

2

CURRICULUM PROPOSAL FORM

DEADLINES:

REGULAR COURSE PROPOSALS: OCTOBER 23, 1998 FOR FALL, 1999 AND FEBRUARY 19, 1999 FOR SPRING, 2000
SHORT-TERM COURSE PROPOSALS: DECEMBER 11, 1998 FOR FALL, 1999 AND MARCH 26, 1998 FOR SPRING 2000

PROPOSAL TITLE: Machine Learning

SPONSOR/S: Professor Nancy Tinkham

DEPARTMENT: Computer Science

6767.556

CHECK ALL THAT APPLY:
 UNDERGRADUATE GRADUATE

COLLEGE: LAS
If LAS: History/Humanities
 Math/Sciences
 Social/Behavioral Sciences

* * * * *

TYPE OF PROPOSAL (Check ALL that Apply)

<input type="checkbox"/> General Education	<input checked="" type="checkbox"/> New Course (NOT Gen. Ed.)
<input type="checkbox"/> New Course in _____ Bank	<input type="checkbox"/> Name Change (Dept., School, Major)
<input type="checkbox"/> Existing course, Add To _____ Bank	<input type="checkbox"/> Changes in Degree Requirements
<input type="checkbox"/> Multicultural/Global Designation	<input type="checkbox"/> Changes Involve Gen. Ed. requirements
<input type="checkbox"/> Writing Intensive Designation	
	<input type="checkbox"/> Minor Changes to Existing Courses
<input type="checkbox"/> New Minor/Concentration/Specialization	<input type="checkbox"/> Course is NOT General Education
<input type="checkbox"/> New Major/Degree Program	<input type="checkbox"/> Course IS General Education
<input type="checkbox"/> Short Term Course Proposal	

A

DEPARTMENT
(SIGNATURE INDICATES APPROVAL)

See attached

_____ DEPT. CURRICULUM CHAIR / DATE _____ DEPT. CHAIRPERSON / DATE

COLLEGE CURRICULUM COMMITTEE
DATE OF OPEN HEARING (if necessary) _____

APPROVED
 NOT APPROVED

COMMENTS:

Nancy Tinkham 2-4-99
SIGNATURE DATE

ACADEMIC DEAN (& GRADUATE DEAN, for New Graduate Programs Only)

APPROVED
 NOT APPROVED

COMMENTS: *see attached*

_____ SIGNATURE (Academic Dean) _____ DATE
_____ SIGNATURE (Graduate Dean) _____ DATE

UNIVERSITY CURRICULUM COMMITTEE

DATE OF OPEN HEARING (if necessary) 11/24/98

APPROVED

NOT APPROVED

COMMENTS:

Francis Reese 2/2/98
SIGNATURE DATE

SENATE

Date announced at Senate 12/8/98

Voted upon at Senate: Approved Not Approved Date:

EXECUTIVE VICE PRESIDENT/PROVOST

FEB 8 1999

APPROVED

NOT APPROVED If no, reasons are as follows:

STUDENT CREDIT HOURS 3 FACULTY LOAD HOURS 3 EQUALIZED CREDIT HOURS _____

OFFICIAL COPY & APPROVAL SHEET FILED (DATE): _____

DATE/SIGNATURE EXECUTIVE VICE PRESIDENT/PROVOST CDMottson

REGISTRAR

DATE APPROVED COURSE DESCRIPTION RECEIVED _____

HEGIS TAXONOMY & COURSE NUMBER ASSIGNED 0707.556

DATE/SIGNATURE OF REGISTRAR Robert A. Kubat 2/23/99

NOTIFICATION FORWARD:

_____ SENATE CURRICULUM COMMITTEE CHAIRPERSON

_____ DEPARTMENT CHAIRPERSONS

_____ ACADEMIC DEAN(S)

_____ REGISTRAR

_____ SPONSOR(S)

TAM
2/25/99

ROWAN UNIVERSITY CURRICULUM PROPOSAL

PROPOSAL TITLE: COURSE PROPOSAL : MACHINE LEARNING

CHECK APPROPRIATE: UNDERGRADUATE GRADUATE 3 SEMESTER HOURS

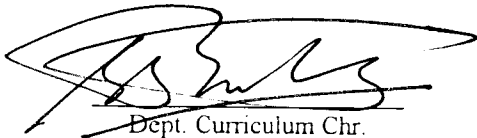
SPONSOR(S): PROF. NANCY TINKHAM

DEPARTMENT/TELEPHONE# COMPUTER SCIENCE / 3869

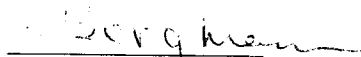
CHECK ONE: COURSE MINOR PROGRAM CONCENTRATION SPECIALIZATION
 ACHIEVEMENT CERTIFICATE CERTIFICATION PROGRAM MAJOR PROGRAM

Step #1 (Department)

Approved (Date)
 Not Approved (Date)


Dept. Curriculum Chr.

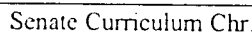
3/20/98
Reviewed (Date)


Dept. Chr.

Step #2 (Receipt)

SCC# 97-98-316

3-27-98
Date Received Senate


Senate Curriculum Chr.

Step #3 (School)

Reviewed Date: 4/27/98

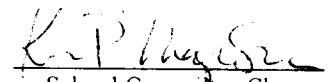
Recommend to Approved
 Recommend NOT to Approve

Forward for Open Hearing:

WITHOUT Reservations

WITH Reservations:

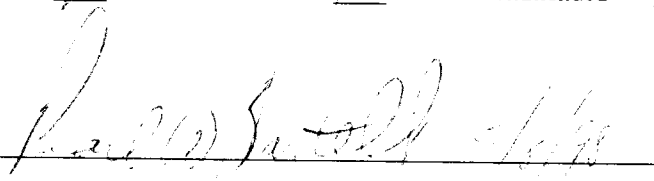
Comments:


School Committee Chr.

Step #4 (Academic Dean): Recommended NOT Recommended Conditionally Recommended (See Comments)

Comments:

Dean Signature/Date



Step #5 (Senate Curriculum Committee): Open Hearing Date: _____ Approved by Curriculum Committee Date _____

Returned to Sponsor(s) for the following reason:

Step #6 (Senate) Date announced/voted on at Senate _____ If voted on: Approved NOT Approved

Date forwarded to Executive Vice President/Provost _____

Senate Curriculum Committee chair Signature/Date: _____

Rowan University
Department of Computer Science

Course Proposal

Machine Learning

1. Details

- | | | |
|----|--------------------------------|--|
| a. | Course Title: | Machine Learning |
| b. | Sponsor: | Nancy Tinkham, Department of Computer Science |
| c. | Credit Hours: | 3 |
| d. | Course Level: | Graduate/Senior |
| e. | Curricular Effect: | Restricted elective for computer science majors, and available as a service course to graduate students taking courses in computer science and related fields. |
| f. | Prerequisites: | Artificial Intelligence (0707.450) or permission of instructor |
| g. | Suggested Time, Implementation | One section every two years to start; will be offered more frequently if demand increases. |
| h. | Resources: | The course can be taught with existing faculty, equipment, and library resources; we expect to expand the library's holdings in this area, which will strengthen the course. |

2. Rationale

Machine learning is a research area in artificial intelligence which encompasses many different but related topics, including inductive inference, statistical learning, explanation-based learning, genetic algorithms, and neural networks.

This course is designed to prepare seniors and graduate students to do research in machine learning. It will survey the major problems and solution methods in the field, will prepare students to do their own literature searches as researchers, and will give students experience in implementing one or more of the learning algorithms.

The course will also be of value to seniors and alumni who are preparing for work in industry using genetic algorithms or other machine learning techniques.

3. Essence of the course

a. Objectives in relation to student outcome

- Students will be able to find current research literature in machine learning, using tools such as the *ACM Guide to Computing Literature*, the ACM digital library, and Internet resources.

- Students will be able to read current research literature in machine learning on their own and summarize these research results on a written or oral presentation.
- Students will understand several of the algorithms currently used in machine learning and will implement at least one of these algorithms in a computer program.

b. Topic outline

The exact topical coverage will vary, depending on the specific interests of the instructor and the state of the art at the time the course is taught; however, typically the topics will include:

Inductive inference (learning concepts from examples)
 Inductive logic programming
 Grammar induction
 Statistical learning
 Explanation-based learning
 Knowledge acquisition
 Genetic algorithms
 Neural networks

c. Evaluation and grading procedures for students

Students will be evaluated based on class presentations, one or more projects, and possibly one or more exams.

d. Course evaluation

The department curriculum committee will evaluate this course.

4. Consultation: We have consulted with the Psychology and Electrical Engineering departments on this course.

5. Additional information

Possible texts include:

Machine Learning (Mitchell, McGraw-Hill, 1997)
Readings in Machine Learning (Shavlik and Dietterich, ed., Morgan Kaufmann, 1990)
Computer Systems That Learn (Weiss and Kulikowski, Morgan Kaufmann, 1991)
Concept Formation: Knowledge and Experience in Unsupervised Learning (Fisher, Pazzani, and Langley, Morgan Kaufmann, 1991)
An Introduction to Genetic Algorithms (Mitchell, MIT Press, 1996)
Neural Networks and Natural Intelligence (Grossberg, MIT Press, 1988)

Readings in the course will typically include journal papers in addition to any textbooks chosen.

6. Catalogue description

Machine Learning 3 s.h.

(Prerequisites: Artificial Intelligence (0707.450) or permission of instructor)

This course presents problems and solution methods for machine learning in a variety of contexts, such as inductive inference, statistical learning, explanation-based learning, genetic algorithms, and neural networks, and prepares the student to do research in this field.

Suggested hegis #: 0707.556