

PROPOSAL TO INTRODUCE A NEW COURSE

(formerly known as subject)

1. COURSE DETAILS

1.1 **Course ID** COMP4002

1.2 **Course name - Long**

Logic Synthesis and Verification

1.3 **Course name - Abbreviated**

Logic Synthesis and Verification

1.4 **Course Authority**

Sri Parameswaran

ext/email

7223/ sridevan@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): COMP

1.6 Justification of Proposal

The course covers fundamental techniques for the design and analysis of digital circuits.

The primary goal is to provide a detailed understanding of basic and advanced logic synthesis algorithms and to enable students to apply this knowledge in praxis for the

design of digital hardware and software systems including corresponding CAD tools. Dr

Kuehlman visiting from Cadence Lab, Berkeley will be available to give the lectures.

1.7 Consultation Process

Consulted with the HoS and Dr Oliver Diessel. This will be only offered once.

1.8 **Units of credit (UOC) Session/s offered Hours Per Week**

s2 – 4hrs/wk (at an accelerated pace)

1.9 **Pre-requisites: COMP 2021 or COMP 9022**

Co-requisites:

Exclusions:

1.10 **Proposed Entry in the Faculty Handbook** (including course description)

The first part of the course will cover fundamental **data structures** and **algorithms for logic reasoning**. Next we will discuss essential concepts of **combinational circuit optimization**

(two-level and multi-level synthesis, technology-independent optimization, technology

mapping), **sequential circuit optimization** (state encoding, retiming), **timing analysis**, and

testing. The last part of the course will cover selected **verification topics** to the extent that they are of practical importance for the design of digital systems.

For each topic the theoretical foundations are discussed and practical implementation details are presented. Students will be required to complete weekly homework assignments. Further, during the weekly seminars each student will present a published paper, which elaborates on a topic covered in class. The homeworks include programming assignments, which will enable the student to apply the class material in practice.

1.11 Is this course replacing an existing course?

YES

Give previous course ID and name

NO

x

1.12 Undergraduate / Postgraduate

1.13 Elective

1.14 Program stage

Final year or PG in session 2

1.15 Program/s in which course is be available

Computer Engineering, Computer Science and Software Engineering

1.16 Proposed teaching methods and assessment practices

4 hrs/week Assignment and final exam

1.17 Assessment grades to be used

full range of grades

1.18 Mode of delivery

Internal

1.19 Information Technology Requirements for students

Laboratories with Linux.

1.20 Textbooks

Logic Synthesis and Verification

Soha Hassoun, Tsutomu Saso (Editors)

Kluwer Academic Publishers, 2001, ISBN 0-7923-7606-4

1.21 Industrial experience component

N/A

2. RESOURCE STATEMENT

2.1 Enrolments

Estimated or proposed enrolments for the next three years.

2002: 20

2003:

2004:

2.2 Resource Requirements

Staffing Requirements:

Hours per week

Staff	Full-time 4	Academic
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Staff	Part-time	Teaching 1
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General Staff

Field Costs: N/A

Studio/Laboratory Requirements: Linux Labs needed 4hrs/week

Materials Requirements:

Equipment Costs:

Computing Requirements:

Library Requirements:

Capital Funds Requirements:

2.3 Servicing Implications:

N/A

2.4 Teaching Arrangements:

YES

NO X

2.5 Alternative Delivery Arrangements:

N/A

2.6 Details of Tuition Fees:

N/A

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

/ /2001

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

/ /2001

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 a fee will / will not (delete one) be charged for this course. 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 a new course 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
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