

MS3261: BUSINESS MODELING WITH SPREADSHEETS

Effective Term

Semester B 2024/25

Part I Course Overview

Course Title

Business Modeling with Spreadsheets

Subject Code

MS - Department of Decision Analytics and Operations

Course Number

3261

Academic Unit

Department of Decision Analytics and Operations (DAOS)

College/School

College of Business (CB)

Course Duration

One Semester

Credit Units

3

Level

B1, B2, B3, B4 - Bachelor's Degree

Medium of Instruction

English

Medium of Assessment

English

Prerequisites

Nil

Precursors

Nil

Equivalent Courses

Nil

Exclusive Courses

GE2255 Solving Business Problems with Spreadsheet Modeling
CB2011 Solving Business Problems with Spreadsheet Modeling
CB2203 Data-driven Business Modeling

Part II Course Details

Abstract

Spreadsheet is a powerful tool for business analysis. This course aims to develop students' ability to formulate, analyse and solve business problems using spreadsheet modeling. Real problems that companies encounter on a day-to-day basis are presented, with the aim of helping students derive applicable principles and link principles to practice. The goal of the course is to train students to become effective modellers who can build sound models to solve business problems in various functional areas of business.

Course Intended Learning Outcomes (CILOs)

CILOs		Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	understand managerial problems, collect relevant data, and analyse the data	20	x		
2	build sound models for the managerial problems using spreadsheets	30		x	
3	select appropriate solution method and implement the analysis for the spreadsheet models	30		x	
4	validate the results obtained from spreadsheet models, and communicate and explain the analysis and findings logically	20		x	x

A1: Attitude

Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability

Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

A3: Accomplishments

Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

Learning and Teaching Activities (LTAs)

LTAs		Brief Description	CILO No.	Hours/week (if applicable)
1	Lectures	In the lectures, students learn the concepts of modeling, formulation of managerial problems in various functional areas, and tools in spreadsheet modeling. They will be provided with opportunities for peer interactions in the lectures.	1, 2, 3	

2	Computer-based laboratories	Hands-on experience with the techniques and problem solving activities based on real world business problems. The laboratory sessions consolidate and supplement what the students learn in lectures.	1, 2, 3	
3	Homework assignment	The assignment is designed to familiarize students with the practice of problem formulation, modeling, analysis, solution design with appropriate tools, and validation of the results.	1, 2, 3, 4	

Assessment Tasks / Activities (ATs)

ATs		CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Homework Assignment	1, 2, 3, 4	10	
2	Quizzes	1, 2, 3	30	

Continuous Assessment (%)

40

Examination (%)

60

Examination Duration (Hours)

2

Assessment Rubrics (AR)**Assessment Task**

Homework Assignment

Criterion

The homework assignments are designed to help students practise their problem-solving skills and obtain hands-on experience using spreadsheet modeling tools.

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Basic

Failure (F)

Not even reaching marginal levels

Assessment Task

Quizzes

Criterion

The quizzes are designed to assess students' reading, understanding of a particular problem situation, independent thinking, reasoning, and application of appropriate spreadsheet skills to obtain an accurate solution.

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Basic

Failure (F)

Not even reaching marginal levels

Assessment Task

Examination

Criterion

The examination covers all topics of the course. It is designed to assess students' understanding on the concepts of spreadsheet modeling, and their ability to apply them to solve business problems.

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Basic

Failure (F)

Not even reaching marginal levels

Part III Other Information

Keyword Syllabus

Introduction to Spreadsheet Modeling

The Spreadsheet Modeling Process. A systematic approach (discover, diagnose, design and deliver) for exploratory spreadsheet modeling.

Relationship Analysis

Structural “what-if” analyses. Analysis using scenario manager and goal seeker. Break-even analysis.

Optimization with Excel Solver

Problem formulation. Use of solver. Sensitivity Analysis. Applications includes investment problem, inventory problem, optimal product mix, workforce scheduling, assignment problem, transportation problem, etc.

Business Analysis through Excel Simulation

Monte Carlo simulation. Replication using datatable. Random number generation. Applications include production planning, hotel overbooking, gambling game, queueing, etc.

Project Scheduling

Critical path method. PERT.

Reading List

Compulsory Readings

Title	
1	B. Render, R.M. Stair Jr., and N. Balakrishnan, “Managerial Decision Modeling with Spreadsheets,” 3rd edition, 2014, Prentice Hall.

Additional Readings

Title	
1	Wayne L. Winston. Microsoft Excel 2013: Data Analysis and Business Modeling. Microsoft Press, 2014.