2209 MATH100 Course Outline (Tentative)

Subject Code	:	MATH100
Subject Title	:	Linear Algebra
Level	:	2
Credits	:	3
Teaching Activity	:	Lecture 45 hours
Prior Knowledge*	:	Advance mathematics
Class Schedule		

D5	TUE	09:00-11:50	C509
D4	TUE	12:30_15:20	N219
D3	WED	09:00-11:50	C301

Instructor	:	Dr. Yang Wu
Contact Number	:	(853) 88972910
E-mail Address	:	ywu@must.edu.mo
Office	:	A322
Office Hour	:	M,T,TH: 11:50-13:50, W: 12:30-17:30, Or by appointment.

Course Description

This subject aims to train students understanding basic concepts and applications of linear algebra as an important tool for solving complex problems. Students are expected to have a good understanding and basic skills in problem description and problem solving with vectors, matrices, and linear systems.

PROGRAM LEVEL OUTCOME

Upon successful completion of the program students will have:

(a) Apply fundamental knowledge of mathematics, algorithmic principles, computer theory, and principles of computing systems in the modelling and design of computer-based systems that demonstrate an understanding of trade offs involved in design choices.

(b) Analyse a problem, specify the requirements appropriate to its computing solution, design, implement, and evaluate a computer-based system, process, component, or program that satisfies the requirements.

(c) Apply design and development principles in the construction of software systems of varying complexity.

(d) Use current skills, techniques, and tools necessary for computing practice.

(e) Function effectively as a member of a team to accomplish a common goal.

(f) Understand professional, ethical, legal, social, and security issues and responsibilities.

(g) Analyse the local and global impact of computing on individuals, organizations, and society.

(h) Write effectively.

(i) Give effective oral presentations.

(j) Recognize the need for, and an ability to engage in, continuing professional development.

INTENDED LEARNING OUTCOMES

Upon successful completion of this subject, students will be able to:

1. Understand the fundamental ideas of linear algebra.
2. Visualize the geometric interpretation of ideas in linear algebra courses.
3. Understand the importance of linear algebra and its applications in many branches of mathematics

Schedule

Index	Topic	Hours	Teaching Method
1	System of linear equations and matrices Matrices and linear systems, Augmented matrices, Row echelon matrices, Matrix equations, Linear independency, Rank of matrices, Applications	6	lecture
2	Determinants Laplace Expansion, Properties of determinants, Cramer's Rule Exam 1	6	lecture
3	Euclidean Vector Spaces Real vector spaces, Bases and dimension, Subspaces	6	lecture
4	General Vector Spaces Orthogonal vector, Orthogonal bases, Orthogonal matrices, Orthogonal subspaces, Orthogonal transformations Exam 2	6	lecture
5	Eigenvalues and Eigenvectors	6	lecture

	Characteristic polynomials, Eigenspaces, Diagonalizable matrix Inner Product Spaces		
6	Norms, Real inner products, Angles, Euclid space and quadratic forms, Exam 3 Linear Transformations	6	lecture
7	Linear transformations, Matrices of linear transformations, Similarity	6	lecture
8	Review	1	lecture
9	Final Exam	2	

TEACHING AND LEARNING APPROACH

The teaching and learning approach of this subject is to help students know why linear algebra as an important tool for solving complex problems are relevant and useful for engineering and the sciences. Application-oriented thinking is strongly suggested to promote study interest, help students develop right methodology for real problem-solving.

Lectures are conducted by means of explanation and chalk-talk through problem solving and plenty examples of applications from common life as well. Students are encouraged to respond to lecturer's questions through in-class discussion.

ASSESSMENT APPROACH

Assessment method	Percentage
1.Attendance	**5%**
2.Assignment	**10%**
3.Quiz	**20%**
4. Exam1,2 and 3	**30%**
5.Final exam	**35%**
Total	**100 %**

Guideline for Letter Grade:

Marks	Grade

93-100	A+
88-92	A
83-87	A-
78-82	B+
72-77	B
68-71	B-
63-67	C+
58-62	C
53-57	C-
50-52	D
49	F

Required Text Book:

Book title: Linear Algebra and its Applications
Author/Editor: David C. Lay, Steven R. Lay and Judi J. McDonald
Edition: global or 5th edition
Publisher: Pearson
Date: 2016

Notes:

Attendance Students should sign attendance on **We must** at the beginning of each class. Students with **no more than 5** absence can replace the lowest exam by the final exam.

Assignments There will be assignments every week. I collect assignments to check for completion while students should check the posted solutions for correctness.

Quiz Quizzes are given **every week and pop quizzes are given randomly beside the regular quizzes**. Problems in each **regular quiz** are selected from **notes, worksheets** and **assignments** of the previous week. Among all quizzes, 8 most satisfying ones for each student will be counted in the final grade.

Moodle Moodle will be the main platform for communications in this course. Class notes, assignments, solutions will be uploaded to moodle.