

CMSC 722, AI Planning Syllabus

Dana S. Nau

University of Maryland

Tues/Thurs 2:00–3:15 PM

IRB room 2207

- Announcements:
 - ▶ If you don't have a U. of Maryland Turning Point account, [get one now](#)
 - You'll need it for every class section
 - ▶ All class sessions will be recorded, uploaded to [Panopto](#)

Instructor and TA

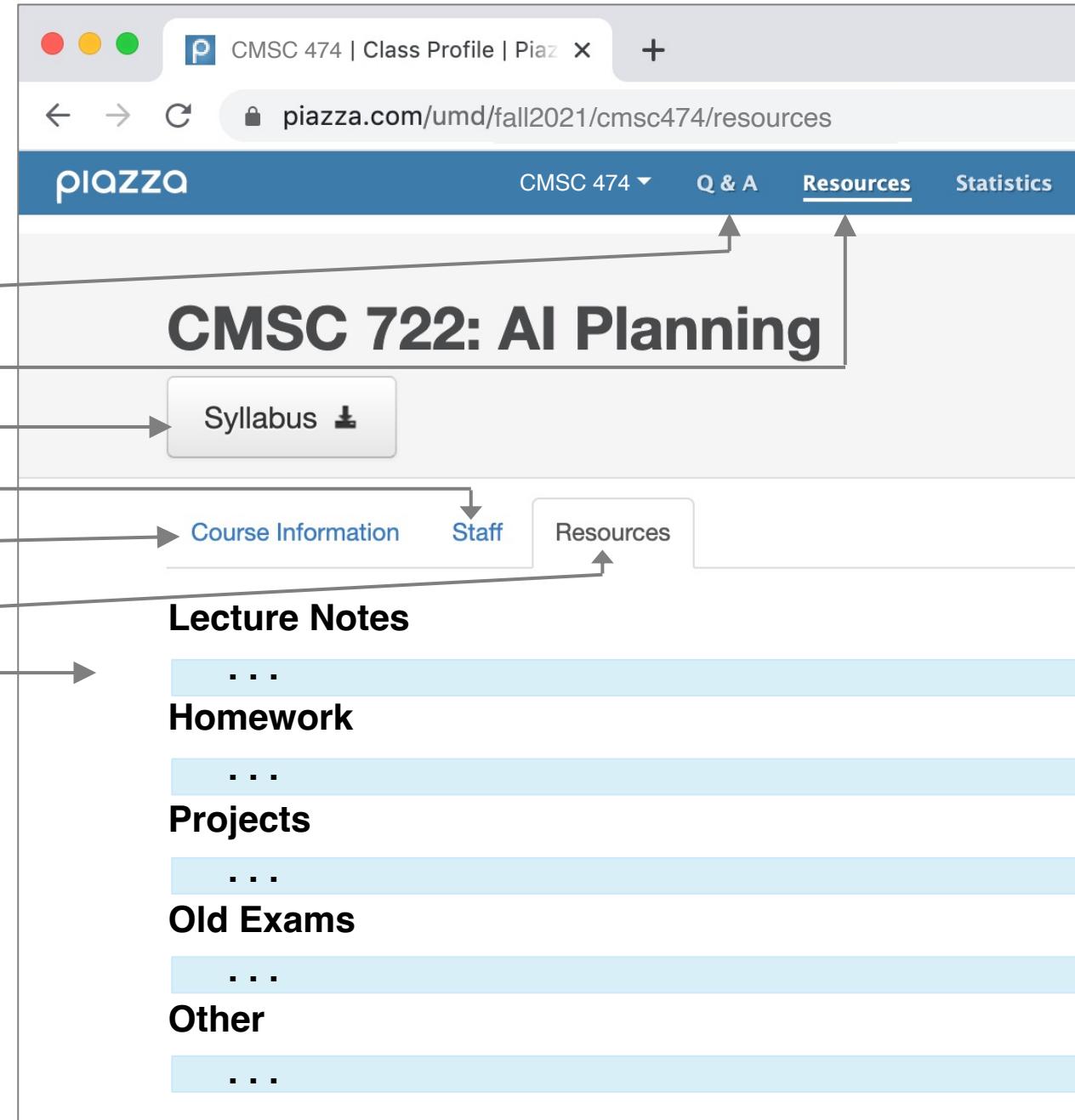
- Instructor
 - ▶ Dana S. Nau
 - <http://www.cs.umd.edu/~nau>
 - Office hours Tues/Thurs 3:30–4pm, other times by appointment
- TA
 - ▶ Jun Wang
 - ▶ Office hours Tues 4–6pm, other times by appointment
- For up-to-date info on office hours, check the Staff tab on the Piazza Resources page
 - ▶ If you don't know what Piazza is, see the next slide

Piazza

- <https://piazza.com/umd/spring2022/cmsc722/home>

- Class discussions
- Resources page
- This syllabus
- Names and office hours
- Nothing useful
- Resources *tab* of the resources *page* (!)
- Things you can download

- ▶ Don't send questions by email, use Piazza instead
 - You'll get answers more quickly
 - The answer might be useful to others
 - Others in the class be able to answer
 - You can post private questions to just the TA and me



My Lectures

- I'll put copies of my lecture slides on Piazza
 - ▶ Final version available after the lecture
- Class sessions will be recorded, uploaded to [Panopto](#)
- Please ask questions!
 - ▶ They give me a better idea of what to explain
 - ▶ Others may have the same question, they'll be glad you asked
- I'm hard of hearing
 - ▶ If I ask you to repeat your question or use a microphone, please be patient
- During lectures, I'll do in-class polls
 - ▶ You'll need a U. of Maryland [Turning Point account](#)
- Most polls:
 - ▶ I'll show you a multiple-choice question
 - ▶ Discuss it with others at your table, then vote for the answer you think is correct
- Vote at [tppoll.com](#) or use the Turning Point app ([iOS](#), [Android](#))
 - ▶ Session ID cmsc722
 - ▶ Votes will be anonymous, won't affect your grade

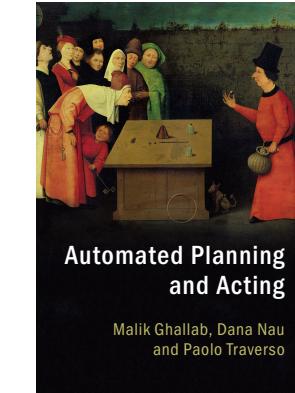
Prerequisites

- Official prerequisite:
 - ▶ CMSC 421 (Intro to AI) or equivalent, or permission of instructor
- You don't need to know most of the things in CMSC 421
- Some things it would be helpful to know:
 - ▶ heuristic search (but I'll review it in class)
 - ▶ propositional (Boolean) logic
 - ▶ a little notation and terminology from first-order logic (e.g., predicates, instantiation)
 - ▶ complexity theory (basic ideas)
 - O , Θ , P, NP, NP-hardness, NP-completeness
 - ▶ “mathematical maturity”
 - math notation, derivations, ...

Textbooks

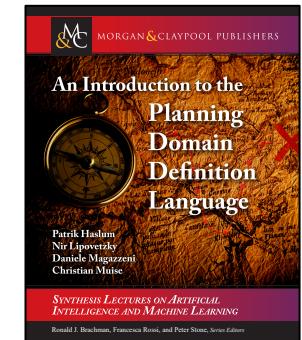
- Primary:

- ▶ Ghallab, Nau, & Traverso. *Automated Planning and Acting*. Cambridge Univ. Press, 2016.
 - [More info](#), including a downloadable copy of the manuscript



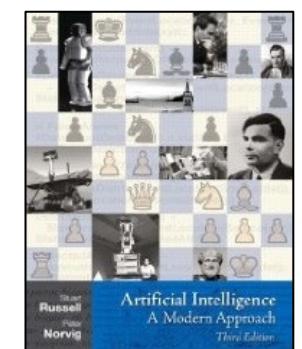
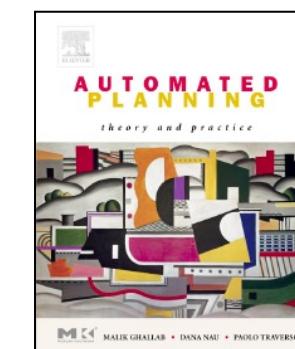
- Supplemental:

- ▶ Haslum, Lipovetzky, Magazzini, & Muise. *An Introduction to the Planning Domain Definition Language*. Morgan Claypool, 2019.
 - PDF copy [available free](#) if you download it on the campus network



- Not required, but parts of them might be useful:

- ▶ Ghallab, Nau, & Traverso. *Automated Planning: Theory and Practice*. Morgan Kaufmann, 2004.
- ▶ Russell & Norvig. *Artificial Intelligence: A Modern Approach*. Pearson, 3rd edition (2009) or 4th edition (2021).



Homework, Quizzes, Exams

≈ 6 ungraded homework assignments

- ▶ Usually a few exercises from the book
- ▶ Please discuss them on Piazza
- ▶ About a week after I assign them, we'll discuss them in class

≈ 6 brief in-class quizzes

- ▶ Usually a single problem to solve, on the same day that we discuss the homework
- ▶ Discuss the question in small groups
 - At most 5 per group
 - If the group all agrees on the same answer, it's OK if the answers look alike
- ▶ Your worst quiz score will be dropped
- ▶ Just a small percentage of your grade

- Midterm exam:

- ▶ Date TBD (probably Thurs March 17 or 31)

- Final exam:

- ▶ Monday, May 16, 10:30am-12:30pm
 - ▶ Specified by the [university exam schedule](#)

- Both exams will be in this room

- To help you prepare

- ▶ In-class review
 - ▶ Online copies of old exams
 - with and without answers

Programming Projects

- One or two projects
- $\approx 2\text{--}4$ weeks to do each project
 - ▶ Submit before midnight on the due date
 - ▶ 10% penalty: submit up to 2 days late
 - ▶ No credit after that
- OK to discuss ideas and general approach with other students
 - ▶ But not pseudocode or actual code
 - ▶ The code you submit must be your own
- Submit projects on [Gradescope](#)
 - ▶ Entry code YVW3ZE
- The TA will grade the projects
 - ▶ For regrades, contact him on Piazza
- Projects will done partly in Python, partly in PDDL
- PDDL is in the supplementary textbook, I'll teach the parts that you'll need
- I'd rather not teach Python
 - ▶ It's easy to learn, almost like reading pseudocode
 - ▶ If necessary, I can quickly review the basics
- **Poll:** how much Python do you know?
 - A. None
 - B. A little
 - C. Enough for ordinary programming
 - D. A lot
 - E. A lot, and I know what import antigravity does
 - F. I probably know more about it than you do

Grading

- Proportion of grade will probably be one of the following:

If we have two projects

Midterm 15%

Final 25%

Projects: 25% each

Quizzes: 10% total

If we have one project

Midterm: 22%

Final: 33%

Project: 35%

Quizzes: 10% total

Letter grade	Percentage
A +	97–100
A	93–96
A –	90–92
B +	87–89
B	83–86
B –	80–82
C +	77–79
C	73–76
C –	70–72
D +	67–69
D	63–66
D –	60–62
F	0–59

- We'll assign letter grades based on the ranges shown in the table
 - ▶ Depending on the grade distribution, I may lower the cutoffs

Other Things

- University course-related policies for graduate and undergraduate students
 - ▶ Academic integrity, accessibility, absences, missed assignments, rights, responsibilities, university resources, etc.
- On exams and programming projects, you'll need to sign the student honor pledge
- A study in 2018:
 - ▶ When students were allowed to use electronic devices, they did about 5 points worse on exams
 - ▶ Even if they didn't use the devices themselves
- You may use electronic devices, but only for things related to this class
- UMD information on preventing COVID-19
- **Poll:** have you been vaccinated and boosted?
 - A. yes
 - B. no
 - C. vaccinated, not boosted
 - D. huh?
- At most 5 people per table
- Wear a mask and make sure it fits properly
 - ▶ KN95, KF94, or N95 (no exhaust valve)
- **Poll:** are you wearing one of the above?
 - A. yes
 - B. no (but I'll do so next time)
- Free test kits:
 - ▶ student union and covidtests.gov
- If you get COVID-19