CENTRAL UNIVERSITY

SCHOOL OF APPLIED SCIENCES

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

Course Code: ITEC 409 **Credit Hour(s)**:**3** **Course Title**: Decision Support Systems

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Office Hours: Wednesday to Friday Time: 9am to 5pm

COURSE OBJECTIVE

This course will examine the design, development, and implementation of information technology-based systems that support managerial and professional work. Students will understand today's turbulent business environment and describe how organizations survive and even excel in such an environment. Understand the need for computerized support of managerial decision-making and understand an early framework for managerial decision-making

COURSE DESCRIPTION

Information systems classified as "Business Intelligence" provide the foundation for decision support, unveil data patterns about trends and behaviors, allow predictions, and uncover cost savings potentials as well as revenue growth opportunities.

The course establishes a foundation for understanding and analyzing information and information systems in organizations. It also provides an overview of technical and organizational aspects of decision support systems (DSS), including individual, group, and organizational DSS as well as executive information systems (EIS).

The course follows the contemporary understanding of decision support and BI in four parts:
1. Decision-making and decision-support systems
2. Descriptive Analytics (What has happened?)
3. Predictive Analytics (What will happen)
4. Prescriptive Analytics (What should happen)

The primary focus of this course is developing intellectual capabilities related to the design and development of decision support systems and Web-based information systems. Topics include: Supporting Business Decision-Making, Gaining Competitive Advantage with DSS, Analyzing Business Decision Processes, Designing and Developing DSS. Others are Evaluating DSS Architecture, Networking and Security Issues, Implementing and building the various types of DSS, and Evaluating DSS Projects.

LEARNING OUTCOME

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

- Understand today's turbulent business environment and describe how organizations survive and even excel in such an environment
- Understand the need for computerized support of managerial decision-making
- Understand an early framework for managerial decision-making
- Learn the conceptual foundations of the decision support systems (DSS) methodology
- Describe the business intelligence (BI) methodology and concepts and relate them to DSS
- Describe the concept of work systems and its relationship to decision support
- List the major tools of computerized decision support
- Understand the major issues in implementing computerized support systems
- Understand the conceptual foundations of decision-making
- Understand Simon's four phases of decision-making: intelligence, design, choice, and implementation
- Recognize the concepts of rationality and bounded rationality, and how they relate to decision making

COURSE DELIVERY METHODS

To encourage active learning and the achievement of learning objectives, the course will be delivered through a group presentation, interactive teaching, class discussions, and online via Zoom and LMS. A course WhatsApp group for sharing content, collaborative learning, and student-teacher engagement will supplement these methods. All students must subscribe to the class WhatsApp group.

RECOMMENDED TEXTBOOKS:

Sauter, V. L. (2011). *Decision Support Systems for Business Intelligence,* (2nd ed.). Hoboken, NJ: John Wiley & Sons, Inc.

Power, D. (2002). *Decision Support Systems: Concepts and Resources for Managers*

Turban, E., Aronson, J. E. & Liang, T. (2010*). Decision Support Systems and Intelligent Systems,* (7th ed.). India: Prentice-Hall of India Private Limited.

Sharda, D. D. & Turban, E. (2014). *Business Intelligence and Analytics: Systems for Decision Support,* (10th ed.). Boston, MA: Pearson

Power, D. (2013). *Decision Support, Analytics, and Business Intelligence,* (2nd ed.).

ASSESSMENT / EVALUATION TECHNIQUES

There will be a written test and assignments. The course requires that students in small groups (2-3 students) analyze a real-world DSS/EIS case. For the assignment, each must hand in a written report (approx. 3000 words) and make an oral presentation.

Mid-semester test will be conducted at the end of December 2024.

The final project will be presented before the revision week.

Then three (3) hours of internal closed book examination.

Evaluation is comprised of:

Class Attendance	5%
Mid-Semester Test	35%
End of Semester Exam	60%
TOTAL	**100%**

GRADING POLICY AND SCHEME

Continuous Assessment (40%)

End-of-semester examination (60%)

Kindly refer to the Central University Undergraduate Student Handbook available on the school website for the grading system, bases for incomplete grades, and bases of grade appeals.

EXAMINATION / ACADEMIC INTEGRITY OTHER POLICIES

There will be a midterm and final exam to check on your learning progress. An exam is to be completed entirely on your own, without discussion among your teams/groups. The midterm and final exams are based on content from the Textbook. Only the Final exam will be proctored, so Students will work on it in a certain period of time under supervision

Please refer to the Central University Undergraduate Student Handbook available on the school website.

COURSE CONTENTS AND SCHEDULE

Session	Topic	Concepts	Learner-centered Activities
1.	Course Overview: Decision Support & Analytics	• Today's turbulent business environment and how organizations survive and even excel in such an environment • The need for computerized support of managerial decision-making • Understand an early framework for managerial decision-making	**Lectures**
2.	Decision Support System & Business Intelligence	• Describe the business intelligence (BI) methodology and concepts and relate them to DSS • Describe the concept of work systems and its relationship to decision support	Lectures
3.	Decision Support System & Business Intelligence	• List the major tools of computerized decision support • Understand the major issues in implementing computerized support systems	**Assessment Task 1** a. Assignment 1 ERD Diagram

4.	Decision Making, Systems, Modelling, And Support	• the conceptual foundations of decision-making • Simon's four phases of decision-making: intelligence, design, choice, and implementation • Recognize the concepts of rationality and bounded rationality, and how they relate to	
5.	Decision Support Systems Concepts, Methodologies, And Technologies: An Overview	• Possible decision support system (DSS) configurations • The key differences and similarities between DSS and business intelligence (BI) systems • Describe DSS characteristics and capabilities	
6.	Big Data	• understand the underlying technologies of big data • understand technologies to analyze large amounts of unstructured data • explain the use of big data technologies for text and web mining	
7.	MID-SEMESTER EXAMINATION	**Mid-Semester Assessment Task** Review Topics 1-6 Take Midterm Exam	
8.	Techniques for predictive Modelling	• understand the difference between SVM and ANN • understand the basic concepts of neural networks • ability to define the difference between predictive modelling and extrapolation	
9.	Model-based decision making	• Understand the underlying concepts of model-based decision-making • Understand a linear programming model for utilizing its information content	**Assessment Task 2** Team project: work assignments
10.	MODELING AND ANALYSIS	• The basic concepts of management support system (MSS) modelling • How MSS models interact with data and the user • Some different, well-known model classes • How to structure decision-making with a few alternatives	
11.	Decision Support System Development	• The concepts of systems development. • The phases of SDLC. • Understand which factors lead to DSS success or failure. • Describe the three technology levels of DSS. • Understand the learning process involved in DSS development.	
12.	Emerging Trends in Business Analytic	• Understand the utility of social media analytics • Security and privacy concerns around social media analytics • Explain the use of previously discussed technology for social media analytics	
13.	Revision		
14.	End-of-semester examinations		
15.	End-of-semester examinations Examination Break		