A. Course Name: Data Driven Decision Making

- **Module 1: Introduction to Data Driven Decision Making - 10%**
- **Module 2: Fundamentals of Data Analysis - 15%**
- **Module 3: Data Collection and Management - 10%**
- **Module 4: Data Visualization - 10%**
- **Module 5: Building Predictive Models - 20%**
- **Module 6: Decision Making Frameworks - 12%**
- **Module 7: Implementing Data Driven Culture - 15%**
- **Module 8: Ethical and Legal Considerations - 5%**
- **Module 9: Case Studies and Practical Applications - 7%**
- **Module 10: Capstone Project**

B. Course Outline:

Module 1: Introduction to Data Driven Decision Making

- Submodule 1.1: Foundations of Data Driven Decision Making
  - Key concepts and principles underlying data-driven decision making
  - Differentiating between data-driven, data-informed, and intuition-based decision making
  - Case studies highlighting the impact of data-driven strategies on organizational success

- Submodule 1.2: Role of Data in Modern Organizations
  - Understanding the significance of data as a strategic asset in organizations
  - Types of data (structured, unstructured, big data) and their relevance in decision making
  - Data-driven business models and their impact on industry disruption and innovation
  - Examples of successful companies leveraging data for competitive advantage

- Submodule 1.3: Business Intelligence and Analytics
  - Overview of business intelligence (BI) and analytics tools and technologies
  - Role of BI in providing actionable insights for decision making
  - Analytics maturity models and assessing organizational readiness for data-driven initiatives
  - Demonstrations of BI and analytics platforms and their capabilities

- Submodule 1.4: Data Culture and Organizational Readiness

- Importance of fostering a data-driven culture within organizations
- Characteristics of a data-driven organization and its benefits
- Strategies for promoting data literacy and empowering employees to use data effectively
- Assessing organizational readiness for embracing data-driven decision making

- Submodule 1.5: Challenges and Limitations of Data Driven Decision Making
    - Common challenges and pitfalls in implementing data-driven strategies
    - Ethical considerations and risks associated with data usage and decision making
    - Addressing biases and ensuring fairness in data analysis and interpretation
    - Strategies for overcoming technical, organizational, and cultural barriers

Module 2: Fundamentals of Data Analysis
- Submodule 2.1: Exploratory Data Analysis (EDA)
    - Understanding the importance of EDA in the data analysis process
    - Techniques for summarizing and visualizing data distributions
    - Identifying patterns, outliers, and missing values in data sets
    - Hands-on exercises using EDA techniques in Python (e.g., Pandas, Matplotlib, Seaborn)

- Submodule 2.2: Statistical Inference
    - Introduction to probability theory and statistical distributions
    - Hypothesis testing techniques for making inferences about data
    - Confidence intervals and p-values interpretation
    - Practical examples and case studies demonstrating statistical inference in action

- Submodule 2.3: Data Preprocessing
    - Data cleaning techniques for handling missing values and outliers
    - Feature engineering methods to create informative variables
    - Data transformation techniques such as normalization and standardization
    - Strategies for dealing with imbalanced data sets

- Submodule 2.4: Supervised Learning
    - Overview of supervised learning algorithms (e.g., regression, classification)
    - Model training, evaluation, and hyperparameter tuning
    - Cross-validation techniques to assess model performance
    - Practical examples and exercises using popular machine learning libraries (e.g., Scikit-learn)

- Submodule 2.5: Unsupervised Learning
  - Introduction to unsupervised learning techniques (e.g., clustering, dimensionality reduction)
  - Applications of unsupervised learning in data analysis and decision making
  - Evaluation metrics for assessing clustering and dimensionality reduction algorithms
  - Hands-on exercises to implement unsupervised learning algorithms in Python

- Submodule 2.6: Time Series Analysis
  - Understanding time series data and its characteristics
  - Techniques for time series decomposition and trend analysis
  - Forecasting methods including moving averages, exponential smoothing, and ARIMA
  - Practical examples and case studies of time series analysis in business forecasting

- Submodule 2.7: Advanced Topics in Data Analysis
  - Introduction to advanced topics such as ensemble learning, neural networks, and deep learning
  - Applications of advanced data analysis techniques in real-world scenarios
  - Considerations for choosing appropriate models based on data characteristics and objectives
  - Hands-on projects and challenges to reinforce learning of advanced data analysis concepts

Module 3: Data Collection and Management

- Submodule 3.1: Data Sources and Acquisition
  - Identifying sources of data relevant to organizational objectives
  - Techniques for data extraction from various sources (e.g., databases, APIs, web scraping)
  - Considerations for data accessibility, quality, and reliability
  - Hands-on exercises to gather and preprocess data from different sources

- Submodule 3.2: Data Governance and Quality Assurance
  - Principles of data governance and its importance in data management
  - Establishing data quality standards and metrics
  - Implementing data validation and cleansing procedures
  - Strategies for ensuring data integrity and consistency

- Submodule 3.3: Data Storage and Infrastructure

- Overview of data storage options (e.g., relational databases, data warehouses, cloud storage)
- Considerations for selecting appropriate data storage solutions
- Introduction to big data technologies (e.g., Hadoop, Spark) for scalable data storage and processing
- Hands-on labs to set up and manage data storage systems

Module 4: Data Visualization

- Submodule 4.1: Principles of Effective Visualization
  - Understanding the principles of visual perception and cognition
  - Best practices for designing clear and informative visualizations
  - Choosing appropriate chart types for different data types and analysis goals
  - Critiquing and improving existing visualizations through case studies

- Submodule 4.2: Data Visualization Tools and Techniques
  - Overview of popular data visualization tools (e.g., Tableau, Power BI, D3.js)
  - Hands-on tutorials to create interactive and dynamic visualizations
  - Customization options for enhancing visual appeal and storytelling
  - Integrating visualizations into reports and presentations

Module 5: Building Predictive Models

- Submodule 5.1: Model Selection and Evaluation
  - Techniques for selecting appropriate predictive models based on data characteristics and objectives
  - Evaluation metrics for assessing model performance (e.g., accuracy, precision, recall, F1-score)
  - Cross-validation methods to avoid overfitting and assess generalization
  - Model interpretation and explaining predictions to stakeholders

- Submodule 5.2: Feature Selection and Engineering
  - Importance of feature selection in improving model performance and interpretability
  - Techniques for identifying relevant features and reducing dimensionality
  - Feature engineering methods to create informative variables from raw data
  - Hands-on exercises to apply feature selection and engineering techniques

Module 6: Decision Making Frameworks

- Submodule 6.1: Decision Analysis Techniques
  - Overview of decision analysis methods (e.g., decision trees, decision matrices)

- Quantitative and qualitative factors in decision making
- Evaluating alternatives and trade-offs in decision making processes
- Case studies and simulations to apply decision analysis techniques

- Submodule 6.2: Risk Management and Uncertainty
    - Understanding risk and uncertainty in decision making
    - Techniques for assessing and managing risks
    - Decision making under uncertainty using probabilistic methods
    - Developing risk mitigation strategies and contingency plans

Module 7: Implementing Data Driven Culture

- Submodule 7.1: Leadership and Change Management
    - Role of leadership in driving cultural change towards data-driven decision making
    - Strategies for gaining buy-in and support from organizational stakeholders
    - Change management techniques to overcome resistance and foster adoption
    - Case studies of successful organizational transformations towards a data-driven culture

- Submodule 7.2: Empowering Teams with Data Literacy
    - Importance of data literacy in enabling employees to make informed decisions
    - Training programs and resources for improving data literacy across the organization
    - Creating a culture of continuous learning and knowledge sharing
    - Assessing and measuring data literacy skills within teams

Module 8: Ethical and Legal Considerations

- Submodule 8.1: Ethical Principles in Data Usage
    - Ethical considerations in collecting, analyzing, and using data
    - Privacy, consent, and confidentiality issues in data-driven decision making
    - Ethical frameworks for resolving dilemmas in data usage
    - Case studies and ethical scenarios for discussion and analysis

- Submodule 8.2: Legal Compliance and Regulations
    - Overview of data protection laws and regulations (e.g., GDPR, HIPAA, CCPA)
    - Compliance requirements for handling sensitive and personal data
    - Legal implications of data breaches and non-compliance
    - Strategies for ensuring legal compliance in data-driven initiatives

Module 9: Case Studies and Practical Applications
- Submodule 9.1: Industry-Specific Case Studies
  - Analysis of data-driven decision making in various industries (e.g., finance, healthcare, retail)
  - Identification of common challenges and best practices specific to each industry
  - Lessons learned from successful implementation of data-driven strategies
  - Interactive discussions and Q&A sessions with industry experts

- Submodule 9.2: Practical Applications and Projects
  - Hands-on projects based on real-world data sets and scenarios
  - Application of data analysis, visualization, and predictive modeling techniques to solve business problems
  - Group collaboration and peer review to simulate teamwork and collaboration
  - Presentation of project findings and recommendations to peers and instructors

Module 10: Capstone Project
- Final project where students apply knowledge and skills acquired
- Develop a data driven decision making strategy for a hypothetical scenario
- Presentation of findings and recommendations to peers and instructors

Conclusion and Next Steps
- Recap of key learnings from the course
- Resources for further learning and professional development in data driven decision making
- Opportunities for networking and community engagement

C. Requirements:

1. Commitment to Participation:
- Participants must commit to actively contributing to the development of the CRM course.

- Participants should be willing to select specific modules to work on and adhere to agreed timelines.

2. Skillset:
- Participants should have relevant skills and expertise in areas such as CRM, digital marketing, data analysis, instructional design, content creation, and video production.

- Participants should be capable of producing high-quality educational content in their chosen module(s).

3. Access to Tools and Resources:

   - Participants should have access to necessary tools and resources for content creation, such as presentation software, video editing software, code editors, etc:

For example:

- ClipChamp – Video Creator
- Power Point / Canvas
- Required software, Code, …

   - Access to relevant CRM platforms or software for demonstration purposes is beneficial.

4. Commitment to Collaboration:

   - Participants must actively engage in collaborative discussions and decision-making within the Zalo group.

   - Participants should be open to feedback, suggestions, and contributions from other participants.

5. Deliverables:

1. Slide Deck:

   - Participants are required to create a comprehensive slide deck for their chosen module(s) following the provided course outline.

   - Slides should be visually appealing, well-organized, and include relevant content, graphics, and examples.

2. Transcript:

   - A detailed transcript of the presentation should be provided along with the slide deck. It is either English and/or Vietnamese (prefer English and along another Vietnamese version) – Use Generative AI to support this point.

   - The transcript should include thorough explanations of each slide's content, ensuring clarity and understanding for learners.

3. Code (if applicable):

   - For modules that involve technical demonstrations or examples, participants should provide sample code snippets, scripts, or configurations.

   - Code should be well-commented and annotated to explain its purpose and functionality.

4. Demo (if applicable):

   - Participants may include live demonstrations or simulations of CRM features, workflows, or processes.

   - Demos should be recorded and integrated into the presentation or provided as separate video files.

5. Video Presentation:

- Participants are required to record a video presentation of their module(s) using screen recording software or video editing tools.

- The video should cover the content of the slide deck, providing additional context, insights, and explanations.

- Videos should be engaging, well-paced, and professionally presented.

6. Commitment Timeline:

- Participants must provide a timeline outlining their planned milestones, including deadlines for completing each deliverable.

- Participants should commit to adhering to the agreed-upon timeline and communicate any delays or challenges promptly.

Collaboration and Tracking:

1. Zalo Group Formation:

- A dedicated Zalo group will be formed for participants to collaborate, discuss, and track progress on a weekly basis.

- Participants are expected to actively engage in group discussions, provide updates, and seek assistance or feedback as needed.

2. Weekly Progress Tracking:

- Weekly progress updates should be shared within the Zalo group, outlining achievements, challenges, and next steps.

- Participants should communicate any issues or concerns promptly to ensure timely resolution and course development.

D. Compensation:

Please refer to the compensation policy on Educonnhub.com