellence***

The University is committed to the general principle that it should strive for excellence in all its activities, judged against the highest international standards.

❑ ***Adaptability and Innovation***

The environment within which the University exists is constantly changing and the University must not only be responsive to a changing environment, it has a creative and leadership role to play in exploring and appraising new possibilities.

❑ ***Intellectual Integrity***

The University is committed to the scholarly values of curiosity, creativity, experimentation and critical appraisal, in both the theoretical and practical dimensions.

❑ ***Ethical Standards***

The University fosters the values of openness, honesty, tolerance, fairness and responsibility in social and moral, as well as academic, matters.

❑ ***Evaluation***

The University is committed to the regular evaluation of its activities and processes and believes that self-evaluation and review are central to the University's responsibility as an autonomous institution. Assistance from external evaluators is sought where necessary to ensure objectivity and credibility.

❑ ***Decision-Making and Accountability***

Decisions within the University are made explicitly, openly and consistently, on the basis of relevant information, and as an integral part of the University's accountability to its staff and students, to the public and to governments.

□ ***Educational Principles*** (in accordance with Academic Council Resolution 73/02)

Students at The University of Western Australia are encouraged and facilitated to develop the ability and desire:

- to master the subject matter, concepts and techniques of their chosen discipline(s) at internationally-recognised levels and standards;
- to acquire the skills required to learn, and to continue through life to learn, from a variety of sources and experiences;
- to adapt acquired knowledge to new situations;
- to communicate in English clearly, concisely and logically;
- to acquire the skills needed to embrace rapidly-changing technologies in a global environment;
- to think and reason logically and creatively;
- to undertake problem identification, analysis and solution;
- to question accepted wisdom and be open to new ideas and possibilities;
- to acquire mature judgement and responsibility in ethical, moral, social, and practical, as well as academic matters;
- to work independently and in a team;
- to acquire cross-cultural and other competencies to take a citizenship and leadership role in the local, national or international community.

Critical Success Factors for the Faculty

The success of the faculty in fulfilling its mission and achieving its vision is dependent on a number of critical success factors:

- ❑ *Maintaining a clear focus and direction that is understood and embraced by all the Faculty's staff and stakeholders.*
- ❑ *Actively and continuously engaging in strategic dialogue with external and internal stakeholders and adapting the strategic plan to reflect and embrace changes and new opportunities.*
- ❑ *Achieving and sustaining international best practice quality in all its activities.*
- ❑ *Fostering an organisational culture based on strong collegial ties, mutual respect, tolerance and understanding.*
- ❑ *Creating and maintaining strong, mutually beneficial linkages with local, national and international academic and industry partners.*
- ❑ *Benchmarking performance against international best practice standards and using these measurements to promote continuous improvement across the Faculty.*
- ❑ *Attracting, retaining and supporting the highest quality staff and students, while seeking to maximise diversity.*
- ❑ *Supporting each of the Schools in their engagement in the Faculty's strategic planning process and creation of their own strategic plans.*

The Strategic Role of the Faculty

The Faculty of Engineering, Computing and Mathematics unites these three discipline areas in the provision of an exciting environment for enquiry in which students and staff from all fields are motivated to research, teach and learn with a view to performing at internationally recognised best practice standards, and to contribute to the development of their local, national and international communities.

A collective understanding of the term 'Faculty' has been defined:

*The term '**Faculty**' is a unifying term that encompasses the staff from every School, Centre and the Faculty Office.*

The Faculty, as defined above, expects that all individuals working within it accept its goals, vision and values.

The Faculty, through the Faculty Board, is responsible for the:

- ❑ Conferral of its degrees
- ❑ Integrity and coherence of academic programmes
- ❑ Quality of graduates via the examination process
- ❑ Initiation and termination of academic programmes

The ‘Dean’, with the assistance of the Faculty Office, provides leadership to facilitate opportunities for the Faculty.

The Dean provides strategic leadership through the following:

- ❑ Enhancing the resources of the Faculty
- ❑ Providing academic leadership and management of the Faculty
- ❑ Representing the interests of the Faculty in the University community and to external stakeholders
- ❑ Overseeing the implementation of Faculty Board decisions;

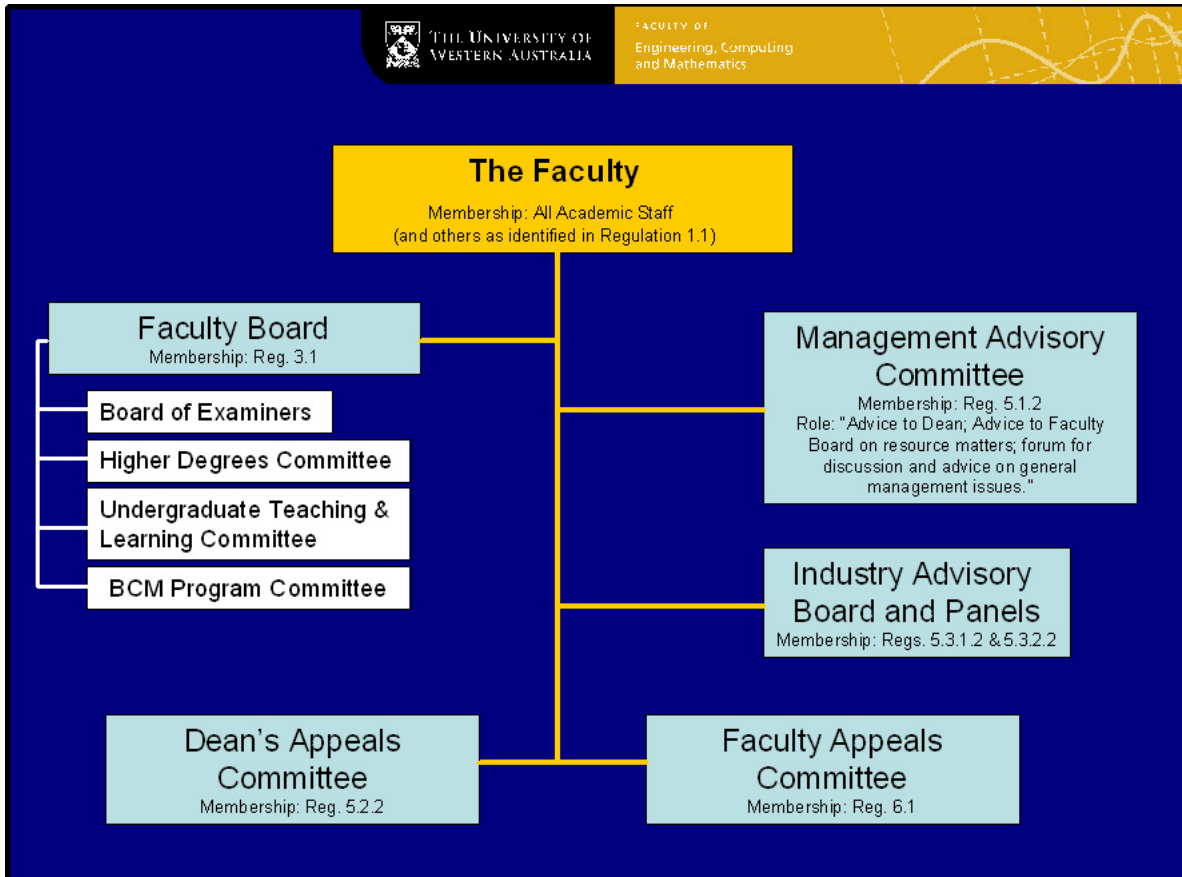
and supports each of the Schools and Centres operating within the Faculty through provision of:

- ❑ Financial, human and industrial relations management
- ❑ Industry and alumni relations support and leadership
- ❑ Marketing support
- ❑ Administrative support and compliance with University policies
- ❑ Strategic funding for initiatives in priority areas

It is recognised that the Dean, informed by the views of senior academic and general staff, sets the strategic direction for the Faculty as a whole, through a unifying vision and mission. Each School is responsible for the creation of a School strategic plan that reflects that of the Faculty.

Faculty Governance and Structure

The membership of the Faculty and its governing structures is defined in the University Calendar at Section E and is summarised in the following diagram:



Corporate Governance

The Dean, as directed by the University, leads the corporate governance of the Faculty. The Faculty Strategic Plan provides a unifying strategic direction for all Schools and Centres operating as part of the Faculty. The Heads of School are responsible for creating strategic and operational plans specific to needs of their School that are in harmony with the Faculty's and The University's planning documents.

The Faculty's Management Advisory Committee (MAC) is responsible for strategic planning and review. The Faculty will continuously engage in strategic dialogue, both internally and externally, updating strategic and operational plans as needed.

The Need for Greater Collaboration

Greater collaboration is viewed as enhancing the overall capacity of the Faculty. The Faculty will unite in the development of international excellence in research, teaching and innovation, and promote interdisciplinary collaboration with a clear strategic focus.

The Dean will represent the Faculty's view to the University that the funding model should encourage greater inter-school collaboration in teaching and research. The Faculty agrees that collaboration should be one of the considerations in the internal funding model.

Teaching and Learning

The Faculty supports information sharing, collaboration between staff and a reduction in duplication to enhance teaching and learning opportunities and outcomes. A range of strategic issues relating to teaching and learning are identified as important areas of focus for the future and these are documented in the following sub-sections.

Undergraduate Programmes

The Faculty will monitor the demand for and quality of undergraduate programmes to maintain and improve its market position as educator of leaders in its professions. The Faculty will review existing entry requirements with the aim of increasing entry flexibility. To ensure the relevance of its programmes to industry, the Faculty will use industry advisory panels as appropriate.

The Faculty, under the direction of the Dean, will work to decrease duplication across the undergraduate degree programmes and promote collaboration between Schools and other Faculties. The Faculty will seek to increase the female gender fraction and to align its international to Australian student ratio with University targets.

Teaching Quality

The Dean and Heads of School will determine where teaching and learning quality is being compromised by lack of funding and seek to improve the quality of course delivery to students through targeted funding or the implementation of alternate delivery mechanisms.

Outcomes Based Education

Outcomes based education (OBE) is now a priority focus for teaching within UWA. The faculty will develop a meaningful definition and implementation of OBE as it applies to its courses. The Schools will engage their industry advisory stakeholders to help develop industry focused outcomes.

Collaboration in Teaching

Collaborative models exist in the form of traditional combined degree programmes, other undergraduate degree programmes and coursework masters programmes. The Faculty will develop collaborative teaching strategies designed to strengthen links across the Faculty, within the Schools and across campus at an undergraduate and postgraduate level. Greater collaboration can lead to increased innovation in course design and delivery, with the potential to provide world class, leading edge combined degree and postgraduate programmes.

Student Satisfaction: Teaching Quality

The Faculty will continuously monitor student satisfaction in all Schools and take appropriate action to enhance the experience of students.

Establishment of Coursework Masters Programmes

The Faculty will run strategically well focused coursework masters (CWM) programmes backed by a sound business case. This work will be undertaken by the proponents. These courses have the potential to make a valuable contribution in terms of industry linkages, opportunities for increased collaboration and in generating additional revenue for the Schools. There is a need to assess the best CWM models in terms of securing adequate enrolment numbers and in turn, generating additional revenue.

The Dean and the Faculty Board will formulate policies and procedures to assist in the development of CWM programmes. They will assess such issues as the market need and the targeting of the programmes, entry standards, delivery modes, staffing and resource allocations and the costing models. The Faculty will also explore the possibility of a Faculty Graduate School as a structure for management of CWM programmes.

Excellence in Teaching

The Faculty views high quality teaching and high quality research to be of equal importance. Academic staff are encouraged to strive for best practice in teaching and to seek a balance between teaching and research in their professional development.

Research

The Faculty will support its existing research strengths and endeavour to foster the development of new areas of research excellence.

Research Funding

The Vice-Chancellor recommends that a percentage of research income be retained at the Faculty level for investment in new research areas and the development of centres. The Faculty will review the way funding is distributed between the Schools and Centres to promote research activities, ensuring that while funding links primarily to research priority areas, all researchers have access to funds, with collaborative efforts and interdisciplinary opportunities attracting greater support.

The Dean will refocus the Management Advisory Committee, who will have increased involvement in the identification and allocation of funding for research activities in order to support existing and foster emerging areas of research excellence.

The Dean will lead in identifying opportunities for collaboration across Schools and Faculties.

The Faculty aims to strengthen its relationships with industry, locally, nationally and internationally. These relationships will support an increase in the level of applied research and create pathways to explore increased opportunities to secure industry funding for doctoral projects. The Dean, with the Heads of School, will increase their promotion of the Faculty's capabilities and areas of activity being undertaken by researchers in the Faculty.

Associate Dean (Research) and the Faculty Research Committee

The Faculty will establish a Research Committee consisting of representatives from all Schools, which reports to the Faculty Board, and appoint an Associate Dean for Research.

The role of the AD(R) will include:

- ❑ Chairing the Faculty Research Committee
- ❑ Representing the Faculty in research matters
- ❑ Liaising with School Postgraduate coordinators

The functions of the Research Committee will include:

- ❑ Preparing Faculty responses to research/innovation/commercialisation matters/policies
- ❑ Facilitating communication of research/innovation/commercialisation opportunities and initiatives
- ❑ Developing Faculty research/innovation/commercialisation policies as needed
- ❑ Implementing and monitoring of research/innovation/commercialisation policies

Support of PhD Students

The Faculty aims to increase the number of Higher Degrees by Research (HDR) students over the next five years (see Operational Plan for targets). The Dean will explore opportunities for funding to PhD students.

The Faculty also seeks to reduce the number of ‘separations’ and the length of time to completion. The current support mechanisms for PhD students will be reviewed. The Faculty will investigate the provision of a small number of UPA/APA scholarships for allocation at the discretion of the Heads of Schools.

Internationalisation

The Faculty embraces internationalisation. Internationalisation may include:

- ❑ Recruitment and teaching of international students both on campus and offshore;
- ❑ Enhancement of opportunities for local students to engage in study and research abroad;
- ❑ International research linkages;
- ❑ Engagement with global industry; and
- ❑ Achievement of international best practice.

The University aspires to be internationally recognised for excellence in teaching and in its ability to build world-class research centres. There are a number of fronts on which the Faculty can work to improve its level of internationalisation and support the University in its mission. The Faculty will explore new international opportunities and markets and seek to strengthen its international research linkages.

Full Fee Paying Overseas Students

The Faculty recognises the value of international students in terms of opportunities to form international research linkages, increase the cultural diversity of the Faculty and to increase revenue. The Faculty Office will strengthen its links with the UWA International Centre, explore opportunities to increase the number of international students and improve the support services for international students studying within the Faculty. The Faculty is committed to recruiting students of high quality.

Markets

The Faculty has traditionally relied on the Singaporean and Malaysian markets. It is now time to diversify. The Faculty will engage in strategic market research, identifying and developing marketing strategies to capture new international market opportunities at both undergraduate and postgraduate levels.

International PHD Students

Postgraduate students remain a desirable group to target in international markets, but increased funding for scholarships needs to be addressed by the Faculty.

As stated previously, the Faculty will review the structure and promotion of its coursework masters degree programmes to enhance the attractiveness of these programmes to overseas students and to facilitate articulation into doctoral programmes.

International Exchange

The opportunity for students to study abroad as part of their undergraduate programme is viewed as an important aspect of internationalisation. An increase in undergraduate exchange activities provides a foundation for enhancing opportunities for doctoral programmes. The Faculty has a role to play in establishing such undergraduate exchange programmes, as they require Faculty-to-Faculty communication to ensure overall ‘fit’ between their respective courses to enable credit transfer and portability of units.

The Faculty will aim to increase the number of students involved in international exchange programmes, and other international study experiences, during the course of their studies.

International Foundation Programme

The Faculty intends to be actively involved in the academic development of the UWA International Foundation Programme.

Industry Linkages and Commercialisation

The Faculty believes it is important to build stronger relations with industry partners and actively engage with industry. Key industry representatives express a strong interest to interact with the Faculties, Schools and Centres. The Dean will oversee improved information flow to enhance awareness of Faculty activity internally, and raise industry awareness of the Faculty’s capabilities. The Associate Dean (Research) will assist in the strengthening of industry linkages for the purpose of supporting the development of research, innovation, and commercialisation opportunities.

Industry Linkages

With existing sources of federal funding in decline, industry offers an important potential funding source. Many of the current linkages occur as a result of informal personal links. The Dean has a role to play in supporting the formalisation of these relationships. The Faculty recognises the need for the University and its Faculties to become more proactive in the development of strategic partnerships with industry and government.

The Dean and Heads of School will run functions to introduce researchers to industry opportunities. The Faculty will strengthen relationships with existing industry partners and improve the quality and quantity of industry linkages.

Industry Advisory Board and Panels

The Faculty will ensure that the Industry Advisory Board (IAB) is structured such that it is reflective and representative of all relevant ECM industry areas. The Faculty will also review the role and function of the IAB.

The Heads of School will engage their Industry Advisory Panels (IAP) during the School strategic planning processes. Each School will establish the most appropriate strategies and mechanisms through which their IAP provides support for the School. The Schools must ensure that their IAP is representative of industry and consideration should be made to include international representation where this is appropriate.

Industry Funding

The Dean and Heads of Schools will develop strategies to obtain sponsorship from industry for research activities.

Engineering Foundation and Alumni

The Engineering Foundation was established to encourage stronger links between ECM and industry and has been in place for some 20 years. The Dean will work with the Engineering Foundation to explore opportunities to build on the solid contribution the Foundation presently makes to the Faculty. The Faculty will develop policy to engage the alumni to assist in reinforcing industry links.

Commercialisation

The Faculty recognises the potential for staff and students to engage in commercialisation activities. The Faculty will seek to develop a culture that embraces and supports appropriate commercialisation activities, while also recognising the value of “pure” or fundamental research.

The Dean will explore mechanisms that can be implemented to facilitate greater levels of commercialisation where appropriate. The Research Committee will assist in achieving greater commercial development of research, and to serve as a vehicle for engagement with industry, including:

- ❑ Enhancement of education and training in commercialisation activities for the Faculty.
- ❑ Development of commercialisation strategies and policies for all Schools and research centres.

Faculty Image and Marketing Objectives

The Faculty has enjoyed a strong image and reputation in its local market for many years. However, there is growing competition locally, interstate and overseas. The Faculty's image and marketing activities are important and need to be extended. The Dean's Office will play an important role in presenting a unified image of the Faculty and building the Faculty's international reputation. The Schools will work cooperatively with the Faculty Marketing and Public Relations Manager to create and present a unified image.

Organisational Culture and Human Resources

The Faculty seeks to foster an organisational culture that supports collaboration, strong collegial ties, mutual respect and understanding.

The Dean will develop strategies for the enhancement of the Faculty's organisational culture. These will include:

- ❑ Annual surveys of staff to identify and measure key aspects of organisational culture.
- ❑ Consultation with Heads of School to develop and implement strategies to improve the alignment of organisational culture with the strategic objectives of the Faculty.
- ❑ A regular review of workloads.

Academic Profile and Staffing

Each School will be define its staffing profile and review its workforce requirements, with particular attention given to the growth of identified research areas.

The Faculty will seek to improve the gender balance at all levels, with the aim of fostering an organisational culture based on strong collegial ties, mutual respect and understanding.

Staff Training and Development

The Dean will revise the induction programme and highlight training opportunities for School Heads. In turn, the Heads of School will develop induction programmes for their own staff and encourage professional development. The Dean will ensure that succession plans will be put in place in all Schools.