Southeast Missouri State University

Department of Management

Title of Course: Artificial Intelligence and Expert Systems

Course No. MG442

Spring 2000

I. Catalog Description and Credit Hours of Course:

This course will focus on the area of Decision Support Systems, Artificial Intelligence, and Expert Systems. Topics covered include: forward and backward chaining rule-based systems, induction systems, and knowledge representation. (3)

II. Prerequisites(s): IS130 Visual Basic Programming and MG375 Management Information Systems with a minimum grade of “C”

III. Purposes or Objectives of the Course:

Upon completion of this course, the student should be able to:

A. Describe Artificial Intelligence and provide suggestions for its use in the business environment.

B. Describe Expert Systems and provide suggestions for their use in the business environment.

C. Describe and demonstrate examples of forward chaining rule-based Expert Systems.

D. Describe and demonstrate examples of backward chaining rule-based Expert Systems.

E. Plan, design and develop an Expert System.

IV. Expectations of Students:

A. Students will complete all assigned readings in textbook, handouts and relevant professional journal articles.

B. Students will participate in classroom discussions and activities.

C. Students will demonstrate achievement of course objectives through exams and projects.

D. Students will develop individual projects in which they will create Expert Systems using the rule-based reasoning under study.

E. Students will develop a group project Expert System using the rule-based reasoning of their choice.
V. Course Content or Outline:

A. Introduction to Decision Support Systems (3)

B. Introduction to Artificial Intelligence and Expert Systems (3)
   1. Major characteristics of Expert Systems
   2. MYCIN

C. Inference Techniques (3)

D. Rule-based Expert Systems (3)

E. Backward Chaining Rule-based Systems (6)
   1. Designing backward chaining rule-based systems
   2. Learn how to create an ES using an ES shell (possibly VP Expert)

F. Forward Chaining Rule-based Systems (6)
   1. Designing forward chaining rule-based systems
   2. Learn how to create an ES using a Level 5 shell

G. Bayesian Approach to Inexact Reasoning (3)

H. Certainty Theory (3)

I. Fuzzy Logic (3)

J. Frame-based Expert Systems (6)
   1. Designing forward frame-based systems
   2. Learn how to create an ES using a frame-based shell

K. Induction Systems (3)

L. Knowledge Engineering and Acquisition (3)

VI. Textbook(s) and/or Other Required Materials or Equipment:

A. Textbooks

B. Professional Journal Publications

C. Other References as Needed

VII. Basis for Student Evaluation:

A. Quizzes/Tests
B. Individual projects and one group project.

C. Class participation