

Artificial Intelligence Syllabus – Spring DRAFT, 2007

COURSE NO./NAME: CS 660-760 — Artificial Intelligence

PROF IN CHARGE: K. D. Reilly - 139 or 141 Campbell Hall - 934-2213

OFFICE HOURS: (1) Aft' class; (2) Thurs: 9:30 plus, if I am here; (3) By app't. PLEASE NOT *b4* CLASS UNLESS URGENT!

PREREQS: Grad. status or permission of instructor. Starting 2007: Seniors and precocious Juniors. Helpful: “Exposure” to Science’s two Great Epistemologies, logic & probability (CS250/350). In another category: programming of SYSTEMS (vs. algo’s)

TEXTBOOK: In LaTeX markup (from which YOU draw a lesson: We accept only FORMAL REFERENCES in this class!): The book covers a lot of stuff ... far too much for a one-term course. We pick and choose portions of it each year though we supplement on the main topics (logic processing, neural nets and soft computing, agent thinking), e.g.: 1) search 2) Hidden Markov M. 3) Planning, 4) Expert Systems, etc.

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@BOOK{RN02,
  AUTHOR= {Russell, S. J. and Norvig, P.},
  TITLE= {Artificial Intelligence: A Modern Approach, 2nd Ed.},
  PUBLISHER= {Prentice Hall},
  ADDRESS= {Englewood Cliffs, NJ},
  YEAR= {2002}}
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URLs of RELEVANCE: See textbook for lotsa juicy stuff. It’s “unreal.”

A couple of books I like. Provide an “index” into and alternative statement on the subject! (1) A. Cawsey, **Essentials of AI**, Prentice-Hall, 1998 (especially Chap. 7) and (2) M. Negnevitsky, **AI: A Guide to Intelligent Systems, 2nd Ed.**, Addison-Wesley, 2004 (esp. on NNs ... maybe ES this time?). You will get a zerox copy of material I use from these books (around about one chapter per book, in past courses).

TOPICS TO BE COVERED: We’ll emphasize at least: (1) the agent basis for AI (& DAI) – ala the book with supplements, (2) Logic, integrated about clause form – semantic nets, NLP, search, etc.; (3) Numerical AI, eg., NNs, HMMs, Fuzzy Logic, and others based on “interest.”

Agent views, ranging from simplest to ones subjected to theory (such as light-weight use of logic (LWUL)) are an anchor in the class.

EXAMINATION — 40 pts.

We will have one (1) examination, about the 8th wk. plus or minus 1 wk.

BONUS CATEGORY: Pop quizzes *may* appear. These will add to your EXAMINATION grade if they apply to course material. These only help a little bit and only in so far as they make you look on top of things! Your being proficient in this task works kinda like you writing a “Letter of Recommendation” for yourself!

HOMEWORKs and PROJECTS (HW&P) 60 pts.

PreAmble: Everything done in this class is accompanied by a write-up (WU). Therefore, let us learn how to do both “easy” and informative WUs via the “I-P-M-R-D—A” (IPMRDA) meth’ (defined below)!

We will have a project due at the end of every month or at the start of a new month ... For Jan/Feb we will be “relaxed.” These projects are worth 10 pts apiece. They are subject to being presented orally.

The official due date is the end of the month. One class leniency applies. After that your grade does down 2.5 pts. per class.

If my arithmetic serves me right ... the final project will be worth 30 points with a 50-50 split between WU and oral presentation. We will definitely use the FINAL EXAM period for this purpose. We may have one or more special sessions, which people have liked well, during the exam period and perhaps in the last week of class

Group Projects Such projects are permitted. Keep in mind the "Umibical Cord Principle" — This principle means the two of you (in rare cases, more) must at some time break loose and do your own "thang," which your WU and presentation should reflect. For the joint part of the work you can present as a team ... working at trying to make player roles clear.

BONUS CATEGORY: Similar to the lecture, project "talk" is given a "Letter of Recommendation" style grade. Here the chatter can be on your work or on that of fellow students' work.

WRITING

You must write in this class. Our favorite thought: a 5 page write-up (WU) with "rich" appendix back-up "pointed to" by the main text. Try: write 'loose' and relaxed appendix material first, then the main paper parts! Each section starts a **NEW PAGE**:

Cover page: Name (big print), title, date. Notebooks or binding: Think 'FLAT' (bindings)!

INTRO (I): Get general issues/matters out of the way!! Be very brief. You die if you exceed more than one page here & are short on **PURPOSE** (next). Use an appendix and "lift."

PURPOSE (P): Point to Expected Results. Use **NUMBERED** text. (We suspect a P section will strongly affect your grade.)

METHODS (M): Key ones, **YOURS**, assume class as audience — not me!.

RESULTS (R): Keyed to **PURPOSEs** (by #) short comments on quality, how well you are meeting your purposes.

DISCUSS'n (D): Adlib on **RESULTS** ... suggest future work, etc.

References: (done in professional style) **ABSOLUTELY MANDATORY!!!!**

APPENDICES: Very informal. **BUT:** what's here **MUST** get ref'd in P M R or D.

SOME HINTS ON PAPER PREP

First: A key first thought is that, as you work, you gather materials informally. Perhaps, you can use a diary, helping to capture highlights of your development. (If you want to go 'formal' try Subversion for version control.) Include "mistakes" and "unusual" ways to do things after you've found better ways — these are good entries for "Methods Issues." The assumption is: "If you did it (good or bad), someone else might, too!" Also, it might help you clarify Purposes as you proceed. *A diary of Subversion reports might be more interesting than a paper!*

Second: Then you organize. The "I-P-M-R-D-A" method is best for "do" projects, but we have seen people use it in for reviews, tutorials, program units, etc. Try it.

Third: Finally, you 'abstract' your gatherings into a shorter, but complete paper, using, eg., the famous P-M-R-D-A formula ... A lot of your informal stuff can go into the A section.