



Course description:

This course aims to provide students with suitable skills for understanding the decision-making process, systems modeling and support, categorization of problem-solving technique and data management. Various models of managerial problems are introduced, such as: linear programming models, simulation models, heuristics and forecasting models. Decision support system construction methods and software are also introduced. In addition, data mining processes and techniques are presented.

Aims of the course:

1. Develop an understanding of basic decision support principles, theories and concepts.
2. Prepare students to use the tools of decision support systems.
3. Enhance the habit of reading critically from a variety of sources, to gain information about the different types of decision making problems.
4. Produce learners who are aware of and able to critically and reflectively engage in ethical issues regarding the role of various decision making problems.
5. Learn more sophisticated decision making problems and to answer raised questions in a systematic way.

Intended Learning Outcomes: (ILOs)

A. Knowledge and Understanding

- A1. Concepts and Theories:** Understand the basics of decision support systems and how they are used to make business related decisions.
- A2. Contemporary Trends, Problems and Research:** Comprehend the meaning of problem solving.
- A3. Professional Responsibility:** Use verbal and graphical methods to analyze business problems and decision support system tools to solve them.

B. Subject-specific skills

- B1. Problem solving skills:** Recognize the structuring type of a problem, define the appropriate decision model.
- B2. Modeling and Design: Measuring output efficiency using using various criteria.**
- B3. Application of Methods and Tools:** Select and use appropriate tool(s) that support making the best possible decision(s) in a given situation.

C. Critical-Thinking Skills

- C1. Analytical skills:** Assess factors that determine the type of decision problem and factors that can be used to select a certain decision support system.
- C2. Strategic Thinking:** Formulate plans designed to handle different decision problems where optimal or satisficing decisions are made.
- C3. Creative thinking and innovation:** Devise innovative solutions, thinking in analyzing the different business conditions.

D. General and Transferable Skills (other skills relevant to employability and personal development)

- D1. Communication:** Effectively communicate in the field of decision support systems by conducting discussions and participating in class, asking questions intended to encourage the exchange of ideas.
- D2. Teamwork and Leadership:** Fostering an ability to work together in teams, engaging in group work,

and to develop skills motivating others to accomplish goals.

Course structures:

Week	Credit Hours	ILOs	Topics	Teaching Procedure	Assessment methods
1,2	6	A1	Introduction to decision support systems and business intelligence	Lecturing	Class participation
3	3	A1,A2,A3	Decision-making: Introduction , definitions and models	discussions	Homework
4	3	A1,A2,A3,B1	Phases of decision making process		Quizzes
5	3	A1,A2,A3,B1,B2	Decision support system configurations and description		presentations
6	3	A1,A2,A3,B1,B2	DSS characteristics, capabilities and classifications		
7	3	A1,A2,A3,B1,B2	Components of DSS		
8	3	A1,A2,A3,B1,B2, B3	Management support systems modeling and structure of mathematical models for decision support		
9	3	A1,A2,A3,B1,B2, B3	Certainty, uncertainty and risk		
10	3	A1,A2,A3,B1,B2, B3, C1, C2, C3	Optimization, sensitivity analysis, what-if analysis and goal seeking		
11	3	A1,A2,A3,B1,B2, B3, C1, C2, C3	Decision analysis with decision tables and decision trees		
12	3	A1,A2,A3,B1,B2, B3, C1, C2, C3, D1, D2	Data mining concepts and application		
13	3	A1,A2,A3,B1,B2, B3, C1, C2, C3, D1, D2	Data mining process and methods		
14	3	A1,A2,A3,B1,B2, B3, C1, C2, C3, D1, D2	Text and web mining		
15	3	A1,A2,A3,B1,B2, B3, C1, C2, C3, D1, D2	Data warehousing		

References:

A. Main Textbook:

- Decision Support Systems and Intelligent Systems, Turban, Aronson, and Liang, 9th edition, 2011, Prentice Hall



B. Supplementary Textbook(s):

- Decision Support Systems In the 21st Century, George M. Marakas, 2003, 2nd edition, Prentice Hall.
- Decision Support System, V.S. Janakiraman, K. Saukesi, 2004, Prentice Hall of India.

Assessment Methods:

Methods	Grade	Date
Fist Exam	20	
Second Exam	20	
Presentation	10	
Final Exam	50	

