Course Code	Course Name	ECTS Credit
CSC206	Artificial Intelligence	7.5

Pre-Requisite	Course Type	Language of Instruction
	Compulsory	English

Year of Study	Level of Course	Mode of Delivery
2nd/4th	BSc/1st Cycle	On Campus

Course Objectives:

The objective of this course is to familiarize the students with the classical programs in the field of Artificial Intelligence, as well as with the subject theory: Mathematical Logic, knowledge comprehension and inference, language comprehension, Machine Learning etc.

Learning Outcomes

After the fulfillment of the course the students will be able to::

- Describe the different fields where Artificial Intelligence is applied nowadays.
- Describe the major components and features of an agent and describe their functionality
- Describe the functionality of various search algorithms
- Describe the principles of propositional logic and first order logic
- Use logic as an inference procedure to derive logical conclusions
- Describe the Bayes rule and its applications
- Build Bayesian networks and use them as inference machines.
- Describe supervised learning, unsupervised learning, reinforcement learning and artificial neural networks.

Teaching Methodology:

Lectures 42 hours

Labs 30 hours (using PYTHON, PYTORCH OR TENSOR FLOW)

Course Content:

Python

Implementing Bayesian learning, gradient descent, deep learning for image recognition and natural language processing

What is Artificial Intelligence? Intro, Intelligent agents, the concept of rationality

Problem-solving

Solving Problems by Searching, Search in Complex Environments, Adversarial Search and Games

Knowledge and reasoning

Logical agents, First-Order Logic, Inference in First-Order Logic

Uncertain knowledge and reasoning

Quantifying Uncertainty, Probabilistic Reasoning, Probabilistic Reasoning Over Time, Making Decisions

Machine Learning

Learning from Examples, Learning Probabilistic Models, Deep Learning, Reinforcement Learning

Communicating, perceiving, and acting

Natural Language Processing, Computer Vision

Conclusion

Philosophy, Ethics, Bias, Fairness and Safety of Al

State of the art applications and issues related to the subject of the course.

 Assessment Methods:

Final Exam

Mid-Term/project exam

Assignment

Required Textbooks/Reading:

Main textbook:

Title	Author(s)	Publisher	Year
Artificial Intelligence: A Modern Approach	Stuart Russell and Peter Norvig		2020

Introduction to Colab and Python

Title	Author(s)	Publisher	Year
Introduction to Machine Learning with Python	Andreas C. Muller	O'Really Media	2011
Introduction to Machine Learning	Ethem ALPAYDIN	MIT press	
Python Data Science Handbook: Essential Tools for Working with Data	Vanderplas, Jake	O'reilly	2016