Artificial Intelligence

1. **Course number and name:** 020IA2ES4 Artificial Intelligence

2. **Credits and contact hours:** 4 ECTS credits, 2x1:15 contact hours

3. **Instructor's or course coordinator's name:** Georges Sakr

4. **Textbook:** Stuart Russell and Peter Norvig, Artificial Intelligence: A Modern Approach, 3rd Edition, 2014

5. **Specific course information**
    a. **Catalog description:**
        Study of intelligent agents, Search problems, DFS, BFS, A*, Greedy … games minimax, expectimax, alfa beta pruning, bayes nets, machine learning, reinforcement learning.

    b. **Prerequisites or co-requisites:** 020SDAES3 Data Structures and Algorithms

    c. **Required:** Elective for CCE students

6. **Specific goals for the course**
    a. The student will develop mini projects in which they will implement the intelligent algorithms in a game environment. They will learn how to design and tune a learning algorithm and apply machine learning technics to solve real world problems.

    b. **KPI:**

KPI	a1	a2	c1	c2	c3	e2	e3	i1	j1	k1	k3
Covered			x	x	x	x	x	x	x	x	x
Assessed	x	x	x	x	x	x	x			x	x

7. **Brief list of topics to be covered**

	Topic
1	Intelligent Agents
2	Search problems (classical)
3	Beyond classical search Genetic algorithm
4	Bayes nets
5	Markov decision processes
6	Reinforcement learning
7	Supervised learning : K-NN, artificial neural networks, support vector machines and decision trees.

8	Unsupervised learning : Clustering and Expectation maximization.
9	Games with adversaries
10	Particle filters