**INTERMEDIATE**

**LEVEL 2**

**Advanced data analytics techniques**

**Course Description**

 This course delves into advanced data analytics techniques, building upon foundational knowledge of statistics and data analysis. Students will explore a wide range of methods, including machine learning, deep learning, time series analysis, and optimization, to extract deeper insights from complex datasets and solve challenging business problems. The course emphasizes both theoretical understanding and practical application, using real-world case studies and hands-on projects. The course will also touch upon relevant considerations for data analysis within the Nigerian context.

**Learning Outcome**

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

* Understand and apply advanced machine learning algorithms (e.g., ensemble methods, support vector machines, clustering).
* Build and evaluate deep learning models for various data types (e.g., image, text, time series).
* Perform time series analysis and forecasting.
* Utilize optimization techniques for decision-making.
* Apply appropriate data analytics techniques to solve complex business problems.
* Communicate data-driven insights effectively to both technical and non-technical audiences.
* Understand the ethical considerations and biases in advanced data analytics.
* Consider the specific challenges and opportunities for data analytics within the Nigerian business landscape.

**Course Content**

**Advanced Machine Learning**

* Ensemble methods: Bagging, boosting, random forests, gradient boosting machines.
* Support vector machines (SVMs): Linear and non-linear SVMs, kernel tricks.
* Clustering algorithms: K-means, hierarchical clustering, DBSCAN.
* Dimensionality reduction: Principal component analysis (PCA), t-SNE.
* Model selection and evaluation: Cross-validation, hyperparameter tuning, performance metrics.

**Deep Learning**

* Neural networks: Architectures, activation functions, backpropagation.
* Convolutional neural networks (CNNs) for image recognition.
* Recurrent neural networks (RNNs) for sequential data (text, time series).
* Deep learning frameworks: TensorFlow, PyTorch.
* Applications of deep learning in business.

**Time Series Analysis and Forecasting**

* Time series concepts: Trends, seasonality, stationarity.
* Time series models: ARIMA, SARIMA, exponential smoothing.
* Forecasting techniques: Time series decomposition, machine learning for forecasting.
* Evaluating forecast accuracy.

**Optimization Techniques**

* Linear programming: Simplex method, sensitivity analysis.
* Integer programming: Branch and bound, cutting plane methods.
* Non-linear programming: Gradient descent, Newton's method.
* Applications of optimization in business.

**Big Data Analytics (Optional)**

* Introduction to Big Data concepts and tools (Hadoop, Spark).
* Applying advanced analytics techniques to large datasets.
* Distributed computing and parallel processing.

**Data Ethics and Bias**

* Ethical considerations in data analytics.
* Bias in data and algorithms.
* Fairness, accountability, and transparency in data-driven decision-making.
* Mitigating bias and ensuring ethical practices.

**Data Analytics in the Nigerian Context**

* Specific challenges and opportunities for data analytics in Nigeria (e.g., data availability, infrastructure limitations, cultural factors).
* Case studies of data analytics applications in Nigerian businesses or the public sector.
* The role of data analytics in addressing local challenges and promoting development.

**Suggested Reading**

**Hands-On Machine Learning with Scikit-Learn, Keras & TensorFlow** by Aurélien Géron: A practical guide to machine learning and deep learning.

**Deep Learning** by Ian Goodfellow, Yoshua Bengio, and Aaron Courville: A comprehensive textbook on deep learning.

**Forecasting: principles and practice** by Rob J. Hyndman and George Athanasopoulos: A practical guide to time series analysis and forecasting.

**Introduction to Operations Research** by Frederick S. Hillier and Gerald J. Lieberman: A comprehensive textbook on optimization techniques.

**Business Research**

**Course Description**

 This course provides a comprehensive introduction to the principles and practices of business research. Students will learn how to formulate research questions, design research studies, collect and analyze data, and interpret and communicate research findings effectively. The course covers both qualitative and quantitative research methods, emphasizing their application in various business contexts. Ethical considerations and the relevance of research to the Nigerian business environment will be integrated throughout the course.

**Learning Outcome**

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

* Understand the research process and its importance in business decision-making.
* Formulate clear and concise research questions and objectives.
* Design appropriate research studies using qualitative and quantitative methods.
* Collect and analyze data using various techniques.
* Interpret research findings and draw meaningful conclusions.
* Communicate research results effectively through reports and presentations.
* Understand ethical considerations in business research.
* Apply research principles and methods to real-world business challenges, particularly within the Nigerian context.

**Course Content**

**Introduction to Business Research**

* The role of research in business decision-making.
* The research process: Defining the problem, formulating research questions, designing the study, data collection, analysis, interpretation, and reporting.
* Types of business research: Exploratory, descriptive, causal.
* Ethical considerations in business research: Informed consent, confidentiality, data privacy.
* Research in the Nigerian context: Challenges and opportunities.

**Research Design**

* Qualitative research designs: Case studies, ethnography, grounded theory, phenomenology.
* Quantitative research designs: Surveys, experiments, quasi-experiments, correlational studies.
* Mixed methods research designs.
* Sampling techniques: Probability and non-probability sampling.
* Developing a research proposal.

**Data Collection Methods**

* Qualitative data collection: Interviews, focus groups, observations, document analysis.
* Quantitative data collection: Surveys, questionnaires, experiments, secondary data analysis.
* Data collection instruments: Designing effective questionnaires and interview guides.
* Data collection in the Nigerian context: Cultural considerations and accessibility.

**Data Analysis**

* Qualitative data analysis: Thematic analysis, content analysis.
* Quantitative data analysis: Descriptive statistics, inferential statistics, hypothesis testing.
* Using statistical software (e.g., SPSS, R, Excel) for data analysis.
* Data visualization and interpretation.

**Report Writing and Presentation**

* Structure and format of research reports.
* Communicating research findings effectively to different audiences.
* Creating compelling presentations and visualizations.
* Writing for academic and professional audiences.

**Advanced Research Topics (Optional)**

* Longitudinal studies and panel data analysis.
* Big data analytics and business research.
* Data mining and machine learning for business insights.
* Research in specific business areas (e.g., marketing research, financial research).

**Research Ethics and Social Responsibility**

* Ethical dilemmas in business research.
* Plagiarism and academic integrity.
* Data privacy and security.
* Social responsibility in research.

**Research in the Nigerian Context**

* Challenges and opportunities for business research in Nigeria (e.g., data availability, infrastructure, cultural factors).
* Case studies of successful research projects in Nigerian businesses.
* The role of research in addressing local challenges and promoting development.

**Suggested Reading**

**Business Research Methods** by Donald R. Cooper and Pamela S. Schindler: A comprehensive textbook covering all aspects of business research.

**Research Methodology: A Step-by-Step Guide for Beginners** by Ranjit Kumar: A beginner-friendly guide to research methods.

**The Research Methods Knowledge Base** by William M.K. Trochim: An online resource for learning about research methods.

**Financial Intelligence**

**Course Description**

 This course aims to develop students' financial intelligence, enabling them to understand, analyze, and interpret financial information effectively. Students will learn key financial concepts, tools, and techniques used in making sound financial decisions. The course covers financial statement analysis, budgeting, forecasting, investment analysis, risk management, and the ethical considerations involved in financial decision-making, with a focus on their application within the Nigerian financial landscape.

**Learning Outcome**

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

* Understand fundamental financial concepts and principles.
* Analyze and interpret financial statements (balance sheet, income statement, cash flow statement).
* Prepare and manage budgets effectively.
* Forecast financial performance using various techniques.
* Evaluate investment opportunities and make informed investment decisions.
* Assess and manage financial risks.
* Understand the ethical considerations in financial decision-making.
* Apply financial intelligence skills in real-world business scenarios, particularly within the Nigerian context.

**Course Content**

**Introduction to Financial Intelligence**

* The importance of financial intelligence in personal and business decision-making.
* Key financial concepts: Assets, liabilities, equity, revenue, expenses, profit, cash flow.
* The role of financial information in different business functions.
* Introduction to the Nigerian financial system and regulatory environment.

**Financial Statement Analysis**

* Understanding the three primary financial statements: Balance sheet, income statement, cash flow statement.
* Analyzing financial statements using ratios and other techniques (e.g., profitability ratios, liquidity ratios, solvency ratios).
* Interpreting financial statement information to assess financial performance and identify trends.
* Financial statement analysis in the context of Nigerian businesses.

**Budgeting and Forecasting**

* The budgeting process: Preparing operating budgets, capital budgets, and cash flow budgets.
* Forecasting financial performance using various techniques (e.g., trend analysis, regression analysis).
* Budgetary control and variance analysis.
* Budgeting and forecasting in the Nigerian business environment.

**Investment Analysis**

* Time value of money concepts: Present value, future value, annuities.
* Evaluating investment opportunities: Net present value (NPV), internal rate of return (IRR), payback period.
* Risk and return in investment decisions.
* Investment analysis in the Nigerian capital market.

**Financial Risk Management**

* Identifying and assessing financial risks: Market risk, credit risk, operational risk.
* Managing financial risks using various techniques (e.g., hedging, diversification).
* The role of risk management in financial decision-making.
* Financial risk management in Nigerian businesses.

**Financial Decision-Making**

* Making informed financial decisions based on financial analysis and risk assessment.
* The role of ethics in financial decision-making.
* Considering the impact of financial decisions on stakeholders.
* Financial decision-making in the Nigerian context: Cultural and socio-economic factors.

**Advanced Topics in Financial Intelligence (Optional)**

* Financial modeling and valuation.
* Mergers and acquisitions.
* International finance.

**Suggested Reading**

**Financial Intelligence for Managers: A Value Creation Approach** by Nuno Fernandes: Provides a comprehensive overview of financial intelligence for managers.

**Analysis for Financial Management** by Robert C. Higgins: Focuses on financial statement analysis and its application in financial decision-making.

**Essentials of Corporate Finance** by Stephen A. Ross, Randolph W. Westerfield, and Bradford D. Jordan: Covers the core principles of corporate finance.

**International Human Resource Management**

**Course Description**

 This course provides a comprehensive understanding of the complexities and challenges of managing human resources in a globalized and interconnected world. Students will explore the key concepts, theories, and practices of IHRM, including global talent management, cross-cultural communication, international compensation and benefits, global labor relations, and managing diversity in international contexts. The course will also examine the legal, ethical, and cultural considerations that impact IHRM decisions, with a focus on their relevance to the Nigerian business environment and its interactions with the global economy.

**Learning Outcome**

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

* Understand the key concepts and theories of IHRM.
* Analyze the challenges and opportunities of managing a diverse workforce in international settings.
* Develop and implement effective global talent management strategies.
* Design and administer international compensation and benefits programs.
* Manage cross-cultural communication and negotiation effectively.
* Understand the complexities of global labor relations.
* Navigate the legal and ethical considerations of IHRM.
* Apply IHRM principles and practices to real-world scenarios, particularly within the context of Nigerian businesses operating internationally or interacting with multinational corporations.

**Course Content**

**Introduction to International Human Resource Management**

* Defining IHRM: Scope, objectives, and challenges.
* The evolution of IHRM in a globalized world.
* Key drivers of internationalization and their impact on HRM.
* Cultural, economic, legal, and political factors influencing IHRM.
* IHRM and its relevance to Nigerian businesses in the global economy.

**Global Talent Management**

* Planning and forecasting global human resource needs.
* Recruitment and selection of international assignees and local nationals.
* Training and development for a global workforce.
* Performance management in international contexts.
* Career development and succession planning for global talent.
* Talent management challenges and opportunities in Nigeria's international business context.

**International Compensation and Benefits**

* Designing international compensation strategies: Equity, cost of living, and incentives.
* Managing international benefits programs: Health insurance, retirement plans, and other benefits.
* Tax implications of international assignments.
* Compensation and benefits considerations for local nationals in different countries.
* Compensation and benefits trends in the Nigerian context and their alignment with international best practices.

**Cross-Cultural Communication and Negotiation**

* Understanding cultural differences and their impact on communication.
* Developing cross-cultural communication skills: Verbal and non-verbal communication, active listening, and feedback.
* International negotiation strategies and tactics.
* Managing intercultural teams and resolving conflicts.
* Cross-cultural communication challenges and opportunities for Nigerian businesses.

**Global Labor Relations**

* The role of unions in international contexts.
* Collective bargaining and dispute resolution in different countries.
* Managing labor relations in multinational corporations.
* International labor standards and regulations.
* Labor relations dynamics and their impact on Nigerian businesses operating internationally.

**Managing Diversity in International Contexts**

* Understanding diversity dimensions: Gender, race, ethnicity, religion, age, and disability.
* Creating inclusive workplaces in international settings.
* Managing diversity for competitive advantage.
* Diversity and inclusion challenges and opportunities in Nigeria's multicultural environment.

**Legal and Ethical Considerations in IHRM**

* International labor laws and regulations.
* Ethical dilemmas in IHRM: Human rights, environmental sustainability, and corporate social responsibility.
* Corporate governance and ethical conduct in international business.
* Legal and ethical considerations for Nigerian businesses operating internationally.

**Emerging Trends in IHRM**

* The impact of technology on IHRM.
* The changing nature of work and its implications for global talent management.
* Globalization and its impact on IHRM practices.
* The future of IHRM in a rapidly changing world.
* Adapting IHRM strategies to address emerging challenges and opportunities in the Nigerian context.

**Suggested Reading**

Articles and case studies from reputable business journals (e.g., Harvard Business Review, Academy of Management Journal).

Industry reports and publications on IHRM best practices.

**Suggested Textbooks**

**International Human Resource Management** by Peter J. Dowling, Randall B. Dunham, and Marion Festing: A comprehensive textbook covering all aspects of IHRM.

**Global Talent Management** by Lance Berger and Dorothy Berger: Focuses on the strategic management of talent in global organizations.

**Managing Across Cultures by** Richard Steers and Luciara Nardon: Explores the impact of culture on international management practices.

**Ethics & Government in Data Analytics**

**Course Description**

This course explores the ethical and governance challenges presented by the increasing use of data analytics in various sectors, particularly within the Nigerian context. Students will examine the ethical frameworks and legal regulations relevant to data collection, storage, analysis, and use. The course will cover topics such as data privacy, security, bias, transparency, accountability, and the societal impact of data-driven decision-making. Students will develop critical thinking skills to analyze ethical dilemmas and formulate responsible data governance strategies. The course will also examine the specific legal and regulatory landscape related to data in Nigeria.

**Learning Outcome**

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

* Understand the ethical principles and frameworks relevant to data analytics.
* Identify and analyze ethical dilemmas in data-driven decision-making.
* Evaluate the societal impact of data analytics and its potential biases.
* Understand the legal and regulatory landscape governing data in Nigeria.
* Develop and implement data governance strategies that promote ethical and responsible data practices.
* Analyze case studies of ethical breaches and best practices in data analytics.
* Advocate for ethical data practices and contribute to the development of responsible data governance frameworks.
* Apply ethical considerations and legal frameworks to real-world data analytics projects in the Nigerian context.

**Course Content**

**Introduction to Data Ethics**

* Defining data ethics: Key principles and frameworks.
* The ethical implications of data collection, storage, analysis, and use.
* Historical and contemporary examples of ethical breaches in data-driven contexts.
* The importance of ethics in building trust and ensuring responsible data practices.

**Data Privacy and Security**

* Concepts of data privacy and security.
* Legal and regulatory frameworks for data protection in Nigeria (e.g., NDPR).
* Data anonymization and de-identification techniques.
* Cybersecurity risks and mitigation strategies.
* Ethical considerations in data sharing and access.

**Bias and Fairness in Data Analytics**

* Sources of bias in data and algorithms.
* The impact of bias on decision-making and societal outcomes.
* Techniques for detecting and mitigating bias in data analytics.
* Fairness metrics and their application in evaluating algorithms.

**Transparency and Accountability**

* The importance of transparency in data-driven decision-making.
* Explainable AI and interpretable machine learning.
* Accountability frameworks for data analytics.
* Communicating data insights responsibly and transparently.

**Data Governance**

* Principles of data governance.
* Developing a data governance framework.
* Roles and responsibilities in data governance.
* Data quality management and data lifecycle management.
* Implementing data governance policies and procedures.

**Societal Impact of Data Analytics**

* The impact of data analytics on various sectors (e.g., healthcare, finance, education).
* The role of data analytics in addressing social challenges.
* The potential for data analytics to exacerbate inequalities.
* The ethical implications of using data for surveillance and social control.

**Legal and Regulatory Landscape of Data in Nigeria**

* Overview of data protection laws and regulations in Nigeria (NDPR and other relevant legislation).
* Sector-specific regulations related to data (e.g., financial data, health data).
* Compliance requirements for data analytics projects.
* Legal implications of data breaches and ethical violations.

**Case Studies and Best Practices**

* Analysis of real-world case studies of ethical breaches and best practices in data analytics.
* Discussion of ethical dilemmas and their resolution.
* Development of ethical guidelines and best practices for data analytics in the Nigerian context.

**Suggested Reading**

**Big Data Ethics: Building Trust in Data** by O'Reilly Media.

**Ethics and Data Science** by Mike Loukides, Hilary Mason, and DJ Patil.

**The Nigerian Data Protection Regulation (NDPR)**.

Relevant articles and reports on data ethics and governance.