University of New Orleans

ScholarWorks@UNO

[University of New Orleans Syllabi](#)

Fall 2015

CSCI 6990

Stephen G. Ware
University of New Orleans

Follow this and additional works at: https://scholarworks.uno.edu/syllabi

This is an older syllabus and should not be used as a substitute for the syllabus for a current semester course.

CSCI 6990: Planning in Artificial Intelligence: Design and Development

Spring 2015: Tuesday and Thursday in Math 226 from 11:00 AM to 12:15 PM.

Contents

- [Course Description](#)
- [Student Learning Outcomes](#)
- [Instructor](#)
- [Prerequisites](#)
- [Text](#)
- [Grading](#)
- [Policies](#)
- [Academic Integrity](#)
- [Students with Disabilities](#)

Course Description

This is a seminar-style course for advanced graduate computer science students interested in Planning, a branch of artificial intelligence research. Simply put, planning is the science of thinking before acting. Given a (1) description of the world in some formal logic, (2) a set of actions with preconditions and effects, and (3) a goal, a planning algorithm's task is to find a sequence of those actions which achieves that goal. Planning is computationally intractable, but the research community has developed a number of interesting techniques to mitigate this high cost and solve an impressive array of problems. Throughout this course, students will read important research papers in the field and work together as a class to implement and benchmark various kinds of planning algorithms.

Topics covered will include:

- First order logic and logical unification
- Uninformed and informed search
- Heuristic design
- Plan-space vs. state-space planning
- Partial order planning
- Causal links in planning
- Plan graphs
- Planning as satisfiability
- Planning as constraint satisfaction
- Modern state-space planning heuristics

Student Learning Outcomes

After taking this class, it is expected that:

- Students will gain a deep understanding of the planning problem, including its computational complexity, history, and various approaches to solving it.
- Students will understand the tradeoffs inherent in designing search algorithms for hard AI problems like planning.
- Students will increase their proficiency in reading, synthesizing, and presenting graduate-level research from top conference proceedings and journals.
- Students will gain practical experiencing in designing and programming scientific software for solving hard AI problems like planning.

Instructor

Prof. Stephen G. Ware, Ph.D.
Department of Computer Science
Math Building, Room 337
sgware@uno.edu Office Hours: 3:30 PM to 5:00 PM on Tuesday and Thursday

## Prerequisites

It is assumed that:

- You are an experienced, competent programmer with a solid foundation in data structures and algorithms.
- You are familiar with the Java programming language and the Eclipse IDE.
- You have previous taken *CSCI 4525: Introduction to Artificial Intelligence* or equivalent course, or you are prepared to learn this material on your own as needed.

Text

There is no required text for this class. Most reading material will be research conference proceedings and journal articles provided to students as PDF files. However, a general AI textbook may be helpful when learning basic concepts and background material. The recommended AI text is:

Artificial Intelligence: A Modern Approach, 3rd edition by Stuart Russell and Peter Norvig

This is a comprehensive text on AI techniques which is commonly used in AI classes around the world, including *CSCI 4525: Introduction to Artificial Intelligence.*
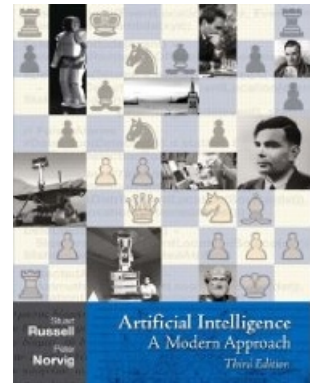
Grading

This is a seminar-style course, which means that most class meetings will be spent reviewing research papers on planning. Students will be expected to read, comprehend, and present research papers to the rest of the class. Throughout the course, a class-wide library of planning algorithms will be developed and maintained. Students will also be expected to claim features of this library and contribute to its development.

Assignment	Percentage
2 research paper presentations	25% each
2 programming contributions	25% each

There will be no exams for this class, unless students are not demonstrating sufficient effort on the projects. The instructor reserves the right to modify the grading policy for this class based on student performance.

Policies

These policies are in place to maintain professionalism and mutual respect:

- **Attendance:** Attendance is not required, but it is always strongly encouraged.
- **Devices in Class:** No electronic devices, such as laptops, tablets, or phones, may be used during class unless there is an in-class programming assignment scheduled for that day. You do not have to come to class, but if you do, you have to be a polite and attentive audience.
- **Phones:** Please silences your phones before class.
- **E-mail Response Time:** Please allow a minimum of 24 hours for e-mail responses.

Academic Integrity

All students are expected to follow UNO's code of academic integrity. Violations of this policy will be dealt with on a case-by-case basis, but punishment will be severe and may include failing the class and expulsion from the university.

Students with Disabilities

It is university policy to provide, on a flexible and individualized basis, reasonable accommodations to students who have disabilities that may affect their ability to participate in course activities or to meet course requirements. Students with physical or learning disabilities should contact the instructor and the Office of Disability Services. Arrangements will be made on an individual basis.