Courses drafted to reflect Leadership, Research and Capacity Building pillars of Data Science Campus (Re: Regional Hub Roadmap)

Courses:

1. Data Science Awareness creation and Advocacy
2. Data Science Core and Advanced Skills training

Course Title: Data Science Awareness creation and Advocacy

This initial course will have parts I – IV:

I. Analytical Business Leadership
   ➢ Leadership Mandate
   ➢ Leadership wisdom
   ➢ Evolution of leadership
   • Data-Driven Decision Making
     ➢ Building capability
     ➢ Phases of data-driven decision making
   • Analytic Thinking
     ➢ Evidence-based approach
     ➢ Barriers to evidence-based approach
     ➢ Shape the Organization and Structure
   • Data Science team
     ➢ Core responsibilities
     ➢ Embracing RAP - Reproducible Analytical Pipeline
     ➢ Key skills

II. Big Data, Data Science, and AI
1. Big Data
   a. Definition
   b. Characteristics of Big Data
   c. Why Do We care?
   d. Big Data Landscape
2. Data Science
   a. Trends of Data Science
   b. Dimensions of Data Science
   c. Data Science Trivium
   d. Data Science Pipeline/Workflow
   e. Story Telling – Visualization and Communication
   f. Data Science limitations
3. Artificial Intelligence (AI)
   a. Definition
   b. AI Application Areas
   c. AI, ML, and DL – History and Relationship
   d. AI Manager’s Dilemma
   e. AI Decision-Making Classification
   f. AI Enabler Stack

III. Digital Transformation
   1. Understanding Digital Transformation
   2. History of Digital Transformation
   3. Digital Transformation Blueprint
   4. Internet of Things (IoT) and Industrial Internet of Things (IIoT)
   5. Innovation and Disruptive Theory
   6. The Digital Ecosystem
   7. Pillars of Digital Transformation
   8. Digital Transformation Strategy
   10. Digital Support Technologies and Applications

IV. Data Protection and Governance
   • Data Protection Regulations and Intellectual Property (IP)
   • Data protection and AI in Data Science sphere
   • Data Standards
     ➢ Impact
     ➢ Quality
     ➢ Relevance
     ➢ Access
   • Data Governance Issues
   • Way forward
Course title: Data Science Core and Advanced Skills training

This course will have two parts that are centered around:

a. **Statistical thinking** – problem business case creating, connecting ideas, and algorithmic computing

b. **Modular approach** – lectures and case studies defined by:
   - Motivation or problem definition
   - Data set required/used
   - Scripts to demonstrate/visualize
   - Concepts or skilled learned

I. **Data Science core skills course**

This course is to lay down foundation to Data Science and covers core analytical practices.

1. Introduction
2. Exploratory Data Analysis (EDA)
3. Data wrangling
4. Introduction to modelling
5. Regression
6. Dimensional reduction
7. Machine learning
8. Web scraping
9. Visualization
10. Introduction to tools and platforms

II. **Advanced Data Science course**

This course goes deeper into practical Analytics use cases on Innovation, Reproducible Analytical Pipeline (RAP), and Automation using:

- Advanced Machine learning
- Deep learning
- Big Data technologies and tools
- Apache spark