



Program : Artificial Intelligence and Data Science

Final Year : Semester - VII

Course Code: CSC701

Course Name: Deep Learning

CSC701.1	Gain basic knowledge of Neural Networks.
CSC701.2	Acquire in depth understanding of training Deep Neural Networks.
CSC701.3	Design appropriate DNN model for supervised, unsupervised and sequence learning applications.
CSC701.4	Gain familiarity with recent trends and applications of Deep Learning.

Course Code: CSC702

Course Name: Big Data Analytics

CSC702.1	Understand the key issues in big data management and its associated applications for business decisions and strategy.
CSC702.2	Develop problem solving and critical thinking skills in fundamental enabling techniques like Hadoop, Map reduce and NoSQL in big data analytics.
CSC702.3	Collect, manage, store, query and analyze various forms of Big Data.
CSC702.4	Interpret business models and scientific computing paradigms, and apply software tools for big data analytics.
CSC702.5	Adapt adequate perspectives of big data analytics in various applications like recommender systems, social media applications etc.
CSC702.6	Solve Complex real-world problems in various applications like recommender systems, social media applications, health and medical systems, etc.

Course Code: CSDO7011

Course Name: Natural Language Processing

CSDO7011.1	To have a broad understanding of the field of natural language processing.
CSDO7011.2	To design language model for word level analysis for text processing.
CSDO7011.3	To design various POS tagging techniques.
CSDO7011.4	To design, implement and test algorithms for semantic analysis.
CSDO7011.5	To develop basic understanding of Pragmatics and to formulate the discourse segmentation and anaphora resolution.
CSDO7011.6	To apply NLP techniques to design real world NLP applications.



Program : Artificial Intelligence and Data Science

Final Year : Semester - VII

Course Code: CSDO7022

Course Name: Blockchain Technologies

CSDO7022.1	Describe the basic concept of Blockchain and Distributed Ledger Technology.
CSDO7022.2	Interpret the knowledge of the Bitcoin network, nodes, keys, wallets and transactions
CSDO7022.3	Implement smart contracts in Ethereum using different development frameworks.
CSDO7022.4	Develop applications in permissioned Hyperledger Fabric network.
CSDO7022.5	Interpret different Crypto assets and Crypto currencies
CSDO7022.6	Analyze the use of Blockchain with AI, IoT and Cyber Security using case studies.

Course Code: ILO7013

Course Name: Management Information System

ILO7013.1	Explain how information systems Transform Business.
ILO7013.2	Identify the impact information systems have on an organization.
ILO7013.3	Describe IT infrastructure and its components and its current trends.
ILO7013.4	Understand the principal tools and technologies for accessing information from databases to improve business performance and decision making.
ILO7013.5	Identify the types of systems used for enterprise-wide knowledge management and how they provide value for businesses.

Course Code: ILO7016

Course Name: Cyber Security and Laws

ILO7016.1	Understand the concept of cybercrime and its effect on the outside world.
ILO7016.2	Interpret and apply IT law in various legal issues.
ILO7016.3	Distinguish different aspects of cyber law.
ILO7016.4	Apply Information Security Standards compliance during software design and development.

Course Code: CSL701

Course Name: Deep Learning Lab

CSL701.1	Implement basic neural network models.
CSL701.2	Design and train feedforward neural networks using various learning algorithms and optimize model performance.
CSL701.3	Build and train deep learning models such as Autoencoders, CNNs, RNN, LSTM, GRU etc.



Program : Artificial Intelligence and Data Science

Final Year : Semester - VII

Course Code: CSL702

Course Name: Big Data Analytics Lab

CSL702.1	Understand the key issues in big data management and its associated applications for business decisions and strategy.
CSL702.2	Develop problem solving and critical thinking skills in fundamental enabling techniques like Hadoop, Map reduce and NoSQL in big data analytics.
CSL702.3	Collect, manage, store, query and analyze various forms of Big Data.
CSL702.4	Interpret business models and scientific computing paradigms, and apply software tools for big data analytics.
CSL702.5	Adapt adequate perspectives of big data analytics in various applications like recommender systems, social media applications etc.
CSL702.6	Solve Complex real-world problems in various applications like recommender systems, social media applications, health and medical systems, etc.

Course Code: CSDOL7011

Course Name: Natural Language Processing Lab

CSDOL7011.1	Apply various text processing techniques.
CSDOL7011.2	Design language model for word level analysis.
CSDOL7011.3	Design, implement and analyze NLP algorithms.
CSDOL7011.4	Realize semantics of English language for text processing.
CSDOL7011.5	To apply NLP techniques to design real world NLP applications such as machine translation, sentiment analysis, text summarization, information extraction, Question Answering system etc.
CSDOL7011.6	Implement proper experimental methodology for training and evaluating empirical NLP systems.

Course Code: CSDOL7022

Course Name: Blockchain Lab

CSDOL7022.1	Develop and test smart contract on local Blockchain.
CSDOL7022.2	Develop and test smart contract on Ethereum test networks.
CSDOL7022.3	Write and deploy smart contract using Remix IDE and Metamask.
CSDOL7022.4	Design and develop Cryptocurrency.
CSDOL7022.5	Write and deploy chain code in Hyperledger Fabric.
CSDOL7022.6	Develop and test a Full-fledged DApp using Ethereum/Hyperledger.



Program : Artificial Intelligence and Data Science

Final Year : Semester - VII

Course Code: CSP701

Course Name: Major Project 1

CSP701.1	Identify problems based on societal /research needs.
CSP701.2	Apply Knowledge and skill to solve societal problems in a group.
CSP701.3	Draw the proper inferences from available results through theoretical/ experimental/simulations.
CSP701.4	Analyze the impact of solutions in societal and environmental context for sustainable development.
CSP701.5	Demonstrate capabilities of self-learning in a group, which leads to life-long learning.
CSP701.6	Demonstrate project management principles during project work.



Program : Artificial Intelligence and Data Science

Final Year : Semester - VIII

Course Code: CSC801 **Course Name: Advanced Artificial Intelligence**

CSC801.1	Acquire basic knowledge of Probabilistic Models.
CSC801.2	Analyze the working and architecture for Generative Networks.
CSC801.3	Interpret various components and various types of Autoencoders
CSC801.4	Understand various aspects of Transfer Learning.
CSC801.5	Apply ensemble learning techniques to real-world problems and demonstrate improved predictive performance.
CSC801.6	Relate to the nascent technologies in the field of artificial intelligence.

Course Code: CSDO8012 **Course Name: Quantum Computing**

CSDO8012 .1	Understand basic concepts of quantum computing
CSDO8012 .2	Illustrate building blocks of quantum computing through architecture and programming models.
CSDO8012 .3	Appraise various mathematical models required for quantum computing
CSDO8012 .4	Discuss various quantum hardware building principles.
CSDO8012 .5	Identify the various quantum algorithms
CSDO8012 .6	Describe usage of tools for quantum computing.

Course Code: CSDO8022 **Course Name: Recommendation Systems**

CSDO8022.1	To have a broad understanding of the field of Recommendation Systems.
CSDO8022.2	In-depth Knowledge of the architecture and models for Collaborative Filtering.
CSDO8022.3	Understanding the architecture and working of Content based recommendation systems.
CSDO8022.4	Understanding the architecture and basics of Knowledge based recommendation systems.
CSDO8022.5	Analyzing hybrid and ensembles recommendation systems.
CSDO8022.6	Evaluation of recommendation systems by selecting right evaluation parameter.



Program : Artificial Intelligence and Data Science

Final Year : Semester - VIII

Course Code: ILO8021

Course Name: Project Management

ILO8021.1	Apply selection criteria and select an appropriate project from different options.
ILO8021.2	Write work break down structure for a project and develop a schedule based on it.
ILO8021.3	Identify opportunities and threats to the project and decide an approach to deal with them strategically.
ILO8021.4	Use Earned value technique and determine & predict status of the project.
ILO8021.5	Capture lessons learned during project phases and document them for future reference.

Course Code: ILO8028

Course Name: Digital Business Management

ILO8028.1	Identify drivers of digital business.
ILO8028.2	Illustrate various approaches and techniques for E-business and management.
ILO8028.3	Prepare E-business plan.

Course Code: CSL801

Course Name: Advanced AI Lab

CSL801.1	Implement Fuzzy operations and functions towards Fuzzy-rule creations.
CSL801.2	Build and training Associative Memory Network.
CSL801.3	Build Unsupervised learning-based networks.
CSL801.4	Design and implement architecture of Special Networks.
CSL801.5	Implement Neuro-Fuzzy hybrid computing applications.

Course Code: CSDOL8012

Course Name: Quantum Computing Lab

CSDOL8012.1	Implement basic quantum computing logic by building dice and random numbers using open source simulation tools.
CSDOL8012.2	Understand quantum logic gates using open-source simulation tools.
CSDOL8012.3	Implement quantum circuits using open-source simulation tools.
CSDOL8012.4	I implement quantum algorithms using open-source simulation tools.



Program : Artificial Intelligence and Data Science

Final Year : Semester - VIII

Course Code: CSDOL8022

Course Name: Recommendation Systems Lab

CSDOL8022.1	Understand mathematics and representation of data for recommendation systems.
CSDOL8022.2	Design, implement and analyze Collaborative filtering based for recommendation systems.
CSDOL8022.3	Design, implement and analyze Content-based recommendation systems.
CSDOL8022.4	Design, implement and analyze Knowledge-based recommendation systems.
CSDOL8022.5	Understanding feature engineering and pre-processing for recommendation systems.
CSDOL8022.6	To solve real world problems using recommendation systems.

Course Code: CSP801

Course Name: Major Project 2

CSP801.1	Identify problems based on societal /research needs.
CSP801.2	Apply Knowledge and skill to solve societal problems in a group.
CSP801.3	Draw the proper inferences from available results through theoretical/ experimental/simulations.
CSP801.4	Analyze the impact of solutions in societal and environmental context for sustainable development.
CSP801.5	Demonstrate capabilities of self-learning in a group, which leads to lifelong learning.
CSP801.6	Demonstrate project management principles during project work.