MS3111: DATA ANALYTICS WITH EXCEL VBA

Effective Term
Semester B 2024/25

Part I Course Overview

Course Title
Data Analytics with Excel VBA

Subject Code
MS - Department of Decision Analytics and Operations
Course Number
3111

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
CB2240 Introduction to Business Programming in Python

Equivalent Courses
Nil

Exclusive Courses
Nil

Part II Course Details

Abstract

This course aims to provide an introduction to manipulating data in Excel and creating report support systems programmatically using Excel VBA programming language. Students can also use the knowledge learned from this course to develop applications in other areas, such as statistical analysis or financial modelling.

Course Intended Learning Outcomes (CILOs)

	CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Develop computer programs with fundamental programming structures, including assignment statements, variables, logical expressions, and repetitions in VBA.	25	x	x	x
2	Manipulate Excel objects such as ranges, workbooks, and worksheets using VBA programs.	25	x	x	x
3	Create Excel Userforms for simple tasks (such as forms embedded with OK and Cancel buttons) and complex tasks (such as selecting multiple items from a Listbox control).	25	x	x	x
4	Design and develop Excel reporting applications using VBA and Python to supplement Excel.	25	x	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	Students will learn the programming logic and demonstrates VBA.	1, 2, 3, 4	

2	In-Class Activities	Students will be asked to create VBA for straightforward but realistic business problems to reinforce the logic and syntax taught. Through these in-class exercises, the lecturer can identify the common issues that the students have and give more elaboration as needed. The students can also find out the kinds of mistakes that they have made and learn how to correct them.	1, 2, 3, 4	
3	Individual Practices	Students will tackle these complex business-related problems as out-of-class assignments. A key to successful computer programming is to develop a logical solution for a complex, realistic problem and then turn the solution into a useable program. The activity is a time-consuming process that is impossible to do in class. Students may work in small groups to discuss the problems and develop a solution, but create the program individually.	1, 2, 3, 4	

4	Application Development	Students will need to develop one such innovation for a problem they have encountered in other modules or for a scenario specified by the lecturer. The ultimate aim of the course is to provide students with the specialist knowledge and training to create a report support system. The project is a semester-long activity. The students have to submit a proposal in the early part of the semester so that the lecturer can approve the project's scope. The students need to use everything they have learned in this course to create the program. They are encouraged to form small groups to analyze the problems and build the program together. They can always seek help and advice from the lecturer during the semester.	1, 2, 3, 4	

Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Assignment, pop quiz, test	1, 2, 3, 4	35	The exact weighting for each component shall be determined by the course examiner and to be announced to students at the beginning of the course.
2	Project	1, 2, 3, 4	65	

Continuous Assessment (%)

100

Examination (%)

0

Assessment Rubrics (AR)

Assessment Task

Assignment, pop quiz, and test

Criterion
Scores shall be awarded for each assessment task.

Excellent (A+, A, A-)
Demonstrated excellent ability to develop macros and report support system using all EXCEL VBA learned in lectures.

Good (B+, B, B-)
Demonstrated good ability to develop macros and report support system using all EXCEL VBA learned in lectures.

Fair (C+, C, C-)
Demonstrated moderate ability to develop macros and report support system using all EXCEL VBA learned in lectures.

Marginal (D)
Demonstrated essential ability to develop macros and report support system using all EXCEL VBA learned in lectures.

Failure (F)
Failed to demonstrate ability to develop macros and report support system using EXCEL VBA learned in lectures.

Assessment Task
Project

Criterion
Students can design and create an application in Excel VBA to automate a set of routinely performed business report activities.

Excellent (A+, A, A-)
The project report is exceptionally well written and presented. All required elements are included and remarkably well demonstrated. Students show a sophisticated understanding of the course materials.

Good (B+, B, B-)
The project report is well written and presented. All required elements are included and well demonstrated. Students show a good understanding of the course materials.

Fair (C+, C, C-)
The report contains a few errors or is not well organized. Not all required elements are included, and some are not well demonstrated. Students show a limited understanding of the course materials.

Marginal (D)
The project report contains many errors. Many required elements are excluded and not demonstrated well. Students show a limited understanding of the course materials.

Failure (F)
The project report is poorly written and presented. Most of the required elements are excluded and poorly demonstrated. Students do not show an understanding of the course materials.

Part III Other Information

Keyword Syllabus

Programming with Excel VBA
Basic programming syntax; Alternative selection structure; Repetition structures; VBA functions.

Excel User Form
Create and manipulate UserForm controls in Excel.

Working with Excel objects
Workbooks object; Worksheets object; Range object; Chart object; Pivot Table object; Analysis ToolPak; Worksheet functions.

Use Python as a supplement to Excel VBA
Incorporate Python code in Excel VBA for reporting applications.

Reading List

Compulsory Readings

	Title
1	VBA for Modelers, Developing Decision Support Systems with Microsoft Excel, 5th edition, S. Christian Albright. South-Western, 2016

Additional Readings

	Title
1	Excel 2016 Power Programming with VBA, Michael Alexander, John Walkenbach, Richard Kusleika, John Wiley & Sons, 2016.
2	Excel 2016 VBA and Macros, Bill Jelen and Tracy Syrstad, QUE, 2015.
3	Microsoft Excel VBA Programming for the Absolute Beginner, Duane Birnbaum, Course Technology, 2007.
4	Microsoft Excel 2016 Programming by Example: with VBA, XML, and ASP, Julitta Korol. Mercury Learning & Information, 2014.
5	Programming with Microsoft Visual Basic 2015, Diane Zak, Cengage Learning.
6	All of Programming, Andrew Hilton, Anne Bracy, Google Play Books, 2015.
7	Automating Excel with Python, Michael Driscoll, 2021
8	Pyrhon for Excel, Felix Zumstein, O’ Reilly Media, Inc., 2021