Reasons for Software Engineering Program Proposal

School of Computer Science & Engineering
School of Information Systems
(now School of Information Systems, Technology & Management)

Reprinted from original proposal

The software industry is one of the fastest growing industries in the world. Even companies that have been associated largely with hardware in the past are estimating that 80–90% of their engineers are involved, or will be involved by the year 2000, in software development. Accompanying this expansion there is a serious problem finding staff who are able to deal with the complexity of developing large software systems.

Parallelling the growth in the software industry is the increasing dependence of society on software. In many cases that dependence is critical, and failure of the software threatens the fabric of our society, and even the lives of citizens. Currently, very little software comes with a guarantee of any sort of fitness for its application, and software does not have a particularly good name for reliability. Society needs software to be produced to the same high standards required of any other engineering profession. Software engineers need to be able to produce verifiable, reliable software. In general, graduates in Computer Engineering, Computer Science, Information Systems and Electrical Engineering are employed to undertake software engineering work. Specifically from this University, the undergraduate courses in Computer Engineering, Computer Science, Business Information Technology, and Information Systems are the courses that are most relevant to Software Engineering. However, none of those courses are designed to give intensive treatment of Software Engineering.

The **Computer Engineering course** is a high ranking course that produces graduates with knowledge and skills in both hardware and software, as well as in key areas of electrical engineering, such as communications, electronics and control. Graduates from this course are well placed to undertake development of systems containing significant hardware and software components.

The **Business Information Technology (BIT) course** is a high ranking course that produces graduates with knowledge and skills in the application of information technology to business. Graduates from this course are well placed to undertake the development of business systems and later the management of that development.

The **Computer Science course** is a generalist course, offered as a major within the Board of Studies in Science and Mathematics (BSSM), that allows students to choose freely from the subjects contained in the Computer Engineering course, and also many of the subjects available in the BIT course. As well as the study of computing and information technology subjects, the Computer Science course allows access to a wide range of subjects from across the University.

The **Information Systems course** is offered as a major within both the BSSM and the Faculty of Commerce. This course equips graduates with skills in information systems analysis, design and business use.

The proposed Software Engineering course contains subjects from the School of Computer Science and Engineering and the School of Information Systems, as well as subjects from Science. The new course contains significantly more software related subjects than any of the courses listed...
above, and it places a greater emphasis on an understanding and experience of the software process. The course will be jointly administered by the School of Computer Science and Engineering and the School of Information Systems.

The course objectives

The objectives of the course are to produce graduates:

1. who are able to undertake the production of high quality software, which will be to the benefit of society;
2. who are able to meet the needs of industry for efficient, reliable software over the period of their professional life;
3. who can make significant contributions to the development and application of computing technology, especially software.

The relationship of the course to the University’s and the Faculty’s corporate plan and the University’s existing enrolment plan

Having identified the Software industry as a major industry by the turn of the century, it is vital for UNSW, in order to “maintain service to our society and enhance our position in an increasingly competitive higher education system” (Vision 2020, page 7, UNSW Corporate Plan 1994–99) that a Software Engineering course be established now. The adoption of this proposal will give UNSW the first undergraduate software engineering course in the Sydney region. The current course proposal is strongly competitive with any software engineering course at any other Australian university, and will contribute to UNSW’s reputation for providing high quality courses.

Following the experience of the Computer Engineering course it is expected that the initial enrolment plan for 25 local students in 1997 will be satisfied by students with TERs in the range 95 to 100. The proposed 25 places could come from a number of sources, of which the following are three:

1. the 25 places could all come from the 5% pool;
2. some places could be taken from the quota for Computer Science students;
3. some places could be taken from the quota for Computer Engineering students.

We have a strong preference for the first option. The Computer Engineering course has the highest TER cutoff for any engineering course in the Faculty of Engineering, and it would not appear appropriate to cut that intake. The Computer Science course is a significant program in the BSSM, and the Corporate plan for the School of Computer Science and Engineering regards the Computer Science course as an important general computing course that allows considerable flexibility across disciplines compared with the highly specialist Computer Engineering and Software Engineering courses. This also fits well with the University Corporate plan key strategy that “greater emphasis is given to broad generalist education and cross-disciplinary mix” (Key Strategies, page 13, UNSW Corporate Plan 1994–99).