Academic Year: 2023-24

Skill Oriented Course-I

S.No.	Sem & Section	Title	Date (From -to)
1.	III SEM CSE-A,B,C&D	AWS Cloud Computing + Hackathon	25/09/2023 -30/09/2023

Skill Oriented Course-II

S.No.	Sem & Section	Title	Date (From -to)
1.	IV SEM CSE-A&B	Data Analysis Using Python	12/02/2024 - 22/02/2024
2.	IV SEM CSE-C&D	Data Analysis Using Python	23/02/2024 - 05/03/2024

Skill Oriented Course-III

S.No.	Sem & Section	Title	Date (From -to)
1.	V SEM CSE-A,B,C&D	ReactJS	03/10/2023 - 14/10/2023

Skill Oriented Course-IV

S.No.	Sem & Section	Title	Date (From -to)
1.	VI SEM CSE-A,B,C&D	Advanced Generative AI Boot Camp	02/01/2024 - 12/01/2024

Skill Oriented Course-V

S.No.	Sem & Section	Title	Date (From -to)
1.	VII SEM CSE-A,B,C&D	ANALYTICAL	12/06/2023 - 21/06/2023

AWS Cloud Computing + Hackathon

Course Outcomes: **After Successful completion of the Course, the student will be able to:**

CO1: Discuss architecture of AWS. [K2]
CO2: Illustrate VPC. [K3]
CO3: Describe storage concepts. [K2]
CO4: Explain database connectivity. [K2]

Course Contents:

Introduction to AWS
- What is AWS ?
- What is Cloud ?
- What is Cloud Computing ?
- Benefits of Cloud Computing
- Types of Cloud Computing Companies using AWS infrastructure
- Why did companies start to use AWS ?

- AWS Services overview
- AWS Global Infrastructure
- AWS Pricing

Elastic Compute Cloud
- What is EC2 ?
- How did Elasticity property come to EC2 ?
- What is an Operating System ?
- Configuration terminology in AWS
- What is EBS & it's types ?
- What are security groups ?

- What are Key pairs ?
- Launching Windows Instance
- Launching Linux Instance
- Launching Multiple instances using Single Security groups and key pairs
- Launching Web Server both Manually and Automatically
- Characteristics of ELB
- Practically proving all the characteristics of EL

- What is ASG ?
- Launching ASG
- What are Status Checks ?
- What are Volumes ?
- Protection from accidental termination
- Encryption
- Difference btw Scale - in, out & Scale - up, down
- Copy of AMI from one region to another
- Copy of Snapshots

Simple Storage Service
- What is S3 ?
- Characteristics of S3
- Features of S3
- S3 Tiered Storage Classes
- Life Cycle Management
- S3 Versioning
- S3 Policies
- S3 Pricing
- Transfer Acceleration
- Replication
- Static Web Hosting

Identity Access Management

- IAM Users
- What are Groups?
- IAM policies & it's types
- Accessing AWS through CLI
- IAM Roles

The workshop will be organized in the duration of 4 days and Hackathon of 24 Hours.

Data Analysis using Python

Course Outcomes: **After Successful completion of the Course, the student will be able to:**

- Construct programs for Data Analysis using NumPy and Pandas. (K3)
- Illustrate Data Acquisition and Wrangling. (K3)
- Construct programs using Advanced Data Analysis Techniques. (K3)
- Construct programs using Deep Learning for Data Analysis. (K3)
- Construct programs using Big Data Analysis with Python. (K3)

Course Contents:

Module 1: Python for Data Analysis

- Core Python concepts review.
- Introduction to NumPy, Pandas, Matplotlib, Seaborn, and Jupyter notebooks.

Module 2: Data Acquisition and Wrangling

- Web scraping with BeautifulSoup and Selenium.
- Working with APIs.
- Data cleaning and transformation techniques.

Module 3: Advanced Data Analysis Techniques

- Statistical analysis with SciPy and statsmodels.
- Time series analysis and machine learning fundamentals.

Module 4: Deep Learning for Data Analysis

- Introduction to neural networks and deep learning architectures.
- TensorFlow or PyTorch for deep learning models.

Module 5: Big Data Analysis with Python

- Introduction to Big Data concepts.
- Distributed computing with Apache Spark and Hadoop ecosystems.

Module 6: Professional Practices and Communication

- Version control with Git.
- Best practices for writing clean Python code.
- Data storytelling and communication skills

ReatJS

Course Outcomes: After successful completion of the course student will be able to learn:

CO1: Discuss fundamentals of HTML . [K2]
CO2: Discuss CSS. [K2]
CO3: Discuss Javascript. [K2]
CO4: Discuss ReactJS. [K2]
CO5: Develop an application using REACTJS. [K3]

Course Contents:

SECTION 1: Web Basics and HTML/CSS.

SECTION 2: JavaScript Fundamentals.

SECTION 3: Introduction to React, Building a basic React application.

SECTION 4: React Hooks, Context API, Custom Hooks, More complex React components.

SECTION 5: Building small projects using React.

SECTION 6: Making HTTP requests with Axios,React Router version 6, Building an API project with deployment.

SECTION 7: Building projects using external APIs, GitHub API project, E-commerce project.

SECTION 8: Introduction to Redux and Redux Toolkit,Building a project using Redux.

SECTION 9: Initial setup for a larger project,Creating a landing page and an error page.

SECTION 10: Implementing a register page,Setting up a dashboard and profile page, CRUD (Create, Read, Update, Delete) Operations.

SECTION 11: Building a full-stack app with Node.js and MongoDB, Introduction to React DevTools and debugging,Using Git for version control

Advanced Generative AI Boot Camp

Course Outcomes: After Successful completion of the Course, the student will be able to learn:

1. Describe advanced knowledge of generative AI models, with a focus on GANs,VAEs, and Transformers. **[K2]**
2. Develop practical skills through hands-on projects, including image synthesis, text generation, and reinforcement learning applications. **[K3]**
3. Apply generative AI techniques to real-world problems. **[K3]**
4. Develop generative AI projects in various domains. **[K3]**
5. Demonstrate insights into emerging trends, ensuring readiness for ongoing advancements in the field. **[K3]**

Course Contents:

1. **Introduction to Advanced Generative AI**
   - Overview of Generative AI applications
   - Recap of basic generative models
   - Discussion on recent advancements and use cases

2. **Advanced GANs and Project Kick-off**
   - In-depth study of advanced GANs (e.g., StyleGAN, BigGAN)
   - Hands-on: Implementing a custom GAN for image synthesis
   - Project: Image synthesis with advanced GAN architecture

3. **Variational Autoencoders (VAEs)**
   - Advanced concepts in VAEs
   - Implementing VAEs for data generation
   - Project: VAEs for image generation and manipulation

4. **Sequence Generation with Transformers**
   - Understanding Transformers in Generative AI
   - Building sequence generation models
   - Project: Text generation using Transformer architecture

5. **Reinforcement Learning in Generative AI**
   - Basics of reinforcement learning
   - Applying RL to generative models
   - Project: Reinforcement learning for generative art

6. **Final Project and Future Trends**
   - Collaborative development of a sophisticated generative AI project
   - Discussion on the latest trends and future directions
   - Final project presentations and feedback

ANALYTICAL

Course Outcomes: After successful completion of the Course, the student will be able to:

- Use their Logical thinking and analytical abilities to solve quantitative aptitude questions form Company specific and other competitive tests. **[K3]**
- Solve questions relative to Time & distance and time & work etc. from company specific. **[K2]**
- Solve puzzle related questions for any type of competitive tests. [**K2]**
- Practice the Aptitude Round Clearing ability in interview Process. **[K3]**
- Apply their knowledge of arithmetical ability in various day to day life problems quickly. **[K3]**

Course Contents:

- Number System
- Ages
- Average
- Boats and Streams
- Simple interest &Compound Interest
- H.C.F and L.C.M
- Mensuration
- Mixture and Allegations
- Partnership
- Percentage
- Permutations and Combinations
- Pipes and Cistern
- Probability
- Problems on Trains
- Profit and Loss
- Races and Games
- Ratio and Proportion
- Simple Interest
- Time and Work
- Time, Speed and Distance
- Chain Rule..
- Blood Relations
- Cause and Effect
- Calendar & Clock
- Coding and Decoding
- Cubes and Cuboids
- Direction Sense
- Letter and Number Series
- Odd Man Out Series
- Order and Ranking
- Seating Arrangement
- Syllogism
- Venn Diagrams