

ISE 709 - Intelligent Engineering Systems

Fall '03/04

Course:

ISE 709 Intelligent Engineering Systems - 4 credit hours, Call number: 03925

Catalog Description:

In-depth study of techniques available in computer technology and human-machine systems to aid in the analysis and decision making situations using expert systems technology.

Sessions:

MW 9:10-11:00am, Stocker 187 (m), Bently 025 (w)

Instructor:

Dr. Dusan Sormaz, Room 277, Stocker Center, phone: (740) 593-1545,
e-mail: sormaz@bobcat, URL: <http://www.ent.ohiou.edu/~sormaz>

Office Hours:

MW 11:00-1:00pm, or by appointment

Textbook:

George F. Luger, *Artificial Intelligence, Structures and Strategies for Complex Problem Solving*, Addison Wesley, 2002.

Gordon S. Novak, *Lisp Programming Lecture Notes*, University of Texas at Austin, 1985.
(Available from instructor)

Readings:

Harlequin Lispworks, User Guide, Harlequin, 1999. (for in-lab use, available from the instructor)

Harlequin KnowledgeWorks, User Guide, Harlequin, 1999. (for in-lab use, available from the instructor)

Patrick Henry Winston, Berthold Klaus Paul Horn, *Lisp*, 3rd edition, Addison-Wesley, 1989.
(for in-lab use, available from the instructor)

The Course Objective:

The objective of the course is to enable the students to learn methods and techniques of artificial intelligence and enable them to apply these methods in building knowledge-based engineering systems.

Students will learn fundamental AI techniques (such as space search and knowledge representation) and study several techniques for building knowledge-based systems in various domains.

After successfully completing this course the students will possess enough theoretical knowledge and programming experience for building intelligent systems in their engineering disciplines.

Requirements:

Readings - Please read the chapter before the class in which it will be covered.

Homeworks - There will be four to five homeworks (pencil and paper) in which you will apply methods and techniques covered in the class.

Programming projects - There will be four to five programming projects in which you will use LISP to implement methods and solve the problems covered in the class.

Midterm exam - Exam will be held about the middle of the quarter (tentatively on 10/22).

Final project – Independent work in building rule-based systems using KnowledgeWorks or Jess, due the day of the final exam.

Grading Policy:

Homeworks 15%

Programming projects 30%

Midterm 30%

Final project 25%

Attendance Policy:

Attendance to all sessions is required. No enforcement policy will be in effect, but students are responsible for all material covered in the class.

Academic Misconduct:

No unauthorized collaboration of any kind is permitted during any of the examinations, homeworks, or quizzes. All suspected cases will be treated according to the University Policy as stated in the Catalog and the Student Handbook.

Tentative Schedule:

1. Week (9/8-12) AI: History and Applications (Ch. 1), Introduction to Lisp (Ch. 15)
2. Week (9/15-19) Introduction to Lisp (Chapter 15, Lisp notes)
3. Week (9/22-26) State Space Search, Blind search (ch. 3)
4. Week (9/29-10/3) Heuristic search (ch. 4)
5. Week (10/6-10/10) Knowledge representation (ch. 6), Predicate calculus (ch. 2)
6. Week (10/13-17) Automated Reasoning (ch. 12)
7. Week (10/20-24) Midterm, Strong Method Problem Solving (Ch. 7)
8. Week (10/27-31) Rule-based systems (hand-out)
9. Week (11/3-7) Case-based reasoning, Expert Systems (hand-out)
10. Week (11/10-14) Machine Learning (ch. 9)
11. Week (11/17) Review

Final project is due on Wednesday, November 19, at 8:00am