**PROPOSAL TO INTRODUCE A NEW COURSE**

**1. COURSE DETAILS**

**1.1 Course ID**

TELE9758

COMPXXXX

(or a common faculty id?)

**1.2 Course name - Long**

Network Systems Architecture

**1.3 Course name - Abbreviated**

Network Systems Architecture

**1.4 Course Authority** Dr. Vijay Sivaraman **ext/email** x5 6577 / vijay@unsw.edu.au

 Prof. Sanjay Jha **ext/email** x5 6471 / sanjay@cse.unsw.edu.au

**1.5 Organisational Unit responsible for course**

**School:** Electrical Engineering and Telecommunications **,** School of Computer Science and Engineering

**Faculty:** Engineering

Academic Group Code (Faculty): ENG

Academic Organisation Code (Owner):

**1.6 Justification of Proposal**

This course, being jointly developed by the Schools of Electrical Engineering and Telecommunications and Computer Science and Engineering, in conjunction with CISCO Systems, teaches students how to design and architect systems for core and enterprise networking. In existing courses students learn about various networking methods and technologies in isolation, such as switching technology (TELE9751), addressing and routing mechanisms (TELE3118), security protocols (TELE3119), mobility-support (TELE9756), network control (TELE9752), network analysis (TELE4642), Computer Network and Applilcation COMP3331/9331, Network Switching and Routing (COMP3332/9332) etc. However, students do not ~~quite~~ learn how to integrate this knowledge to design, analyse, and verify entire systems that address all user and business requirements while meeting cost constraints and future expansion needs. This significant gap in student learning has been pointed out ~~to us~~ by large employers in the networking area such as Cisco Systems. This course intends to fill this gap by leading the students through the systems design process for building enterprise network, core Internet and Telecommunications networks that support data, voice, and video applications. Steps starting from initial requirements gathering to final system validation will be covered, and the design process will be illustrated via several case studies off campus as well as national networks. Students will participate actively by undertaking projects in which they will develop and demonstrate valid designs for networking systems to be deployed in smart buildings, transportation services, data centres, computing clusters, and national infrastructures. This course fills the need in industry for engineers who can integrate their piece-wise knowledge to develop comprehensive systems solutions, and will train our students for roles in the national broadband network (NBN) to be deployed across Australia in the coming decade.

This course may form the basis for later development of a Graduate Certificate which could be offered to satisfy predicted demand from industry. However, in its present form it has intrinsic merit in its own right, and will form an important extension to existing programs dealing with data networks.

**1.7 Consultation Process**

This course comes from a working party established with membership from Schools within the Faculty of Engineering (Electrical Engineering and Telecommunications and Computer Science and Engineering), and from CISCO Systems (attached please find their letter of support).

In addition, discussion has also taken place within the School of EE&T’s Academic Executive Committee (AEC) meeting, held September 3 2009. The committee supported the proposal.

This proposal has been discussed at the CSE teaching committee meeting dated ???

**1.8 Units of credit (UOC):** 6 units

 **Session/s offered :** S2

 **Hours Per Week:** 3 contact hours per week (or equivalent)

**1.9 Pre-requisites:** or equivalent background in Data Networks,COMP3331/9331

**Co-requisites:** None

**Exclusions:** None

**1.10 Proposed Entry in the Faculty Handbook**

This course aims to provide understanding of the design of enterprise and telecommunications network architecture. It will bring together in-depth coverage of various networking technologies (such as TCP/IP, security, wireless LAN 802.11 etc) in order to provide practical context and integration requirements for real-world applications. It covers the methodology behind the design of building enterprise and core networks to support applications that include data, voice and video. Telecommunications architecture will cover IP Multimedia Systems (IMS) and IP Next Generation Networks (IP NGN). Enterprise architecture will review segments within corporate networks referred to as “Places in the Network” (PINs) such as Data Centres, Wide Area Networking (WANs) and remote branches. Other practical applications will include a review of the Australian National Broadband Network (NBN), Cloud Computing and mobile computing.

**1.11 Is this course replacing an existing course?** No

**1.12 Postgraduate:** Yes

**1.13 Elective:** Yes

**1.14 Program stage:** n/a

**1.15 Program/s in which course is be available**

All postgraduate coursework programs within the Faculty of Engineering, e.g. #8538 MEngSc. This includes the new 2-year Master of Engineering program 8621, MIT, 8543, Elective for undergraduate programs such as BE Computer Engineering/Software Engineer

**1.16 Proposed teaching methods and assessment practices**

Teaching methods include face-to-face lectures, block-mode delivery, laboratory-based assignments, and web-supported delivery.

Assessment is based on 50% formal examination and 50% project-work (demonstrated and presented in-class)

**1.17 Assessment grades to be used**

Full range of grades (HD, DN, CR, PS, FL)

* 1. **Mode of delivery:** Internal

**1.18.1 Multi-mode Delivery Guidelines:** n/a

**1.19 Information Technology Requirements for students**

Specialist equipment and software is required for aspects of the work (simulation, equipment configuration). This equipment is available in School laboratories.

**1.20 Textbooks**

Recommended:

* James D. McCabe, “Network Analysis, Architecture, and Design”, 3rd Edition, Morgan-Kaufmann, Jun 2007.
* Priscilla Oppenheimer, “Top-Down Network Design”, 2nd Edition, Cisco Press, Jun 2004.
* John Day, “Patterns in Network Architecture: A Return to Fundamentals”, Prentice Hall, Jan 2008.

Additionally several on-line resources (specifically design guides and white-papers) will be used.

**1.21 Industrial experience component:** n/a

**2. RESOURCE STATEMENT**

**2.1 Enrolments**

Estimated or proposed enrolments for the next three years.

|  |  |
| --- | --- |
| 2010: | 25 |
| 2011: | 35 |
| 2012: | 50 |

**2.2 Resource Requirements**

**Staffing Requirements:**

Hours per week

|  |  |
| --- | --- |
|  Full-time Academic Staff  | 3 hpw |
|  Part-time Teaching Staff |  |
|  General Staff | 2 hpw laboratory set-up / maintenance |

|  |  |
| --- | --- |
| **Field Costs:** | N/A |
| **Studio/Laboratory Requirements:** | Data Networks Laboratory (existing) |
| **Materials Requirements:** | N/A |
| **Equipment Costs:** | No new equipment |
| **Computing Requirements:** | No new requirements |
| **Library Requirements:** | None |
| **Capital Funds Requirements:** | No new requirements |

**2.3 Servicing Implications:** n/a

**2.4 Teaching Arrangements:**

(i) Will other units contribute on a regular basis to the teaching of this course?

 Yes

(ii) If so, which units are involved and what proportion of the course will they teach?

 The course will be shared by EET and CSE. Additionally CISCO will provide guest lecturers.

1. **Alternative Delivery Arrangements:** n/a

**2.6 Details of Tuition Fees:** standard fees that apply to TELE9XXX /COMP9XXXcourses

Proposed fee:

|  |
| --- |
| $ for non-award enrolment (local) |
| $ for non-award enrolment (international) |
| $ for course which forms part of full fee-paying program (for local students) |
| $ for course which forms part of full fee-paying program (for international students) |

**3. AUTHORISATION**

**3.1 University Librarian’s Endorsement**

***Note:***  *this section of the Proposal must be signed by a Library representative, stating:*

I have examined the Library needs related to the above proposal and certify that existing Library holdings, staffing, services and accommodation are adequate / inadequate (delete one) to cover the demands that are inherent in it.

Appropriate arrangements for the use of digitised material to support this course have been made by the Course Authority with the University Librarian.

|  |
| --- |
| Further Comments: |

University Librarian

 / /2005

**3.2 Head of School’s Approval**

***Note:***  *this section of the Proposal must be signed by the Head of School, stating:*

I have examined the resource implications of the above proposal in regard to staff, space, materials, equipment, capital funds, and computing, and certify that the School can cover the demands that are inherent in it.

|  |
| --- |
| Further Comments: |

Head of School

 / /2005

**3.3 Dean’s Approval**

***Note:***  *this section of the Proposal must be signed by the Dean, stating:*

I have examined the resource implications of the above proposal in regard to staff, space, materials, equipment, capital funds, and computing, and certify that:

*(Tick whichever is applicable)*

3.3.1 (i) the proposal involves no additional resources. (A statement from the Head of School explaining how this can be achieved must be provided); or

(ii) the proposal involves additional resources and it is proposed to redeploy existing resources within the faculty. (A statement from the Head of School explaining how this will be achieved must be provided); or

(iii) the proposal involves additional resources to be obtained as set out below; or

(iv) the additional resources essential to bring the proposal into effect cannot be found within resources available to the faculty.

3.3.2 **Fees** (delete if not applicable):

 a fee will not be charged for this program (other than HECS)

 a fee will be charged for this program for local fee-paying students

 a fee will be charged for international students

If a fee is to be charged the Dean certifies as follows:

I have ensured that the Vice-Chancellor has been advised of the proposed fee arrangements, and note that approval of fee arrangements is needed before the new program can be implemented.

3.3.3 the proposal conforms to the University's commitment to Equal Opportunity in Education.

|  |
| --- |
| Statement from Head of School on Source of Additional Resources and/or Further Comments: |

Dean

 / /2005

Please click on link for

[DISABILITY GUIDELINES FOR ACADEMIC STAFF PREPARING COURSES](http://www.secretariat.unsw.edu.au/acboardcom/minutes/coe/disabilityguidelines.pdf)