

COURSE PROPOSAL

TO: Office of Student Affairs  
6426 Boelter Hall

Date: June 4, 1998

FROM: D.S. Parker, R. Bagrodia, C. Zaniolo Computer Science  
(Proposers) Department

Course No. CS230A Title Models of Information and Computation Units 4  
New Course x Revision \_\_\_\_\_ Deletion \_\_\_\_\_  
Prerequisites CS131 and CS181, or equivalent

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CATALOG DESCRIPTION (Limit 40 words):

Paradigms, models, frameworks, problem solving; axiomatic systems; domains, fixpoint theory; induction. Logical models: deduction; proof; models; semantics; propositional & first-order logic; logic programming. Functional models: equations; combinators; lambda calculus; functional programming. Program models: Hoare logic; object models; standard templates; design patterns; frameworks.

OBJECTIVES OF THE COURSE:

To expose graduate students to the principles behind dominant models of information and computation, models that arise in software paradigms and frameworks.

JUSTIFICATION FOR PROPOSAL:

This material is fundamental in both research and development of software and information management systems.

REQUIRED TEXTBOOKS:

Author(s)	Title	Publisher	Publication Date
Davis, R.E.	<i>Truth, Deduction, and Computation</i>	W.H. Freeman	1989

Selected research papers from the literature.

RECOMMENDED TEXTBOOKS:

Hennessey, M.	<i>The Semantics of Programming Languages</i>	J. Wiley	1990
Gamma, E. et al.	<i>Design Patterns</i>	Addison-Wesley	1995



Does this modification affect major or minor field program?  
 Yes  No

Submit major field program sheets with handwritten correction.

This course is recommended to satisfy an elective constraint as indicated below:

	Suggested Units (please circle)	Constraints				
		Units Approved by UPC				
___ Design_____	0 1 2 3 4	0	1	2	3	4
___ Engineering Science_	0 1 2 3 4	0	1	2	3	4
___ Laboratory_____	0 1 2 3 4	0	1	2	3	4
___ Engineering and Science in Society		___DO_NOT_FILL_IN___				
___ Mathematics - Upper division						

RECOMMENDED

Signatures(s):

\_\_\_\_\_  
 DEPARTMENT CHAIRMAN

\_\_\_\_\_  
 PROPOSER

\_\_\_\_\_  
 DATE

\_\_\_\_\_  
 ACADEMIC POLICY COMMITTEE (CSD)  
 CHAIRMAN

\_\_\_\_\_  
 PROPOSER

\_\_\_\_\_  
 DATE

\_\_\_\_\_  
 EXECUTIVE COMMITTEE (SEAS)  
 CHAIRMAN

Signature: \_\_\_\_\_

\_\_\_\_\_  
 INSTRUCTOR IN CHARGE

\_\_\_\_\_  
 DATE

Information for the Academic Policy Committee:

(1) Approximately how many sessions of this course will be lectures by the instructor? 20

(2) How will the remaining sessions be conducted (e.g. student project presentations, exams, guest lecturers)?

**N/A**

(3) What is the intended basis of grading in this course?

**The class will be graded on the basis of programming assignments and a final exam.**

(4) Is this course a standard course of a major or minor field? Yes x No \_\_\_\_\_

If yes explain:

**This course integrates, and supersedes, a number of courses previously offered by different instructors on different topics:**

- 232A. Operational Semantics of Programming Languages.
- 232B. Semantics of Programming Languages.
- 234A. Correctness Proofs.
- 235A. Logic Programming and PROLOG.

**Elements of the material are also taught in other courses, particularly the data management course sequence. The idea is to form a "core" course in the software area, covering important foundations that underly modern software research.**

(5) If this is a standard course, has it been evaluated and approved by the major field group as a whole? Yes x No \_\_\_\_\_

If yes, which other faculty member(s) have agreed to teach the course in your absence? Stott Parker, Rajive Bagrodia, Carlo Zaniolo

Optional:

(6) Is this a good course, and will you do a good job teaching it? Yes,yes x, Yes,no\_\_\_\_, No,yes\_\_\_\_, No,no\_\_\_\_

(7) How hard is it?

**Fairly hard.**