

# PROPOSAL TO INTRODUCE A NEW COURSE

## 1. COURSE DETAILS

1.1 **CourseID** COMP 3153

1.2 **CourseName– Long** Algorithmic Verification

1.3 **CourseName– Abbreviated** Algorithmic Verification

1.4 **CourseAuthority** **ext/email**  
Ansgar Fehnker 83060490/ansgar@cse.unsw.edu.au

1.5 **Organisational Unit responsible for course**

**School:** School of Computer Science Engineering **Faculty:** Engineering

## 1.6 Justification of Proposal

The course COMP 4151 "Advanced Topic in Concurrency" was proposed in 2003 as a generic template for a variety of advanced courses in the theory of concurrent and distributed systems for fourth year and postgraduate research students. In practise, it has been instantiated by two different courses. In 2003 S1 and 2005 S1 the course was given by Rob van Glabbeek under the title "Comparative Concurrency Semantics" and in 2004 S1 and 2006 S1 it was given by Ron van der Meyden, Ralf Huuck and Ansgar Fehnker under the title "Algorithmic Verification".

As both courses are being continued indefinitely, it appears prudent to give them different course numbers:

- COMP 3152/9152 Comparative Concurrency Semantics
- COMP 3153/9153 Algorithmic Verification

Amongst others, this enables students to enrol in both courses, which is proper given that they have different content. It also enables us to offer both courses in the same session. Given the fact that the material in both courses is particularly suited for 3rd year students, at the same time we propose to emphasise this by using a COMP3xxx course code. As the course is also useful for graduate students who are not already familiar with this material, we'd like to also offer it as 9xxx.

## 1.7 Consultation Process

The Formal Methods group in NICTA wants to increase the visibility and continuity of their teaching. Splitting the single course with alternating titles into two courses would serve both purposes. The CSE teaching committee was consulted, and helped formulate the current proposal.

1.8 **Units of credit** **Session/soffered** **Hours Per Week**  
6UOC S1 3 hours

1.9 **Prerequisites:** COMP2011 or COMP2711 or COMP2911  
**Co-requisites:** none  
**Exclusions:** none

**1.10 Proposed Entry in the Faculty Handbook**

**Description**

It is virtually impossible to guarantee correctness of a system, and in turn the absence of bugs by standard software engineering practice such as code review, systematic testing and good software design alone. The formal methods community has developed various rigorous, mathematically sound techniques and tools that allow the automatic analysis of systems and software. The application of these fully automatic techniques is typically called algorithmic verification.

The course will describe several automatic verification techniques, the algorithms they are based on, and the tools that support them. We will discuss examples to which the techniques have been applied, and provide experience with the use of several tools.

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

**YES** COMP 4151. See "rationale" earlier in this proposal.

**1.12 Undergraduate**

**1.13 Elective**

**1.14 Program stage**

Stage 3/4 of all CSE programs

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

- 3798 Bachelor of Science Computer Science
- 3645 Bachelor of Engineering in Computer Engineering
- 3647 Bachelor of Engineering in Bioinformatics
- 3648 Bachelor of Engineering in Software Engineering
- 3400 Bachelor of Arts (major in Computing)
- 3970 Bachelor of Science (minor in Computing)

and combined programs that include one of the programs listed above.

**1.16 Proposed teaching methods and assessment practices**

Teaching: lectures, tutorials.

Assessment: homework assignments, seminar presentations by enrolled students, exams.

**1.17 Assessment grades to be used**

Full range of UNSW grades (i.e. FL,PS,CR,DN,HD,etc)

**1.18 Mode of delivery**

Internal x

External

Other (specify)

### 1.18.1 Multi-mode Delivery Guidelines

N/A

### 1.19 Information Technology Requirements for students

*The standard computing resources available in CSE are adequate.*

### 1.20 Textbooks

Logic in Computer Science, Huth and Ryan, Cambridge University Press.

Model Checking, Edmund Clarke, Orna Grumberg and Doron Peled, MIT Press.

### 1.21 Industrial experience component

none

## 2. RESOURCE STATEMENT

### 2.1 Enrolments

Estimated or proposed enrolments for the next three years.

2007: 15

2008: 25

2009: 35

### 2.2 Resource Requirements

#### Staffing Requirements:

Hours per week

3 Full-time Academic Staff

1 Part-time Teaching Staff

0 General Staff

**Field Costs:** N/A

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

**Materials Requirements:** N/A

**Equipment Costs:** N/A

**Computing Requirements:** Already covered by CSE infrastructure

**Library Requirements:** Standard for a course of this size

**Capital Funds Requirements:** N/A

### 2.3 Servicing Implications:

None

**2.4 Teaching Arrangements:**

- (i) Will other units contribute on a regular basis to the teaching of this course? **NO**
- (ii) If so, which units are involved and what proportion of the course will they teach? **N/A**

**2.5 Alternative Delivery Arrangements: N/A**

**2.6 Details of Tuition Fees:**

Standard fee scale as for other CSE undergraduate courses.

### 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  
/ /2006

#### 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  
/ /2006

#### 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:
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Dean  
/ /2006