MAT121: Mathematics for Business

Spring Semester, 2024

Course Details

Course Title	Mathematics for Business
Course Code	MAT121
Credit Hours	3
Pre-requisites	None

Lecture schedule

Section	Days	Time	Room
001 002 003	Wed, Fri	13:00 - 14:30 09:00 - 10:30 10:30 - 12:00	904

Instructor

Instructor	Nimisha Singh
Office	Writing Center, Room 201 (Second Floor)
Consultation Hours	Email for specific day and time, check MySolBridge hours
Email	nimishasingh@woosong.org

Mission Map

Mission Based Goals 	Approximate % of Course Content
Global Perspective	30%
Asian Expertise	20%
Creative Management Mind	10%
Cross Cultural Competence	20%
Social Responsibility	20%
Total	100%

SolBridge Mission & Course Objectives

The prime goal of the course is to deliver the promise of SolBridge. SolBridge has the mission of educating the next generation of Asian Thought leaders. The school aims to instill in our graduates a Global Perspective, Asian Expertise, a solid foundation in Management Knowledge, Cross Cultural Competence and a sense of social responsibility. This course aims to partially fulfill the following elements of Solbridge Mission: Global Perspective, Asian Expertise, Creative Management Mind and Social Responsibility.

This course is about essential mathematics that is prerequisite for taking economics, finance and business in the future. The course will cover linear and non-linear functions, sequences and

series, solving systems of equations using matrices, and the basics of differentiation, along with application of all these techniques. All of these areas are fundamental parts for various business models.

The objectives of this course are:

- To acquire basic skills in analytical mathematical thinking and problem solving.
- To demonstrate a proficiency in the mathematical topics covered in the course and its application.

Learning Outcomes

Following successful completion of the course, the participant would be able to:

- Understanding basic mathematical operations and terminology.
- Solve mathematical problems using learned basic skills.
- Understanding basic mathematical operations used in economics.
- Apply problem solving skills to solve mathematical business economic problems.

Course Outcome – SolBridge Mission Matrix

Course outcomes	Learning level	Course Outcome Statement	AoL competency Goal (code and the brief description)	SolBridge Mission Goals[1]					Assessments
				Global Perspective	Asian Expertise	Creative Management Foundation	Cross Cultural Competence	Social Responsibility	
CO 1	L2	Understanding basic mathematical operations and terminology	N/A	1	0	0	0	0	Assignment Exam
CO 2	L3	Solve mathematical problems using learned basic skills	N/A	2	1	0	1	1	Assignment Exam
CO 3	L2	Understanding basic mathematical operations used in economics	N/A	1	1	0	1	1	Assignment Exam
CO 4	L3	Apply problem solving skills to solve mathematical business economic problems	N/A	2	2	2	2	2	Assignment Exam

[1]*Key: 3 - Imparts Knowledge/Skills, Provides Practice, and Provides Reflection/Experimentation opportunities; 2 – Imparts Knowledge/Skills, and Provides Practice; 1 – Imparts Knowledge/Skills; 0- Does not address*

Teaching Methodology

The Course will be taught as a mixture of lectures and practice exercises, with an emphasis on acquiring practical mathematical skills and its application in Business related calculations.

Course Materials and Readings

The following textbook will be the primary resource for this course. It is available digitally at openstax.org/subjects/math.

Marecek, Lynn & Mathis, Andrea Honeycutt (2020). *Intermediate Algebra 2e*. Openstax. ISBN: 978-1-951693-24-4

The following textbooks will be the Pre-calculus resource for this course.

Abramson, Jay (2014). *Pre-calculus*. Openstax. ISBN: 978-1-947172-06-7

Herman, Edwin & Strang, Gilbert (2020). *Calculus, Volume 1*. Openstax.

ISBN: 978-1-947172-13-5

Assessment Methods

Component	Weight
1. Class Attendance/Participation	20%
2. Homework Assignments	20%
3. Midterm Exam	20%
4. Final Exam	40%
Total	**100%**

Class Attendance (20%)

Class attendance bears 20%. Now is the time to carefully note the points lost for each absence and its potential impact on your final grade. Effective participation requires three things on behalf of the student:

Attendance – You cannot participate in class if you do not attend. Non-attendance affects not only your own learning experience but also that of your peers. As such, 100% attendance is expected and required. In the event of an unavoidable absence, e.g. through serious illness, students should provide documentary evidence of the reason for their absence to their academic coordinator. Students are solely responsible for the make-up of any missed classes and for obtaining any class materials or assignments which they may miss. The instructor may fail any students on the grounds of unacceptable attendance.

Effective Listening – Effective listening is an important managerial skill and students will be expected to demonstrate this ability during the class. When the instructor or another student is speaking students should act in a considered and respectful manner, taking on board the point that has been made before contributing further. Disruptive or disrespectful behavior will not be tolerated in the classroom.

Thoughtful Contribution – Students can also demonstrate effective participation through constructive commentary or relevant questioning of the material. A good-quality comment is one which is relevant to the material being discussed and which adds to the learning of those in the class. Equally, do not be afraid to ask questions to clarify material.

Students should however be wary of making irrelevant comments or simply participating for the sake of participating. Inappropriate contributions may negatively impact your final grade.

Homework Policy – Homework will be assigned as needed. You should work alone or with your study group and submit fully worked solutions. All submitted work should be your own work, evidence of plagiarism will award you a zero for the assignment.

Grading – The SolBridge grading system is based on a curve with the distribution as follows:

Grade	Allocated Percentage
A0 – A+	30
B0 – B+	40
D0 – C+	30
F	Grade below minimum course pass

The percentage distribution per grade is calculated per class section after the number of failures have been removed from the class roll. Grades are allocated according to class rank. The minimum passing grade for this course is 50%.

Weekly Plan

Week #	Week Outcome At the end of the week, the student will be able to…	Topic	Pre-class Preparation	Post-Class work	In-Class activities or assignments due, etc.
1	Understand the basics of mathematical operations	Arithmetic review	None	Based on diagnostic test result, students can evaluate the necessity of attending weekly Math Workshops and attending Tutoring sessions	Diagnostic Test
2	Linear functions of calculating and constructing graphically slopes, intercepts and translations. Understand the calculations for price, cost, revenue and profit for demand and supply.	Linear algebra	Complete a Preview Assignment based on the week's topic	**Homework Assignment 1 based on Week 1 and 2**	Applications of Linear functions and demand and supply in class activities
3	Learn to solve simultaneous equations using elimination and substitution method. Learn application of Break-even point and analysis for demand and supply.	Simultaneous Equations	Complete a Preview Assignment based on the week's topic	Given a list of practice problems to gauge understanding.	Practice exercises based on simultaneous equations. Homework assignment 1 due.
4	Be able to solve a matrix using Gaussian and Gauss-Jordan Elimination methods	Simultaneous Equations	Complete a Preview Assignment based on the week's topic	**Homework Assignment 2 based on Week 3 and 4**	Actively solve matrix elimination in-class
5	Understand the basics of system of inequalities and its application in Linear programming with two variables	Simultaneous Equations	Complete a Preview Assignment based on the week's topic	Given a list of practice problems to gauge understanding.	In-class: Practice exercises based on system of inequalities equations. Homework assignment 2 due.
6	Understand the basics of system of inequalities and its application in Linear programming with multiple variables	Simultaneous Equations	Complete a Preview Assignment based on the week's topic	**Homework Assignment 3 on Simultaneous equations**	In-class: Practice exercises on linear programming
7	Be able to solve matrices questions using basic operations of addition, subtraction and multiplication	Matrices	Complete a Preview Assignment based on the week's topic	Given a list of practice problems to gauge understanding.	In-class: Solving matrices using the different operations. Homework assignment 3 due.
8	**Midterm exam course content review and Exam**				

9	Understand arithmetic and geometric sequence and series concepts and calculating for terms, general term formula, partial sum and convergence. Understand and write Sigma notation for each type.	Sequence and series	Complete a Preview Assignment based on the week's topic	**Homework assignment 4 on Sequence and series**	In-class problem solving of sequence and series
10	Understand and solve polynomial functions and quadratic equations	Non-linear algebra	Complete a Preview Assignment based on the week's topic	Given a list of practice problems to gauge understanding.	Gauge understanding through active group solving. Homework assignment 4 due.
11	To be able to solve exponential functions by graphing, reducing and solving the formula	Non-linear algebra	Complete a Preview Assignment based on the week's topic	**Homework assignment 5 on Non-linear algebra**	Gauge understanding through active group solving.
12	Understanding and solving limits and slope of a curve	Differentiation (Pre-calculus)	Complete a Preview Assignment based on the week's topic	Given a list of practice problems to gauge understanding.	In-class: Practice exercises and group discussion to gauge understanding. Homework assignment 5 due.
13	Understanding and applying the derivative rules of power, sum and constant to a polynomial function. First order derivatives and turning points determination graphically and algebraically.	Differentiation (Pre-calculus)	Complete a Preview Assignment based on the week's topic	Given a list of practice problems to gauge understanding.	In-class: Practice exercises and group discussion to gauge understanding
14	Second order derivatives and inflection points determination graphically and algebraically. Using derivatives to solve cost, revenue and profit in business application models	Differentiation (Pre-calculus)	Complete a Preview Assignment based on the week's topic	Given a list of practice problems to gauge understanding.	In-class: Practice exercises and group discussion to gauge understanding
15	**Final exam course content review and Exam**				

Ethics

Plagiarism

SolBridge considers plagiarism as a serious breach of professional ethics. Plagiarism will not be tolerated in any form at SolBridge. Penalties can be as severe as expulsion from the university. To avoid plagiarism, it essential to always do your own work. Consulting with other students is acceptable and encouraged, but any work submitted must be your own.

In this class, the rules are:

1. The first instance of plagiarism will result in a "zero" for the assignment in question, and a report will be filed with disciplinary officer.
2. The second instance of plagiarism will result in a fail grade for the entire course, and a report will be filed with disciplinary officer.
3. The third instance will result in institutional-level disciplinary action which could include expulsion from the school.
4. The instructor will report each instance of plagiarism, academic dishonesty and violation of school disciplinary rules to the disciplinary officer.

Copying Textbooks, copyrighted materials and academic dishonesty

Copying Textbooks and other copyrighted materials without permission of publisher or author is tantamount to theft. Therefore, students are expected to purchase the prescribed books and other materials from the Woosong Bookstore.

- Students using copied versions of books without permission will be asked to leave the classroom.
- In addition, such students will get "zero" participation points and any other penalties as levied by the instructor.

Academic Dishonesty includes but not limited to: (a) cheating during examinations, (b) obtaining/ providing information for reports, assignments and examinations by fraudulent means, and (c) false representation of others' effort as one's own.

Some examples of academic dishonesty are: copying from other students during examinations; copying material from other students' reports/ assignments and submitting the same as one's own report; creating fictitious interview materials for assignments or reports.

Generative Artificial Intelligence (AI) Usage Policy

AI Problem Solving Tools

DO NOT USE The use of Generative AI tools (such as ChatGPT, Bard, Bing, CoPilot, AlphaCode, etc) is NOT permitted in this course. Any assignments submitted using AI tools will be considered as a form of plagiarism.