

# CAP5605/CAP4601: Artificial Intelligence

## Fall 2025

**Instructor:** Daniel G. Schwartz, 266 LOV, 644-5875, dgschwartz@fsu.edu.

**Office Hours:** By appointment and via Zoom, unless an in-person meeting is necessary. Send me email and we can set up a time.

**Website:** [www.cs.fsu.edu/~cap5605](http://www.cs.fsu.edu/~cap5605). Homework assignments and scores will be posted on Canvas.

**Teaching Assistants:** TBD

**Course Overview:** This course covers what is nowadays called Traditional AI and focuses on Knowledge Representation and Reasoning. This is not Neural Nets or Deep Learning.

[*Note:* The latter topic is sometimes covered in other courses, when they are offered.]

We start with an overview of the history and philosophical considerations that underpin the modern development of AI. We then learn a little about formal logics and reasoning systems, specifically the syntax and semantics of proposition calculus and first-order predicate logic. Next we delve into search algorithms, leading up to heuristic search and the well-known A\* algorithm, which has uses in many areas including robotics and computer games. Then we combine the logic with search to study the algorithms underlying expert reasoning systems. Finally we go into the Prolog programming language and use this to implement a simple expert system, the various search algorithms, and a simple robot motion planning system. Following this, we will look into resolution theorem proving, which underlies Prolog as well as other automated reasoning systems. We will also take an excursion into automated planning, which uses automated reasoning.

Specifically, we will cover the indicated chapters from the two books cited below. PDFs of both of these books can be found on the course website, also cited below. It happens that I am in process of revising these chapters and will work from the revisions, for as many as I have managed to revise so far (it's a work in progress). There is a link to the revised chapters on the course website. You will need to provide the ID "cap5605" and password "cap5605".

From the textbook, Luger 6th Edition: Chapters 1, 2, 3, 4, 6, 7, 8, and 14

From the supplementary text: Chapters 2, 3, and 4

**Textbook:** George F. Luger, *Artificial Intelligence: Structures and Strategies for Complex Problem Solving, 6th Edition*, Addison-Wesley, Reading, MA, 2009, ISBN-10: 0321545893, ISBN-13: 978-0-321-54589-3.

**Supplementary Materials:** We will also need the supplementary text *The Java, PROLOG and LISP Companion*, also titled *AI Algorithms, Data Structures, and Idioms in Prolog, Lisp, and Java*. This book is posted on the course website.

**Homework Assignments:** These will be posted on Canvas. Grad students will be given one additional assignment, which undergrads can do for extra credit.

**Homework Collaboration:** It is acceptable to work in groups and turn in one paper per group, with a maximum of four students per group. If you do work with others, remember to give the names of your collaborators on every assignment you turn in. Moreover, if you work independently, you are entitled a a 1% extra credit, but you will need to write to me at the end of the semester to request this.

**Late Homework Policy:** There is a one-week grace period on all assignments, after which no assignments will be accepted without a doctor's letter or other valid excuse. This should accommodate the usual short-term issues, such "not feeling well", "need to go out of town", or simply "too busy". The reason for this policy is that the graders cannot do their work until all assignments have been submitted.

**Attendance:** Attendance will be taken daily and people that attend at least 75% of the lectures will receive a 1% extra credit on their final semester average.

**Grading:** Homeworks will count for 50%, and the final exam will count for 50%. The final exam will be take-home, basically a long homework assignment to be done individually. The exam will be published on Monday, November 17, and due the day of the regularly scheduled exam, which is Monday, December 8.

**University Attendance Policy:** Excused absences include documented illness, deaths in the family and other documented crises, call to active military duty or jury duty, religious holy days, and official University activities. These absences will be accommodated in a way that does not arbitrarily penalize students who have a valid excuse. Consideration will also be given to students whose dependent children experience serious illness.

**Academic Honor Policy:** The Florida State University Academic Honor Policy outlines the University's expectations for the integrity of students' academic work, the procedures for resolving alleged violations of those expectations, and the rights and responsibilities of students and faculty members throughout the process. Students are responsible for reading the Academic Honor Policy and for living up to their pledge to "... be honest and truthful and . . . [to] strive for personal and institutional integrity at Florida State University." (Florida State University Academic Honor Policy, found at <http://dof.fsu.edu/honorpolicy.htm>.)

**Americans With Disabilities Act:** Students with disabilities needing academic accommodation should: (1) register with and provide documentation to the Student Disability Resource Center; and (2) bring a letter to the instructor indicating the need for accommodation and what type. This should be done during the first week of class.

This syllabus and other class materials are available in alternative format upon request. For more information about services available to FSU students with disabilities, contact the:

Student Disability Resource Center  
874 Traditions Way  
108 Student Services Building  
Florida State University  
Tallahassee, FL 32306-4167  
(850) 644-9566 (voice)

(850) 644-8504 (TDD)  
sdrc@admin.fsu.edu  
<http://www.disabilitycenter.fsu.edu/>

Students approved to take exams at the SDRC office are expected to take exams at the regularly scheduled time. Any exception to this will only be granted with a valid documented reason and must be approved by the instructor a week before the exam.

**Syllabus Change Policy:** Except for changes that substantially affect implementation of the evaluation (grading) statement, this syllabus is a guide for the course and is subject to change with advance notice.