**CSE422 Lecture Plan**

|  | **Topic** | **Content** | **Slide Link** | **Supplementary slides** |
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| **Before Midterm** | Introduction | Brief history, Turing test, Rational vs Human behavior, AI agents | [01\_Introduction.pptx](https://docs.google.com/presentation/d/1YxaUJKoIQdegk968eG7m4YEC2N1jhE-D/edit?usp=sharing&ouid=106202042710929132457&rtpof=true&sd=true) |  |
| Agent | Types of agent, Property of Environment | [02\_Agent.pptx](https://docs.google.com/presentation/d/10_KQ7g80xWv-DSg-hjVrwRk4Ia72Z6Kn/edit?usp=drive_link&ouid=106202042710929132457&rtpof=true&sd=true) |  |
| Informed Search | Role of search algorithms in AI, State space, Heuristic formation, Greedy best-first search, A\* search, Heuristic admissibility and consistency, Heuristic dominance | [03\_State Space.ppt](https://docs.google.com/presentation/d/10hjs0tw9ocGDuz5kYKS45s9oJ3BaqPb0/edit?usp=drive_link&ouid=106202042710929132457&rtpof=true&sd=true) [04\_Informed Search.pptx](https://docs.google.com/presentation/d/11yRlAB_m-rH9W4hxLh2raWvzsDzerjgr/edit?usp=drive_link&ouid=106202042710929132457&rtpof=true&sd=true) |  |
| Local Search | Hill climb algorithm, Issues with hill climb algorithm, Remedies of the issues, Simulated annealing. Gradient descent intro | [05\_Local Search.pptx](https://docs.google.com/presentation/d/1hhu6mBBAfFFCBkI1-4Y6YPqSFRED6f8w/edit?usp=drive_link&ouid=106202042710929132457&rtpof=true&sd=true) |  |
| Genetic Algorithm | Solving n-queen problems using basic genetic algorithm, Knapsack and traveling salesman problem solving using genetic algorithm (For practice) | [06\_Genetic Algorithm.pptx](https://docs.google.com/presentation/d/1Dt-vlpT8XOA35NKcB16ppc83dIuPkgU-/edit?usp=drive_link&ouid=106202042710929132457&rtpof=true&sd=true) |  |
| Games | 2-player game tree formation, Minimax, alpha-beta pruning | [07\_Games.ppt](https://docs.google.com/presentation/d/1XW2vCoiyHYc3I7Q7NdCIYgFdAl7AqTRc/edit?usp=drive_link&ouid=106202042710929132457&rtpof=true&sd=true) |  |
| **After Midterm** | Constraint Satisfaction Problem | Intro to domain/variable/constraints/Goal, Backtracking search, Variable/Value ordering, Node and arc consistency checking | [08\_CSP.ppt](https://docs.google.com/presentation/d/1isMlRVpohCeY_qhGnrELIAuY-DUfW1bn/edit?usp=drive_link&ouid=106202042710929132457&rtpof=true&sd=true) |  |
| Regression Analysis | Basics of supervised learning. Basics of gradient descent, basic steps of gradient descent in linear regression |  |  |
| Probability Theory | Probability intro, solving problems from joint probability distribution table, Checking independence and conditional independence, | [09\_Probability.pptx](https://docs.google.com/presentation/d/1zVAHqdsGDhjfIHyVU_euQmki7nFpJR-x/edit?usp=drive_link&ouid=106202042710929132457&rtpof=true&sd=true) |  |
| Naive Bayes | Bayes theorem, Learning phase in naive Bayes, classification using naive Bayes | [10\_Naive-Bayes.pdf](https://drive.google.com/file/d/1qpJhAOM2oblDmlIeLWsMw1NZEtcJ7MXI/view?usp=drive_link) |  |
| Decision Tree | Entropy and information gain, ID3 algorithm to form a decision tree | [11\_Learning.pptx](https://docs.google.com/presentation/d/1cJ7M7nn31xOdkOFlG9XnwaW2FqZgofKO/edit?usp=drive_link&ouid=106202042710929132457&rtpof=true&sd=true) |  |