Syllabus and Study guide for AI Final exam

Sources

- Russell & Norvig's textbook (AIMA)
- Slides available in the AIMA book website
- Slides posted via Google classroom

Study guide

- The exam is **cumulative**, i.e., everything taught in this course will be covered in the final exam. But I have trimmed some topics, as you will see in the table.

Syllabus

Ch.	Subject	Topics/Skills required
2	Intelligent Agents	- Understanding PEAS description - Understanding the characteristics of environments (static/dynamic, stochastic/deterministic, etc.) - Understanding different types of models (model-based, utility based, etc.)
3	Search	Understanding all blind and heuristic search techniques (BFS, DFS, Greedy, A* etc.) and ability to solve mathematical problems related to these.
5	Adversarial Search	- Understand minimax and alpha-beta pruning and ability to solve simple mathematical problems related to these. - Understand techniques to make game tree search faster (cut-off search, move ordering, etc.)
7,8	Logic	- Translating English sentences to and from propositional logic and first order logic - Converting sentences to and from CNF and Horn form - Applying resolution, forward and backward chaining on propositional logic statements
13	Quantifying Uncertainty	Understanding basic notions of probability, conditional probability, independence, full joint distribution, Bayes' rule
14	Probabilistic Reasoning	- Understanding conditional independence - Understanding the basic principle of Bayesian Networks - Ability to make inference given the topology and conditional probability tables of a given Bayesian network

15	Temporal Reasoning	• Understanding the basic principles of a Markov process • Ability to perform basic calculations given the transition table of a Markov process • Understanding the basic principles of a Hidden Markov Model (HMM) • Ability to make inference (filtering) given the transition and emission probabilities of a Hidden Markov Model
18	Basic Machine Learning	• Knowing the basics of three major types of machine learning (supervised, unsupervised, reinforcement) • Knowing the function of basic ML tasks: preprocessing, feature extraction, model construction and model evaluation • Knowing concepts related to supervised learning: training, testing, model complexity, overfitting, underfitting