Course Title:        Artificial Intelligence
Course Code:       CSC-205
Credit Hours:       (2+1)
Course Instructor:  Engr. Muhammad Younis
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## Description:

Dive into the fundamentals of Artificial Intelligence in this comprehensive course designed for BS (AI & MMG) students. Explore key concepts such as machine learning, neural networks, natural language processing, and Generative AI. Through hands-on projects and real-world case studies, you'll gain practical experience in designing and implementing AI systems. This course emphasizes both theoretical understanding and practical application, preparing you for advanced studies and careers in the rapidly evolving field of AI.

## Aims and Objectives:

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| • To understand and Implement the Basic Constructs of Python Language |
| • To Analyze and Visualize the Data using Pandas and Numpy |
| • To Implement ML and DL Models using (Scikit Learn, Tensorflow, keras) |
| • To Understand and Implement NLP Concepts using (Spacy, NLTK, Gensim) |
| • To Implement Generative AI Concepts and Use Vertex AI |

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**Week Wise Lab Schedule:**

| Week No. | Lab Objectives | Contact Hours |
|---|---|---|
| 01 | Introduction to PYTHON Programming Language<br>Installation and Interface<br>Introducing Syntax of PYTHON<br>Use print() function to display output<br>Use Input() function to get Input<br>Use variables and Data Types<br>Arithmetic and Relational Operators | 02 |
| 02 | Use Conditional Statements<br>Use Logical Operators<br>Use Loop Statements | 02 |
| 03 | Lists<br>Tuples<br>Sets<br>Dictionaries | 02 |
| 04 | Data Analysis Using Pandas | 02 |
| 05 | Data Visualization using Matplotlib | 02 |
| 06 | Implementation of Decision Tree<br>Implementation of SVM | 02 |
| 07 | Implementation of KNN Algorithm | 02 |
| 08 | Implementation of Linear Regression and Multivariate Regression | 02 |
| | MID TERM EXAM | |
| 09 | Implementation of Clustering Algorithms | 02 |
| 10,11 | Implementation of BOW,TFID,N-GRAMS | 02 |
| 12 | Using Tensorflow and Keras to Implement Neural Network | 02 |
| 13 | Implementation of CNN | 02 |
| 14 | Using Pre-Trained CNN | 02 |
| 15 | Implementation of Generative AI | 02 |
| 16 | Vertex AI | 02 |