F-7-16

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| **Unit Code:** | BSD 411 |
| **Unit Title:** | Business Intelligence and Analytics |
| **Pre-requisites** | BDM 221: Data Science<br>BDM 121: Database Management Systems |
| **Program(s):** | BBIT Y4S1 |
| **Lecturer Name:** | Mr. Daniel Njeru |
| **Lecturer Contacts:** | Email: daniel.njeru@zetech.ac.ke Phone No: 0719321351 |
| **Consultation time:** | Monday 11:00am-2:00pm in Mang'u Campus or Wednesday 11:00am to 2:00pm in TRC Campus. |

## UNIT DESCRIPTION/ OBJECTIVES OF THE UNIT

To evaluate strategic use of BI technology for strategic advantage, and to provide practical understanding of the BI concepts and technologies in business organizations.

## EXPECTED LEARNING OUTCOMES

By the end of this course, the learner should be able to:

i). Apply theoretical concepts of the course to the decision-making and BI processes and technologies for making appropriate managerial decisions in future real -life situations.

ii). Undertake systematic investigation/research related to the decision support and BI systems and technologies for today's dynamic business environment.

iii). Develop professional attitudes in students in relation to team work, interpersonal communication, and business ethics.

## COURSE SYLLABUS AND SCHEDULE

Modelling and Analysis, Decision Support Systems (DSS) and Business Intelligence (BI): Introduction to BI workshop, its logistics, Decision Making Process: Basic decision making modelling with Planners Labs, DSS Concepts, Methods & Technologies, Data Mining: Decision making with statistical model and business process optimization; Power Pivot: Integrating data for business analysis and data filtering, Artificial Neural Network (ANN) and DM, Text & Web Mining, Data integration & Data cleansing Data Warehousing, Data mining techniques for business purposes, Collaborative Computer Supported Technologies, Knowledge Management and BI, Building interactive reports, Expert Systems & Advanced Intelligent Systems, Building dashboards. Power Tools and Data Visualization tools: PowerBI, Tableau, and Kobo Collect.

| WEEK | TOPIC | SUB TOPIC | DELIVERABLES |
|---|---|---|---|
| Week 1 | Administrative Issues and Introduction | ● Administrative Issues<br>● Introduction to Data, warehousing and Business intelligence Concepts<br>● Definitions<br>● Tools in Data and Data Analytics in the 21st Century<br>● Introduction to Business Intelligence | **Set the course objectives** |
| Week 2 | Introduction to Business Intelligence and Business analytics | ● Market Basket Analysis<br>● Descriptive, Predictive, and Prescriptive Analytics<br>● Analytics Lifecycle: Define, Collect, Analyze, Interpret, and Act<br>● Role of Machine Learning in Analytics<br>● Key Metrics and KPIs for Business Analytics | |
| Week 3 | Data Management Best Practices | ● Data Wrangling<br>● Best Practices to implement BI projects<br>● Data story-telling concepts and use cases<br>● The role of Data Science in business<br>● Introduction to Cloud Based BI Tools<br>● Data Governance and Master Data Management | **Assignment 1** |
| Week 4 | Big Data and BI | ● Definition and Characteristics of Big Data (Volume, Velocity, Variety, Veracity)<br>● Big Data Technologies: Hadoop, Spark, NoSQL Databases<br>● The Role of Big Data in Business Intelligence<br>●<br>● Challenges of Managing and Analyzing Big Data<br>● Big Data Analytics and Use Cases | **Assignment 1 due** |
| Week 5 | Using BI to Improve Organizational Performance | ● The role of business processes<br>● Becoming Data Driven<br>● Defining Winning KPIs<br>● Approach to Implementation (KPIs) | |
| Week 6 | Big Data | ● Big Data Introduction | |

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| | Fundamentals | • Big Data Technology<br>• Drivers and Enablers for Big Data<br>• Hadoop Ecosystems<br>• No SQL Fundamentals | |
| **CAT ONE** | | | |
| Week 7 | Data Visualization and Reporting | • Importance of Data Visualization<br>• Principles of Effective Visualizations (Clarity, Accuracy, Efficiency)<br>• BI Tools for Visualization: Tableau, Power BI, Google Data Studio<br>• Types of Visualizations (Charts, Dashboards, Heatmaps, etc.)<br>Storytelling with Data | **Assignment 2** |
| Week 7 | Hands-on Session | • Hands-on Session, Data Visualization using Power-BI and Tableau | |
| Week 8 | Predictive Analytics and Machine Learning in BI | • Basics of Predictive Modeling<br>• Common Machine Learning Algorithms: Regression, Classification, Clustering<br>• Supervised vs Unsupervised Learning<br>• Use Cases of Predictive Analytics in Business<br>• Challenges and Best Practices for Implementing Predictive Analytics | |
| Week 9 | BI System Development and Implementation | • Phases of BI System Development<br>• BI Tools: Commercial (SAP, Oracle, Microsoft BI) vs Open Source (Pentaho, KNIME)<br>• BI Implementation Strategies and Challenges<br>• Data Integration Techniques<br>• Case Studies of Successful BI Implementations | |
| Week 10 | Case Study Analysis | Business Case Analysis on use of BI Systems in the following sectors:<br>• Education sector<br>• Government Sector<br>• Agricultural Sector<br>• Finance Sector<br>• Non-Governmental Organizations<br>• E-commerce business | |
| | **CAT 2**<br>**Business Case analysis on Application of Big Data in the Industry** | | |
| Week 12 | Ethical and Privacy Considerations in BI | • Data Privacy Regulations: GDPR, HIPAA, and Others<br>• Ethical Issues in Data Analytics and BI<br>• Ensuring Transparency and Fairness in AI-Driven BI<br>• Balancing Data Security with Business Intelligence Needs<br>• Case Studies on Ethical Challenges in BI | |

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| Week 13 | Emerging Trends in Business Intelligence | • Artificial Intelligence and BI<br>• Self-Service BI<br>• Cloud-Based BI Solutions<br>• Augmented Analytics and Automated Insights<br>• Natural Language Processing (NLP) in BI | |
| **REVISION WEEK** | | | |
| Week 15 and 16 | **END OF SEMESTER EXAMS** | | |

**MODE OF DELIVERY**

The course unit will be delivered through blended and Face to Face learning.

**TEACHING/LEARNING METHODOLOGY**

Lectures, Presentations, Case studies, Lab Practical, Library Research, Video Conferencing

**INSTRUCTIONAL MATERIALS**

Course texts, Handouts, Presentation slides, Computer Software and Hardware, Simulation Boards, Virtual Labs, Simulators, LMS.

**ASSESSMENT CRITERIA**

| ***Assessment Type*** | ***Frequency*** | ***Percentage*** |
|---|---|---|
| *Assignment* | *2* | *10%* |
| *CATs* | *2* | *20%* |
| *Final Examination* | *1* | *70%* |
| ***Total*** | | ***100%*** |

**REFERENCE MATERIALS**

**Core Reading Materials for the Course**


1. Albright, S. C., & Winston, W. L. (2020). *Business analytics: Data analysis & decision making*. Cengage Learning.
2. Sharda, R., Delen, D., & Turban, E. (2016). *Business intelligence, analytics, and data science: a managerial perspective*. Pearson.


**Recommended Reference Materials**


1. Sabherwal, R., & Becerra-Fernandez, I. (2013). *Business intelligence: practices, technologies, and management*. John Wiley & Sons.
2. Sauter, V. L. (2014). *Decision support systems for business intelligence*. John Wiley & Sons.
3. Efraim, T. (2011). *Decision support and business intelligence systems*. Pearson Education India.

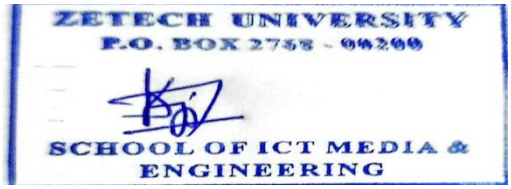

**Course Journals**

1. International Journal of Business Intelligence and Data Mining, ISSN: 1743-8195
2. International Journal of Business Analytics, ISSN: 2334-4547

***Approval for circulation by:***

***Prepared by:*** Daniel Njeru ***Signature*** 

***Approval for circulation by:***

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