American University of Technology
Faculty of Applied Sciences
CSC & IT
SPRING 2018

Course Information (based on Course Catalogue)

Course No.: MAT221	Title: Calculus & Applied Math / Bus
Number of credits: 3	Number of contact hours per week: 3
Pre-requisites: Placement or MAT100	Co-requisites: **ENG020**
Description: This course aims at introducing students to some of the basic mathematical tools of linear algebra, functions, elementary calculus and mathematics of finance, and applying these tools in the fields of economics and business.	

Schedule Information (based on class schedule)

CRN: 20117	Section: A
Days/time class meets: TR 14:00 - 15:15	Class Location (Building & Room): AG 212
Name of Instructor: Dr. Mouhamad Ibrahim Telephone Emails: mouhamad.ibrahim@aut.edu Office location: AD 403	

Course Learning Objectives

1. **Foundational Knowledge Outcomes**
   Upon completing the course, you should be able to:
   - ✓ be familiar with the mathematical terminology
   - ✓ formulate business problems in mathematical terms
   - ✓ understand the mathematical concepts
   - ✓ know basic matrix operations and their application in business
   - ✓ know linear, quadratic, logarithmic, and exponential functions & their business applications
   - ✓ know derivatives and integrals of functions with their business applications
   - ✓ be familiar with graphs and their interpretations

2. **Application Outcomes**
   Students should try out:
   1. Analytical skills through solving problems and undertaking case studies.
   2. Teamwork skills through homework assignments, undertaking case studies, and in class group discussions.
   3. Creative thinking skills through analysis of problems and case studies.
   4. Computer skills through the use of (DERIVE &EXCEL) and the use of Internet.

3. **Integration Outcomes**
   - ✓ Integrate mathematics with business
   - ✓ Relate mathematics to real life problems

4. **Human Dimension Outcomes**
   - ✓ Become more confident about the use of mathematics in practical applications
   - ✓ Improve team interaction skills through class group discussions

5. **Caring Outcomes**
   - ✓ Value the importance of mathematics in life and science
   - ✓ Come to terms with mathematical concepts through applications

6. **Learning-How-to-learn Outcomes**

By the end of the course, the student will be able to

- ✓ research new topics on the subject
- ✓ Read and study effectively

Course Design Components

Course Objectives	Assessment Activities	Learning Activities
1. Foundational knowledge outcomes	case studies, quizzes	group discussions, assignments
2. Application outcomes	Problem solving, case studies	group discussions, assignments
3. Integration Outcomes	case studies, Presentations	group discussions, Projects
4. Human Dimension Outcomes	case studies, Presentations	group discussions, Projects
5. Caring Outcomes	Problem solving, case studies	group discussions, assignments
6. Learning-How-to-learn Outcomes	case studies, Presentations	group discussions, Projects

Course Schedule of Learning and Assessment Activities (based on academic calendar for both TTh, MWF, MW, or WF courses; dates will be provided to you as published by academic affairs office)

Week(s)	Unit Contents	Unit Objective
1 - 2	**Chapter 1**; Linear Equations: Graphs of linear equations, Algebraic solutions of simultaneous linear equations, Supply & demand analysis, National income determination.	We familiarize the student with mathematical terminology. We introduce the concepts of linear equations & their business applications.
3 - 4	**Chapter 7**; Matrices: Basic matrix operations, Matrix inversion, Cramer's rule.	The student will learn how to operate on matrices and how to use them in business problems.
5	**Review**	
6 - 7	**Chapter 2**; Non-Linear Equations: Quadratic functions, Revenue, cost & profit, indices & logarithms, Natural exponential & logarithmic functions.	The student will learn about non-linear equations and how to apply them in business problems.
8	**Chapter 3**; Mathematics of Finance: Percentages, Compound interest, Investment appraisal.	The student will understand the way in which financial calculations are worked out.
9 - 10	**Chapter 4**; Differentiation: Derivative of a function, Rules of differentiation, Marginal functions, Optimization of economic functions.	The student will learn how to use differentiation to maximize the profit and revenue functions, and minimize the cost and time functions.
11 - 12	Applications of Derivative: Graphs of polynomial functions.	The student learns how to sketch graphs of certain functions, and use them to extrapolate properties about the function.
13 - 14	**Chapter 6**; Integration: Indefinite integral, Definite integral.	The student learns about integration and how to use it business problems.

Evaluation Criteria (Total must be equal to 100%)

60-70%	Individual Performance Tasks/Activities	
	- Midterm 30% - Final Exam 40%	
30-40%	Continuous assessment which may involve Group/Team Performance Tasks/Activities/Quizzes	
	- Group Work Assignment 30%	

Required Textbooks

Mathematics for Economics and Business, I. Jacques, Prentice Hall, 4th Edition.

Course Policies *(based on AUT policies and procedures as per Catalogue)*

a. Punctuality: You must in class exactly on time.

b. Attendance policy: It is AUT policy that attendance is mandatory. If a student absents himself/herself for the equivalent of three weeks of classes, he/she must drop the course. Otherwise, he/she receives an "F" on that course.

c. Withdraw from the course: Wednesday May 24, 2018.

d. Homework: Assignments will be given at the end of each section.

f. Office hours: TR: 10:00 - 11:00.

g. Makeup exam policy: No makeup exams.

h. Grading policy: Midterm (30%), continuous assessment (Group Work 30%), final exam (40%).