**SKILLED**

**LEVEL 2**

**Advanced Enterprise Architecture for Business Intelligence**

**Course Description**

This course delves into the advanced concepts and practices of enterprise architecture (EA) as it relates to Business Intelligence (BI) systems, specifically within the Nigerian context. Students will learn how to design, implement, and manage complex EA frameworks that support data-driven decision-making, ensuring alignment between business strategy and IT infrastructure. The course focuses on advanced topics such as data governance, cloud-based BI architectures, real-time analytics, and the integration of emerging technologies, while also addressing the unique challenges and opportunities of implementing these systems in Nigeria.

**Learning Outcome**

 Upon successful completion of this course, students will be able to:

* Understand the advanced principles and frameworks of Enterprise Architecture for Business Intelligence.
* Design and implement complex BI architectures that align with business strategy.
* Develop and manage data governance frameworks for BI systems.
* Utilize cloud-based BI architectures for scalability and cost-effectiveness.
* Implement real-time analytics and streaming data processing.
* Integrate emerging technologies (AI, machine learning) into BI architectures.
* Evaluate and select appropriate BI tools and technologies.
* Understand the challenges and opportunities of implementing advanced BI architectures in Nigeria.
* Apply advanced EA concepts to solve real-world BI challenges relevant to the Nigerian context.

**Course Content**

**Advanced Enterprise Architecture Concepts for BI**

* Enterprise Architecture (EA) frameworks and methodologies (e.g., TOGAF, Zachman).
* Alignment of BI architecture with business strategy and goals.
* Developing EA roadmaps for BI implementation.
* Advanced data architecture principles and design patterns.
* Understanding the complexities of the Nigerian IT infrastructure.

**Data Governance and Data Quality Management**

* Developing and implementing data governance frameworks for BI.
* Data lineage and metadata management.
* Data quality assessment and improvement techniques.
* Data security and privacy considerations (NDPR compliance).
* Data governance challenges and opportunities in the Nigerian context.

**Cloud-Based BI Architectures**

* Cloud computing concepts and deployment models (IaaS, PaaS, SaaS).
* Designing and implementing cloud-based data warehouses and data lakes.
* Cloud-based BI tools and platforms (e.g., AWS, Azure, Google Cloud).
* Scalability and cost optimization for cloud BI architectures.
* Addressing cloud adoption challenges in Nigeria (connectivity, data sovereignty).

**Real-Time Analytics and Streaming Data Processing**

* Concepts of real-time data processing and stream analytics.
* Architectures for real-time BI systems (e.g., Kafka, Spark Streaming, Flink).
* Implementing real-time dashboards and alerts.
* Use cases for real-time analytics in Nigerian industries (e.g., finance, telecom).

**Integrating Emerging Technologies in BI Architectures**

* Artificial intelligence (AI) and machine learning (ML) for advanced analytics.
* Natural language processing (NLP) for text analytics and sentiment analysis.
* Internet of Things (IoT) data integration for BI.
* Big Data analytics and distributed computing for large datasets.
* Adapting emerging technologies to the Nigerian context.

**BI Tool Selection and Evaluation**

* Evaluating and selecting appropriate BI tools and technologies.
* Comparing different BI platforms and their features.
* Developing evaluation criteria for BI tools.
* Conducting proof-of-concept (POC) projects.
* Addressing the cost and accessibility of BI tools in Nigeria.

**Implementing and Managing Advanced BI Architectures**

* Project management methodologies for BI implementations.
* Change management and user adoption strategies.
* Performance monitoring and optimization of BI systems.
* Security and compliance management for BI architectures.
* Addressing implementation challenges specific to the Nigerian environment.

**Case Studies and Best Practices in the Nigerian Context**

* Analysis of real-world case studies of advanced BI implementations in Nigeria.
* Discussion of best practices and lessons learned.
* Developing strategies for overcoming challenges in the Nigerian BI landscape.
* Future trends and opportunities for advanced BI in Nigeria.

**Suggested Textbooks/Readings:**

* **Enterprise Architecture as Strategy: Creating a Foundation for Business Execution** by Jeanne W. Ross, Peter Weill, and David C. Robertson. 1
* [1. blogs.msdn.microsoft.com](https://blogs.msdn.microsoft.com/jmeier/2013/02/24/diversification-coordination-replication-and-unification/)
* [blogs.msdn.microsoft.com](https://blogs.msdn.microsoft.com/jmeier/2013/02/24/diversification-coordination-replication-and-unification/)
* **The Data Warehouse Toolkit: The Complete Guide to Dimensional Modeling** by Ralph Kimball and Margy Ross.
* **Building the Data Lakehouse: How to Build a Successful Data Lakehouse Architecture** by Bill Inmon.
* **Relevant articles and reports on advanced BI architectures and the Nigerian IT landscape.**

**Advanced Digital Transformation and Analytics Strategy**

**Course Description**

This course provides a deep dive into the strategic aspects of digital transformation and the integration of advanced analytics to drive business innovation and competitive advantage, specifically within the Nigerian context. Students will explore frameworks for developing and implementing comprehensive digital transformation strategies, leveraging data analytics to inform decision-making, and fostering a culture of innovation. The course emphasizes practical application, addressing the unique challenges and opportunities of digital transformation in Nigeria's dynamic business environment.

**Learning Outcome**

Upon successful completion of this course, students will be able to:

* Develop and implement comprehensive digital transformation strategies for Nigerian organizations.
* Analyze the impact of emerging technologies on Nigerian businesses.
* Integrate advanced analytics into strategic decision-making processes.
* Foster a culture of innovation and digital agility within organizations.
* Leverage data analytics to identify and capitalize on market opportunities in Nigeria.
* Understand the legal, ethical, and regulatory considerations of digital transformation in Nigeria.
* Design and manage digital transformation projects effectively.
* Evaluate the success of digital transformation initiatives using key performance indicators (KPIs).
* Address the specific challenges and opportunities of digital transformation in Nigeria.

**Course Content**

**Foundations of Advanced Digital Transformation Strategy**

* Defining digital transformation and its strategic importance.
* Key drivers of digital disruption in the Nigerian market.
* Frameworks for developing digital transformation strategies (e.g., McKinsey 7S, Business Model Canvas).
* Understanding the digital maturity of Nigerian organizations.
* The role of leadership in driving digital transformation.

**Emerging Technologies and Their Impact on Nigerian Businesses**

* Artificial intelligence (AI) and machine learning (ML).
* Internet of Things (IoT) and sensor technologies.
* Blockchain technology and its applications.
* Cloud computing and edge computing.
* Mobile technologies and their role in digital transformation.
* Assessing the applicability of these technologies within the Nigerian infrastructure.

**Advanced Analytics for Strategic Decision Making**

* Data-driven decision-making frameworks.
* Predictive analytics and forecasting for strategic planning.
* Prescriptive analytics for optimization and scenario planning.
* Real-time analytics and streaming data processing.
* Data visualization and storytelling for strategic communication.
* Addressing data availability and quality challenges in Nigeria.

**Digital Business Models and Innovation**

* Designing and implementing digital business models.
* Lean startup and agile methodologies for digital innovation.
* Open innovation and collaboration strategies.
* Building digital ecosystems and partnerships in Nigeria.
* Leveraging data analytics to identify new business opportunities.

**Digital Customer Experience and Engagement**

* Designing personalized and seamless digital customer experiences.
* Customer journey mapping and analytics.
* Social media marketing and influencer engagement.
* Building digital communities and customer loyalty.
* Addressing the unique needs of Nigerian consumers in the digital space.

**Digital Operations and Supply Chain Transformation**

* Digitizing operational processes and workflows.
* Implementing smart supply chain management.
* Leveraging IoT and automation for operational efficiency.
* Addressing logistics and infrastructure challenges in Nigeria.
* Data analytics for supply chain optimization.

**Digital Governance, Ethics, and Security in Nigeria**

* Legal and regulatory frameworks for digital transformation in Nigeria (NDPR and others).
* Data privacy and security considerations.
* Ethical implications of AI and data analytics.
* Cybersecurity risks and mitigation strategies.
* Building trust and transparency in digital interactions.

**Implementing and Managing Digital Transformation Projects**

* Project management methodologies for digital transformation.
* Change management and stakeholder engagement.
* Measuring the success of digital transformation initiatives using KPIs.
* Developing a roadmap for continuous digital improvement.
* Addressing the specific challenges of implementing digital projects in Nigeria.

**Case Studies and Best Practices in the Nigerian Context**

* Analysis of successful and unsuccessful digital transformation initiatives in Nigeria.
* Discussion of best practices and lessons learned.
* Developing strategies for overcoming challenges in the Nigerian digital landscape.
* Future trends and opportunities for digital transformation in Nigeria.

**Suggested Textbooks/Readings:**

* **Digital Transformation: Survive and Thrive in an Era of Mass Extinction** by Thomas M. Siebel.
* **Competing in the Age of AI: Strategy, Technology, and Leadership in the Networked World** by Marco Iansiti and Karim R. Lakhani.
* **Relevant reports and publications on digital transformation in Nigeria.**
* **Reports on the Nigerian technology and business landscape.**

**Advanced Artificial Intelligence**

**Course Description**

This course delves into the advanced concepts and techniques of Artificial Intelligence (AI), building upon foundational knowledge of machine learning and data science. Students will explore cutting-edge topics such as deep learning architectures, reinforcement learning, natural language processing (NLP), computer vision, and ethical considerations in AI. The course emphasizes both theoretical understanding and practical application, with a focus on addressing challenges and opportunities relevant to the Nigerian context.

**Learning Outcome**

 Upon successful completion of this course, students will be able to:

* Understand and apply advanced deep learning architectures for complex tasks.
* Implement and train reinforcement learning agents for decision-making problems.
* Develop and deploy NLP applications for text analysis and generation.
* Build and evaluate computer vision models for image and video processing.
* Understand the ethical and societal implications of advanced AI.
* Apply AI techniques to solve real-world problems in various sectors within Nigeria.
* Evaluate and select appropriate AI tools and technologies.
* Conduct research and development in advanced AI.

**Course Content**

**Advanced Deep Learning Architectures**

* Recurrent Neural Networks (RNNs) and Long Short-Term Memory (LSTM) networks.
* Convolutional Neural Networks (CNNs) for advanced image processing.
* Generative Adversarial Networks (GANs) and Variational Autoencoders (VAEs).
* Transformer networks and their applications in NLP and other domains.
* Deep reinforcement learning architectures.
* Advanced optimization techniques for deep learning.

**Reinforcement Learning**

* Markov Decision Processes (MDPs) and Bellman equations.
* Deep Q-Networks (DQNs) and policy gradient methods.
* Reinforcement learning algorithms for continuous control.
* Multi-agent reinforcement learning.
* Applications of reinforcement learning in robotics, game playing, and resource optimization (relevant to Nigerian industries).

**Natural Language Processing (NLP)**

* Advanced text representation techniques (word embeddings, transformer-based embeddings).
* Natural language understanding (NLU) and information extraction.
* Natural language generation (NLG) and text summarization.
* Sentiment analysis and opinion mining.
* Chatbots and conversational AI.
* NLP for low-resource languages (relevant to Nigerian languages).

**Computer Vision**

* Object detection and segmentation.
* Image generation and manipulation.
* Video analysis and action recognition.
* 3D computer vision.
* Applications of computer vision in surveillance, agriculture, and healthcare (relevant to Nigerian needs).

**Ethical and Societal Implications of AI**

* Bias and fairness in AI algorithms.
* Privacy and security concerns in AI applications.
* Explainable AI and interpretable machine learning.
* AI governance and regulation.
* The impact of AI on employment and society (consider the Nigerian context).

**AI Applications in Nigerian Sectors**

* AI for agriculture: Crop monitoring, yield prediction, pest control.
* AI for healthcare: Disease diagnosis, drug discovery, remote patient monitoring.
* AI for finance: Fraud detection, credit scoring, personalized financial services.
* AI for education: Personalized learning, intelligent tutoring systems.
* AI for infrastructure: Smart city management, traffic optimization.
* AI for addressing social challenges in Nigeria.

**AI Tools and Platforms**

* Deep learning frameworks (TensorFlow, PyTorch).
* Cloud-based AI platforms (AWS, Azure, Google Cloud).
* NLP libraries (NLTK, spaCy, Hugging Face Transformers).
* Computer vision libraries (OpenCV, TensorFlow Object Detection API).
* Reinforcement learning libraries (Gym, Stable Baselines).

**Research and Development in Advanced AI**

* Current trends and research directions in AI.
* Developing and evaluating AI models for specific applications.
* Conducting AI research projects.
* Contributing to the AI community.
* Addressing AI research challenges specific to the Nigerian context (data availability, infrastructure).

**Suggested Textbooks/Readings:**

* **Deep Learning** by Ian Goodfellow, Yoshua Bengio, and Aaron Courville.
* **Reinforcement Learning: An Introduction** by Richard S. Sutton and Andrew G. Barto.
* **Speech and Language Processing** by Daniel Jurafsky and James H. Martin.
* **Computer Vision: Algorithms and Applications** by Richard Szeliski. 1
* [1. github.com](https://github.com/Bassamejlaoui/Awesome-Applied-AI-Bachelor-degree)
* [github.com](https://github.com/Bassamejlaoui/Awesome-Applied-AI-Bachelor-degree)
* **Relevant research papers and articles on advanced AI topics.**
* **Reports on AI adoption and potential in Nigeria.**

**The Global Profession**

**Course Description**

 This course examines the evolving nature of professions in a globalized world, with a particular focus on the implications for professionals working within and interacting with the Nigerian context. Students will explore the concepts of professionalism, ethics, cross-cultural competence, global mobility, and the impact of technology on professional practice. The course also addresses the challenges and opportunities faced by Nigerian professionals in navigating the global professional landscape.

**Learning Outcome**

Upon successful completion of this course, students will be able to:

* Understand the concept of professionalism and its global dimensions.
* Analyze the ethical challenges faced by professionals in a globalized world.
* Develop cross-cultural competence and communication skills.
* Understand the dynamics of global mobility and talent management.
* Assess the impact of technology on professional practice.
* Understand the challenges and opportunities faced by Nigerian professionals in the global arena.
* Develop strategies for building a successful global professional career.
* Apply professional ethics and standards to real-world scenarios, particularly within the Nigerian context.

**Course Content**

**Introduction to the Global Profession**

* Defining professionalism in a global context.
* The evolution of professions in a globalized world.
* Key characteristics of global professionals.
* Global professional organizations and networks.
* The Nigerian professional landscape and its global connections.

**Ethics and Professional Responsibility in a Global Context**

* Ethical frameworks and principles for global professionals.
* Cross-cultural ethical dilemmas and decision-making.
* Corporate social responsibility and sustainability.
* Professional codes of conduct and their application.
* Ethical challenges faced by Nigerian professionals in global interactions.

**Cross-Cultural Competence and Communication**

* Understanding cultural differences and their impact on professional practice.
* Developing cross-cultural communication skills.
* Managing intercultural teams and collaborations.
* Negotiation and conflict resolution in a global context.
* Effective communication strategies for Nigerian professionals in international settings.

**Global Mobility and Talent Management**

* The dynamics of global talent mobility.
* International assignments and expatriation.
* Managing a diverse and geographically dispersed workforce.
* Global talent acquisition and retention strategies.
* Opportunities and challenges for Nigerian professionals seeking global mobility.

**Technology and the Future of Professional Practice**

* The impact of technology on professional roles and responsibilities.
* Digital literacy and online collaboration tools.
* Data analytics and artificial intelligence in professional practice.
* Cybersecurity and data privacy in a global context.
* Adapting to the changing technological landscape in Nigeria.

**Building a Global Professional Career**

* Developing a global professional profile.
* Networking and building international relationships.
* Identifying and pursuing global career opportunities.
* Developing leadership skills for a globalized world.
* Strategies for Nigerian professionals to enhance their global competitiveness.

**Sector-Specific Global Professional Issues (Nigerian Focus)**

* Global trends and challenges in specific professions (e.g., engineering, healthcare, finance, law) within the Nigerian context.
* Case studies of successful Nigerian professionals in global roles.
* The role of professional associations in promoting global standards in Nigeria.
* Challenges and opportunities for specific professions in the Nigerian environment.

**The Nigerian Professional in the Global Arena**

* Understanding the Nigerian professional identity in a global context.
* Addressing cultural biases and stereotypes.
* Promoting Nigerian professional expertise globally.
* Contributing to the development of professional standards in Nigeria.
* The role of Nigerian professionals in shaping the future of the global profession.