INDIANA UNIVERSITY OF PENNSYLVANIA
SENATE CURRICULUM COMMITTEE

NEW COURSE PROPOSAL

CO 405   ARTIFICIAL INTELLIGENCE

Department: COMPUTER SCIENCE

Person to Contact for Further Information: MARY MICCO, X2637

Desired Effective Semester for Change: FALL, 1990

Date of Proposal: March 21, 1990

Approvals:

   Department Committee Chairperson _John A Cross_____

   Department Chairperson _Gary L Buterbaugh_____

   College Curriculum Committee _____

   College Dean _____

DESCRIPTION OF CURRICULAR CHANGE

I. Catalog description - attached.

II. Course Objectives

    A.   <u>Catalog Description</u> - attached.

    B.   <u>Course Objectives</u>.

        1.   Students will know the history of artificial intelligence research.

        2.   Students will demonstrate an understanding of a variety of knowledge representation techniques.

        3.   Students will develop applications in three different artificial intelligence packages.

    C.   <u>Detailed Course Outline</u>.

        1.   What is Intelligence: Criteria for judging it   (2 hours)

        2.   Description Matching and Goal Reduction   (2 hours)

            One procedure that does geometric analogy problems by description matching and another procedure that manipulates toy blocks by goal reduction will be presented. The purpose is to demonstrate the importance of good representation and to introduce some particularly useful problem-solving tools early on.

        3.   Exploiting Natural Constraints   (3 hours)

            Once essential facts are well described, constraints   may

   games like checkers and chess.

5.   Control Metaphors and the General Problem
      Solving Paradigms. Generate and Test Paradigm (2 hours)

      Control concerns the process of passing information and
      attention around a computer problem-solver's collection of
      procedures. The focus here turns directly to the question
      of attention; and we consider, among other things, the
      General Problem Solver paradigm.

to solving problems. This can require many representations
such as parse trees, thematic-role frames, and various kinds
of semantic structures. To get started, we examine context-
free parsers, transition-net parsers, and wait-and-see
parsers. Next, we consider the issues involved in building
thematic-role frames.   And finally, we think about
transition-net semantic grammar systems for practical
language interfaces such as INTELLECT and LIFER.

10. Vision and Image Understanding   (4 hours)

Better representation is the key to computer understanding
of visual images as well as to computer understanding of
language. Among the popular representations are the primal

and short answer questions and will be based on the
readings assigned in the textbooks and articles. You
are considered responsible for the assigned readings.
There is no guarantee that everything will be covered in
class.

Schank, Roger C., Peter G. Childers, <u>The Cognitive Computer: On
    Language, Learning and Artificial Intelligence</u>, Addison-
    Wesley Publishing Co., Reading, MA, 1984.

III.   Course Analysis Questionnaire.

8. This material is not required in the ACM accreditation

B. Interdisciplinary Implications

None attached.

LETTERS OF SUPPORT

Were attached.

CATALOG DESCRIPTION

CO405   Artificial Intelligence   3C-0L-3SH

Prerequisite: CO310 Data Structures

This course is meant to provide the students with an introduction to the