S.87-67

SIMON FRASER UNIVERSITY

MEMORANDUM

TO: Senate

FROM: J.W.G. Ivany, Chair, SCAP

SUBJECT: Graduate Curriculum Changes - Computing Science Reference: SCAP 87-35

DATE: Nov.19, 1987

Action undertaken by the Senate Committee on Academic Planning/Senate Graduate Studies Committee gives rise to the following motion:

MOTION: "That Senate approve and recommend approval to the Board of Governors, as set forth in S.87-67 the following new courses:

CMPT 823-3 Formal Topics in Knowledge Representation

CMPT 824-3 Logic Programming and Fifth Generation Computing"

"

New Graduate Course Proposal Form

CALENDAR INFORMATION:

Department: Computing Science Course Number: 823

Title: Formal Topics in Knowledge Representation

Description: The course covers formal aspects of knowledge representation in current artificial intelligence research.

Credit Hours: 3 Vector: 3-0-0 Prerequisite(s) if any: prior AI course or approval of instructor.

ENROLLMENT AND SCHEDULING:

Estimated Enrollment: 10 When will the course first be offered: 89-1

How often will the course be offered: Annually

JUSTIFICATION:

Knowledge representation is central to all research in artificial intelligence. A formal stance is necessary to vigorously and unambigously investigate foundational issues of representation. This course has been offered annually as a special topics course.

RESOURCES:

Which Faculty member will normally teach the course: Dr. James P. Delgrande

What are the budgetary implications of mounting the course: None

Are there sufficient Library resources (append details): Yes - See Attached

Appended: a) Outline of the Course
b) An indication of the competence of the Faculty member to give the course.
c) Library resources

Approved: Departmental Graduate Studies Committee: Barry K. Bowling Date: 6/10/87.

Faculty Graduate Studies Committee: _____ Date: _____

Faculty: _____ Date: _____

Senate Graduate Studies Committee: _____ Date: _____

Senate: _____ Date: _____

SCHOOL OF COMPUTING SCIENCE

COURSE OUTLINE

CMPT 823 SPRING 1987

FORMAL TOPICS IN KNOWLEDGE REPRESENTATION

Instructor: J.P. DELGRANDE

This course is intended as a survey of formal or foundational topics in the representation of knowledge in artificial intelligence. There is no course text; rather lecture and reading material will be drawn from recent papers in the area.

Tentative Outline

1. Introduction and overview
2. Semantics and representation schemes
3. Nonmonotonic and default reasoning
4. Inconsistency and knowledge acquisition
5. Expressiveness and tractability
6. Reflection and reasoning about control
7. Commonsense reasoning

Recommended Preparation

Prior course in artificial intelligence; knowledge of elementary logic

Marking

To be decided on in consultation with the class in the first week of lectures. Tentatively the scheme is: presentation 10%, project 50%, take-home examination 40%.

CMPT 823 Library Requirements

There is no suitable textbook for this course. Material will be taken from journal papers and conference proceedings.

The following journals are perhaps the most relevant to the course:

1. Artificial Intelligence
2. Cognitive Science
3. Computational Intelligence

The first two journals are currently available in the SFU library. The last journal is not presently available in the SFU library. The institutional rate for Computational Intelligence (which incidentially is a Canadian journal) is $107.00; however Dr. Delgrande has copies of the journal which can also be put on reserve.

CMPT 823

Dr. Delgrande presently teaches the undergraduate analogue of CMPT 823. This course, CMPT 411, deals with implementational issues of artificial intelligence knowledge representation systems. This course is offered twice a year;

Dr. Delgrande obtained his doctorate degree in the area of artificial intelligence, and is actively engaged in research in default reasoning and logics of explicit belief in knowledge representation. He has supervised one M.Sc. thesis. and is presently supervising two others, in this area.

SIMON FRASER UNIVERSITY

MEMORANDUM

To.....Binay..K...Bhattacharya.....
Director, Graduate Program
.....School..of..Computing..Science.....

From....Sharon..Thomas,..Head,.....
.....Collections..Management..Division

Subject.....New..Course..Proposal:CMPT..823.

Date.....October..15,..1987.....

We have been supporting this course as a special topics offering without difficulty and could clearly continue to do so in a more permanent format.

However, it would be desirable to add a subscription to Computational Intelligence at an annual cost of $107.00 rather than relying on Dr. Delgrande's personal copies.

Sharon Thomas

ST/dab

New Graduate Course Proposal Form

CALENDAR INFORMATION:

Department: Computing Science Course Number: 824

Title: Logic Programming & Fifth Generation Computing

Description: This course presents research results in Fifth Generation Computing research in a seminar style.

Credit Hours: 3 Vector: 3.0.0 Prerequisite(s) if any:

ENROLLMENT AND SCHEDULING:

Estimated Enrollment: 10 When will the course first be offered: has been; 87-2

How often will the course be offered: According to demand.

JUSTIFICATION:

CMPT 824 is a highly desirable course at this point when Fifth Generation Computing is making quick progress and spreading all over the world. This course has been offered annually as a special topics course.

RESOURCES:

Which Faculty member will normally teach the course: V. Dahl

What are the budgetary implications of mounting the course: Making at best C-Prolog, if not Quintus Prolog, available to students.

Are there sufficient Library resources (append details): Yes; see Bibliography attached.

Appended: a) Outline of the Course
b) An indication of the competence of the Faculty member to give the course.
c) Library resources

Approved: Departmental Graduate Studies Committee: [signature] Date: 7/10/87

Faculty Graduate Studies Committee: Date:

Faculty: Date:

Senate Graduate Studies Committee: Date:

Senate: Date:

COURSE OUTLINE

CMPT 824

Veronica Dahl

FIFTH GENERATION COMPUTING

This course presents research results in Fifth Generation Computing research in a seminar style. After a four-week introduction to the subject, students will be expected to read recently published material and present it in class for discussion. In the last five weeks they will develop a project on one of the subjects discussed, which can be either a programming project or an essay.

Outline:

Weeks 1-4: Introduction. Aims of the Japanese Fifth Generation Computing project. Parallel efforts in Europe and North America. Hardware and software implications. Introduction to the Prolog programming language.

Weeks 5-8: How much of the dreams have materialized? Survey of recent Fifth-Generation computing material. Student expositions.

Weeks 9-13: Project development.

Grading Scheme:	In-class presentations	40%
	Project	60%

Bibliography:

- Fifth Generation Computing Journal.
- Logic Programming Journal.
- Proceedings, Conferences and Symposiums on Logic Programming.
- Fifth Generation Computing Newsletter
- Proceedings, Fifth Generation Computing Conferences.

- Programming in Prolog, by Clocksin and Mellish, 2nd ed. Springer Verlag 1984.
- Prolog Programming for Artificial Intelligence, I. Bratko, Addison Wesley 1986.
- Logic for Problem-solving, by R. Kowalski, North-Holland, 1979.
- The Art of Prolog, by Leon Sterling and Ehud Shapiro, MIT Press, 1984.
- Prolog II, by Giannessini, Kanoui, Pasero, M. Van Canegham, Inter-Ed. 1985.
- Logic Programming, by K.L. Clark and S.A. Tarnlund, Academic Press, 1982.

Various related articles will be also made available to the students.

CMPT 824

Dr. Dahl has already taught CMPT 824 in Summer 87, and her publication record is mostly in various areas of Fifth Generation Computing. She has supervised one M.Sc. and one Ph.D. thesis in this area.

SIMON FRASER UNIVERSITY

MEMORANDUM

To: Binay K. Bhattacharya, Director, Graduate Program School of Computing Science	From: Sharon Thomas, Head, Collections Management Office
Subject: NEW COURSE PROPOSAL: CMPT 824	Date: October 16, 1987

CMPT 824: LOGIC PROGRAMMING AND FIFTH GENERATION COMPUTING

The Library's collection of materials is small but apparently adequate to support the special topics course given last summer.

However, it might be useful to note that of the five journals identified in Isaac Balbin's Logic Programming: a Classified Bibliography only one, Future Generations Computer Systems is held by the Library and that our collection of the relevant conferences and symposia is incomplete.

The cost of subscribing to the remaining four journals alone is over $650 per year and while they are not necessarily required for CMPT 824, it does suggest that library holdings in this area might be expanded if teaching activity and research interest in this area continue to develop.

Sharon Thomas

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