

CB2011: SOLVING BUSINESS PROBLEMS WITH SPREADSHEET MODELING

Effective Term

Semester A 2022/23

Part I Course Overview

Course Title

Solving Business Problems with Spreadsheet Modeling

Subject Code

CB - College of Business (CB)

Course Number

2011

Academic Unit

Management Sciences (MS)

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

MA2172 Applied Statistics for Sciences and Engineering or equivalent

Equivalent Courses

Nil

Exclusive Courses

MS3261 Business Modeling with Spreadsheets

GE2255 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 to non-specialists	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.

Teaching and Learning Activities (TLAs)

	TLAs	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**

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-)

Strong evidence of original thinking; good organization, capacity to analyse and synthesize; superior grasp of subject matter; evidence of extensive knowledge base and familiarity with literature. Clearly and correctly states most critical points and important findings of the project. Excellent presentation skills.

Good (B+, B, B-)

Evidence of original thinking, some evidence of critical capacity and analytic ability; reasonable understanding of issues; evidence of familiarity with literature. Clearly and correctly states some critical points and important findings of the project. Good presentation skills.

Fair (C+, C, C-)

Little evidence of original thinking, little evidence of critical capacity and analytic ability; reasonable understanding of issues. Correctly states some critical points and some of the findings of the project. Average presentation skills.

Marginal (D)

Very little evidence of original thinking, critical capacity, and analytic ability but shows marginal understanding of subject matters and issues and states a few critical points and findings of the project. Below average presentation skills.

Failure (F)

Very little evidence of familiarity with the subject matter and issues; weakness in critical and analytic skills. Poor presentation skills.

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-)

Strong evidence of original thinking; good organization, capacity to analyse and synthesize; superior grasp of subject matter; evidence of extensive knowledge base.

Good (B+, B, B-)

Evidence of grasp of subject, some evidence of critical capacity and analytic ability; reasonable understanding of issues; evidence of familiarity with subject matter.

Fair (C+, C, C-)

Some evidence of understanding of the subject; ability to perform basic model building and data analysis.

Marginal (D)

Adequate familiarity with the subject matter; shows marginal ability to perform basic model building and data analysis.

Failure (F)

Little evidence of familiarity with the subject matter; weakness in critical and analytic skills; limited or irrelevant use of literature.

Assessment Task

Written 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-)

Strong evidence of original thinking; good organization, capacity to analyse and synthesize; superior grasp of subject matter; evidence of extensive knowledge base.

Good (B+, B, B-)

Evidence of grasp of subject, some evidence of critical capacity and analytic ability; reasonable understanding of issues; evidence of familiarity with literature.

Fair (C+, C, C-)

Some evidence of understanding of the subject; ability to perform basic model building and data analysis.

Marginal (D)

Adequate familiarity with the subject matter to enable the student to progress without repeating the course.

Failure (F)

Little evidence of familiarity with the subject matter; weakness in critical and analytic skills; limited or irrelevant use of literature.

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 include 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.