AIB503 Foundation to Python for AI

Level: 5

Credit Units: 5 Credit Units

Language: ENGLISH

Presentation Pattern: EVERY REGULAR SEMESTER

Synopsis:

Artificial intelligence (AI) has been transforming the way everyone lives, studies, works, and connects. This course AIB503 Foundation to Python for AI is designed to equip students with the knowledge in AI in order to embrace the technological revolution and paradigm shift. Python is an essential programming language in the toolkit of an AI professional. In this course, you will learn the essentials of Python programming in data management, data analytics, and data visualisation. By the end of the course, you should be able to understand the concepts of machine learning and deep learning and differentiate supervised and unsupervised learning. Next, students will learn to execute and implement AI models (e.g., regression and classification) to solve real-life problems. Last, examples and hands-on exercises will be designed to help students learn to visualise and present the machine learning results using Python toolkits, e.g., NumPy, SciPy, Pandas, Seaborn and Matplotlib.

Topics:

- Introduction to Python programming (basic methodology, syntax, logic, etc.)
- Data types (tuple, list, dictionary)
- Numpy basics (array, module, method, function)
- Pandas and dataframe
- Data collection (importing and storing data, web scraping, etc.)
- Data preparation (manipulation, cleaning, transforming, merging, etc.)
- Plotting and visualisation
- Regression vs classification
- Unsupervised learning
- Artificial neural network
- Convolutional neural network
- Python for NLP basics (tokenisation, stemming, lemmatisation)

Textbooks:

Artificial Intelligence with Python: Your complete guide to building intelligent apps using Python 3.x 2nd Artasanchez, A., & Joshi, P. Packt Publishing
ISBN-13: 9781839216077

Learning Outcome:

- Appraise the fundamental methodology in Python programming
- Evaluate supervised and unsupervised learning, regression and classification problems
- Assess the applications for AI models
- Prepare data for analysis using Python
- Analyse data using appropriate tools and techniques with Python
- Design and implement various AI models using Python

Assessment Strategies - Regular Semester (Evening Class):

Components	**Description**	**Weightage Allocation (%)**
Overall Continuous Assessment	PRE-CLASS QUIZ 1	10
	PARTICIPATION 1	15
	GROUP BASED ASSIGNMENT 1	25
Overall Examinable Components	ECA	50
Total		**100**

*The information listed is subject to review and change.