# PROPOSAL TO INTRODUCE A NEW COURSE

## 1. COURSE DETAILS

**1.1 Course ID**
COMP43??/93??

**1.2 Course name - Long**
Web Data Compression and Search

**1.3 Course name - Abbreviated**
Web Data Compression and Search

**1.4 Course Authority**      **ext/email**
**Sebastian Maneth**      **83060481 /** [smaneth@cse.unsw.edu.au](mailto:smaneth@cse.unsw.edu.au)

**1.5 Organisational Unit responsible for course**

**School:**      **CSE**            **Faculty: Engineering**

Academic Group Code (Faculty): ENG

Academic Organisation Code (Owner): COMPSC

**1.6 Justification of Proposal**

As data and storage continues to grow, methods and solutions for data search and compression remain crucial aspects of modern computing. Text and image compression are classical and mature fields in computer science. Search and compression of XML, the lingua franca of the web, poses new challenges and requires new solutions.

This course will cover the basics of text compression and search (that is: models, algorithms, implementations, and applications), as well as new topics related to web data and XML. If time permits, we will discuss streaming algorithms for search and analytics.

Currently, there is no such course in CSE, yet it is widely believed that such a course is highly demanded by our students and a substantial amount of students will be enrolled.

Different than the new course "Information Retrieval and Web Search" by Wang/Shepherd/Lin which focuses on ranking, precision, probabiblistic models and other Information Retrieval topics, this course focuses on **core search and compression algorithms**. The latter means **exact search** (not ranked) through compressed and indexed text (unstructured and structured).

**1.7 Consultation Process**
The teaching committees

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

**1.9 Pre-requisites:** COMP2911 or COMP2011 or COMP9024
       **Co-requisites:** none
       **Exclusions: none**

**1.10 Proposed Entry in the Faculty Handbook**

| COMP 43??/93?? |
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> **Web Data Compression and Search**
> **UOC6, HPW5**
>
> **Data Compression :** (a) Adaptive Coding, Information Theory (b) Text Compression (ZIP, GZIP, BZIP, etc) (c) Burrows-Wheeler Transform and Backward Search (d) XML Compression
> **Search:** (a) Indexing (b) Pattern Matching and Regular Expression Search (c) Distributed Querying (d) Fast Index Construction (e) Implementation
> If time allows: Streaming Algorithms, On-Line Data Analytics
> The lecture materials will be complemented by projects and assignments.

## 1.11    Is this course replacing an existing course?
**NO**


## 1.12    Undergraduate / Postgraduate

## 1.13    Elective

## 1.14    Program stage
(Undergraduates) usually taken in Stage III (first offered in s2,2010)

## 1.  Program/s in which course is be available

All CSE undergraduate and postgraduate programs.

## 1.16    Proposed teaching methods and assessment practices
Final examination, written assignments and programming projects

## 1.17    Assessment grades to be used
Full range of grades (HD, DN, CR, PS, FL)

## 1.18    Mode of delivery
Internal                              X

External

Other (specify)


## 1.18.1  Multi-mode Delivery Guidelines
The following issues should be addressed in proposals for Multi-mode delivery:
· parity in admission requirements to ensure that the integrity of programs at UNSW was not compromised;
· administrative processes relating to enrolments and dealing with students overseas;
· content and standard of courses and assuring comparability with on-campus courses;
· by whom and how courses were to be delivered;
· assessment procedures; and
· availability of library resources.

Note:   **The business components of off-shore proposals** are considered by the International Strategies Committee (ISC) chaired by the Deputy Vice-Chancellor (Research) whilst the Academic Board approves the academic aspects of proposals for offshore delivery of existing programs.  The ISC considers (i) partnership arrangements; (ii) whether the impact on the faculty of staff going overseas has been considered; and (iii) whether appropriate steps have been taken to register the program in the country concerned.

**The Postgraduate Coursework Committee has wished to ensure that the following issues have been addressed in proposals for offshore delivery:**  parity in admission requirements to ensure that the integrity of programs at UNSW is not compromised; administrative processes relating to enrolments and dealing with students overseas; content and standard of courses and assuring comparability with on-campus courses; by

whom and how courses are to be delivered; assessment procedures and availability of library resources.

Proponents should contact the Office of the Deputy Vice-Chancellor (Research) regarding this committee.

### 1.19    Information Technology Requirements for students

Standard for Computer Science and Engineering

### 1.20    Textbooks

Set textbook:
- Managing Gigabytes: Compressing and Indexing Documents and Images / I. H. Witten, A. Moffat, T. C. Bell, Morgan Kaufmann, 1999. 519 p., ISBN1-55860-570-3

Recommended references:
- Data Compression: The Complete Reference / D. Salomon, Fourth Edition, Springer, 2007. 1092 p., ISBN 1-84628-602-5
- Ricardo Baeza-Yates and Berthier Ribeiro-Neto, Modern Information Retrieval, Addison Wesley. 1999. 544 p., ISBN 0-20139-829-X

### 1.21    Industrial experience component
n/a

## 2.    RESOURCE STATEMENT

### 2.1    Enrolments
Estimated or proposed enrolments for the next three years.

2010:  30

2011:  50

2012:  70

### 2.2    Resource Requirements

**Staffing Requirements:**

This course will be taught by NICTA staff. Thus, no significant resources are required (besides tutors). 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:**         Standard for CSE courses, and already available

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

**Capital Funds Requirements:**     n/a

### 2.3    Servicing Implications:
n/a

**2.4    Teaching Arrangements:**

<mark>(i)        Will other units contribute on a regular basis to the teaching of this course?</mark>
**NO**

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

2.5          **Alternative Delivery Arrangements:**

n/a

**2.6    Details of Tuition Fees:**

Proposed fee:  Standard for an Engineering course of this type

# 3. AUTHORISATION

### 3.1 University Librarian's Endorsement

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

    /   /2010

### 3.2 Head of School's Approval

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

    /   /2010

### 3.3 Dean's Approval

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

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     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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| Please click on link for<br>DISABILITY GUIDELINES FOR ACADEMIC STAFF PREPARING COURSES |
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De

/    /2010