SYLLABUS
MA 481 MATHEMATICAL LOGIC

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NS 3015

Recent advances in logic have created new and powerful tools for attacking substantial problems of knowledge representation and knowledge processing. These problems lie at the core of the field of Artificial Intelligence (AI), which is attempting to build computer-based systems which begin to exhibit intelligent behavior.

We will look at a variety of these new tools of logic, carefully enough to analyze in each case the question of whether the system is sound (all that is provable is true) and complete (all that is true is provable). Following this we will look at logic-related needs of AI and analyze how well these new tools meet those needs. Finally, we will of course want to try to look to the future: what might some of the future needs of AI be, and what future tools should logic be working toward developing to fulfill those needs?

TEXT: What is Mathematical Logic?
By John Crossley et al

OTHER MATERIALS: a variety of current papers and texts, available in the library, which will help in our exploration of contemporary logic and its applications in AI

EVALUATION:

During the semester there will be three exams.
Projects, papers, and/or presentations, … will also be an integral part of the course.
There will be a final exam.
The grade will be based on a 1000 point total for the semester.

In particular, the plan is as follows:

Firstly, in addition to ungraded daily assignments, there will be a sequence of graded SUBMITTED ASSIGNMENTS which can be resubmitted repeatedly until satisfactory.

Secondly, there will be three mid-semester exams and a final exam. Only very exceptional circumstances could justify missing an exam; in these rare cases, except in emergencies, permission must be requested in advance, and a make-up exam (usually oral) will occur on Friday 27 April.

Thirdly, each student, either individually or in a group context, will design and execute a paper or project. A presentation to the class of results of this work will be included.

The evaluation framework is as follows: (please note especially the dates, already fixed, when the three exams will take place):

Exam 1:	Wed	21 Feb	150 points
Exam 2:	Wed	21 Mar	150 points
Exam 3:	Wed	11 Apr	150 points
Final Exam:			300 points
Submitted Assignments:			
to be submitted en masse by			
Fri 20 Apr for grade recording			50 points
Presentations, Projects, Papers, …			200 points
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		Total:	1000 points

Grading: 90-100%, A; 80-89%, B; 70-79%, C; 60-69%, D; 0-59%, F. The grading may be less stringent, but not more stringent, than this.

Note regarding special needs:

If you have a need for any disability-related accommodations or services, please inform the Coordinator of Disability Services Office in 405 Cohodas (227-1550). Reasonable and effective accommodations and services will be provided to students if requests are made in a timely manner, with appropriate documentation, in accordance with federal, state, and university guidelines

SOME ELEMENTARY LOGIC BOOKS IN OUR LIBRARY

(All are nice, and those marked (**) are particularly good.)

PARTICULARLY SLANTED TOWARD "MATHEMATICAL LOGIC":

Cori and Lascar, MATH LOGIC, QA9:C742513

Enderton, MATHEMATICAL INTRO TO LOGIC, QA9:E54 **

Hermes, INTRO TO MATH LOGIC, QA9:H4413

Kleene, MATH LOGIC, QA9:K652

Manin, COURSE IN MATH LOGIC, QA9:M29613

Mendelson, INTRO TO MATH LOGIC, QA9:M4 **

Robbin, MATH LOGIC, QA9:R68 **

Robison, INTRO TO MATH LOGIC, QA9:R72 **

PARTICULARLY SLANTED TOWARD "PHILOSOPHICAL LOGIC":

Church, INTRO TO MATH LOGIC, BC135:C42(v.1) **

Copi, SYMBOLIC LOGIC, BC135:C58 **

Epstein, PREDICATE LOGIC, BC181:E67

Langer, INTRO TO SYMBOLIC LOGIC, BC135:L35

Lee, SYMBOLIC LOGIC: AN INTRO FOR NON-MATHEMATICIANS, BC135:L38

Lyndon, NOTES ON LOGIC, BC135:L9 **

Reichenbach, ELEMENTS OF SYMBOLIC LOGIC, BC135:R4

Resnik, ELEMENTARY LOGIC, BC71:R47 **

Suppes, INTRO TO LOGIC, BC108:S85

GENERAL BOOKS ON ARTIFICIAL INTELLIGENCE (AI):

Approximately Q325 through Q336: lots to choose from and browse in:
e.g. Wagman, THE ULTIMATE OBJECTIVES OF AI, Q335:W344