**Artificial Intelligence Foundation**

**Overview**

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| Level | 3 (Semester 5) |
| Duration | 4 weeks |
| Lectures | 10 times 40-minute lecture per week for 2 weeks |
| Practicals/tutorials | 5 times 2 hours per-week, for 3 weeks |

**Learning Outcomes**

1. Students will demonstrate an understanding of, and ability to apply, classic artificial intelligence theories and techniques.
2. Students will develop the ability to think analytically and creatively about classic AI theories and techniques, including the ability to inter-relate (classes of) problems and techniques/theories for their solutions.
3. Students will demonstrate the ability to apply relevant analysis techniques, and to contrast and compare A.I. techniques and their applicability to specific or classes of problems.
4. Students will demonstrate an ability to perform an in-depth analysis of variants, combinations and extensions of classical A.I. techniques and theories, and an ability to evaluate these and communicate their findings effectively at an appropriate level of technical depth.

**Syllabus**

* Grand Challenges in AI
* Approaches in AI: Symbolic; Sub-symbolic; Statistical learning; Cybernetic and integrated/combined agent
* Search and adversarial search
* Uncertainty
* Introduction to Knowledge Representation and Reasoning (KRR)
* Classical planning
* Probabilistic reasoning
* Simple/complex decision-making
* Advanced directions