

# PROPOSAL TO INTRODUCE A NEW COURSE

(formerly known as subject)

## 1. COURSE DETAILS

**1.1 Course ID** COMP4???

**1.2 Course name - Long**

Advanced Topics in Software Verification

**1.3 Course name - Abbreviated**

Advanced Verification

**1.4 Course Authority** A/Prof R. van der Meyden **ext/email** 54897 meyden@cse.unsw.edu.au

**1.5 Organisational Unit responsible for course**

**School:** Computer Science and Engineering **Faculty:** Engineering

Academic Group Code (Faculty): ENG

Academic Organisation Code (Owner): COMPSC

**1.6 Justification of Proposal**

This course is intended as a generic template for a variety of advanced courses in software verification and theorem proving for fourth year and postgraduate research students, intended to bring students into contact with current research topics in this area. It will be offered by NICTA staff.

**1.7 Consultation Process**

Associate Head of School

**1.8 Units of credit (UOC)** 6 **Session/s offered** S2 **Hours per Week** 3L 1T

**1.9 Pre-requisites:**

Permission of the Instructor

**Co-requisites:**

**Exclusions:**

**1.10 Proposed Entry in the Faculty Handbook**

**COMP4???**

**Advanced Topics in Software Verification**

Staff Contact: A/Prof. R. van der Meyden

UOC6 HPW4 S2

Topics chosen from:

higher order logic, natural deduction, lambda calculus, term rewriting, data types and recursive functions, calculational reasoning, semantics of programming languages, Hoare logic, refinement, theorem provers, decision procedures

**1.11 Is this course replacing an existing course?**

YES

NO           X

**1.12 Undergraduate & Postgraduate**

**1.13 Elective**

**1.14 Program stage**

Stage 4 or Masters/PhD, first offered S2 2005

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

All CSE programs

**1.16 Proposed teaching methods and assessment practices**

Lectures plus tutorials and homework assignments

Assessment by assignments and final exam.

**1.17 Assessment grades to be used**

full range of grades ie. HD, DN, CR, PS, FL;

**1.18 Mode of delivery**

Internal                           X

External

Other (specify)

Other NICTA nodes may wish to have the course delivered via the video-conferencing facility so as to be available to their students. In this case, staff from other NICTA nodes may contribute to the course. Video-conferencing costs will be NICTA's responsibility.

**1.19 Information Technology Requirements for students**

Standard requirements for School of Computer Science and Engineering

**1.20 Textbooks**

Will vary from year to year, depending on instructor and topic. Textbooks indicative of potential course content include:

Melvin Fitting. First-Order Logic and Automated Theorem Proving. Springer Verlag, 2nd edition.

Franz Baader and Tobias Nipkow. Term Rewriting and All That. Cambridge University Press.

Chris Hankin. Lambda Calculi. A Guide for Computer Scientists, Oxford University Press.

Glynn Winskel. The Formal Semantics of Programming Languages. MIT Press.

Carroll Morgan. Programming from Specifications. Prentice-Hall.

Ralph-Johan Back, Joakim Wright. Refinement Calculus – A systematic introduction. Springer.

N. Francez. Program-Verification, Addison-Wesley.

### **1.21 Industrial experience component**

None

## **2. RESOURCE STATEMENT**

### **2.1 Enrolments**

Estimated or proposed enrolments for the next three years.

2005: 10

2006: 15

2007: 15

### **2.2 Resource Requirements**

#### **Staffing Requirements:**

This course will be taught by NICTA staff under the general direction of A/Prof. R. van der Meyden, with small numbers of students. Thus no significant resources are required. There will be general staff support from the Computer Support Group.

**Field Costs:** N/A

**Studio/Laboratory Requirements:** N/A

**Materials Requirements:** N/A

**Equipment Costs:** N/A

**Computing Requirements:** Current CSE facilities will suffice

**Library Requirements:** Standard text requirements for a small course

**Capital Funds Requirements:** N/A

### **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**

**NO**            X

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

**2.5 Alternative Delivery Arrangements:**

N/A

**2.6 Details of Tuition Fees:**

Standard fee structure for Faculty of Engineering courses of 6uoc.

### 3. AUTHORISATION

#### 3.1 Principal 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 Principal Librarian.

Further Comments:

Principal Librarian  
/ /2004

#### 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  
/ /2004

#### 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  
/ /2004