Course Outline

MA 216 Calculus for Social Science I

Semester 2/2020 (January 20 - May 19, 2021)

Number of credits: 3 credits

Lecture Time: **Section 046401:**Tuesday and Thursday, 09.30AM – 11.00AM
Section 046402: Tuesday and Thursday, 08.00AM – 09.30AM

Lecture Venue: **Online learning platform: B.E.-Moodle, MS-team, Line Group**

Instructors: Assistant Professor Dr. Saifon Chaturantabut

Email: saifon@mathstat.sci.tu.ac.th

Office hours: by appointment

Course Description:

Limits and continuity of one variable functions, derivatives of algebraic functions and transcendental functions, implicit differentiation, higher order derivatives, Roll's theorem, the mean value theorem, applications of derivative for determining limits and maximum and minimum of functions, differentials and its applications, antiderivatives, indefinite integrals and integration, definite integrals and application of area solving, functions of several variables, limits and continuity of functions of several variables, partial derivatives, the chain rule, total differential and its applications.

Note : There is no credit for students who are currently taking or have earned credits of MA111 or MA211 or MA218

Prerequisites: -

Course Objectives:

- Introduces calculus and its applications
- Strengthens mathematical skills to prepare for higher-level mathematics
- Raises the appreciation for mathematics and its applications

Recommended Text and Materials:

- Stewart, James, *Calculus***,** 8th ed., Cengage Learning, 2016.
- Anton, H., Bivens, I., and Davis, S. *Calculus*, 9th ed., John Wiley & Sons, Inc., 2009.
- L.J. Goldstein, D.C. Lay, and D.L. Schneider, *Calculus and its Applications*, 12th ed., Prentice Hall, 2010

Course Schedule:

Week	Topic	Activities/Text & Materials/Media
1	Course Overview Limits and Continuity - Limits (An Intuitive Approach) - Computing Limits	Lecture Discussion Practice
2	Limits and Continuity - Limits at Infinity - Limits of Trigonometric Functions - Continuity	Lecture Discussion Practice Quiz
3	Differentiation - The Derivative - Techniques of Differentiation - The Chain Rule	Lecture Discussion Practice Quiz
4	Differentiation - The Chain Rule - Implicit Differentiation	Lecture Discussion Practice Quiz
5	Differentiation - Derivatives of Logarithmic and Exponential Functions - Higher Derivatives	Lecture Discussion Practice Quiz
6	Applications of Differentiation - Linear Approximations and Differentials - L'Hospital's Rule; Indeterminate Forms	Lecture Discussion Practice Quiz
7	Applications of Differentiation - Related Rates - Rolle's Theorem; Mean Value Theorem	Lecture Discussion Practice Quiz
	Midterm Exam	
8	Applications of Differentiation - Interval of Increase and Decrease; Concavity - Relative Extreme; First and Second Derivative Tests - Curve Sketching	Lecture Discussion Practice Quiz

Week	Topic	Activities/Text & Materials/Media
9	- Maximum and Minimum Values of a Function and applications Integration - Antiderivatives; The Indefinite Integral - Integration by Substitution	Lecture Discussion Practice Quiz
10	Integration - The Definite Integral - The Fundamental Theorem of Calculus - Evaluating Definite Integrals by Substitution	Lecture Discussion Practice Quiz
11	Techniques of Integration - Integration by Parts - Integrating Rational Functions by Partial Fraction	Lecture Discussion Practice Quiz
12	Techniques of Integration - Integrating Rational Functions by Partial Fraction - Improper Integrals	Lecture Discussion Practice Quiz
13	Applications of Definite Integral - Area Between Curves	Lecture Discussion Practice Quiz
14	Functions of several Variables - Function of Two or More Variable - Partial Derivatives	Lecture Discussion Practice Quiz
15	Functions of Several Variables - The Chain Rule - Total Differential and Its Applications	Lecture Discussion Practice Quiz
	Final Exam	

Course Evaluation:

Midterm Examination 40% **(Thursday, March 11, 2021; 09.00-11.00 AM)**

Final Examination 50% **(Friday, May 28, 2021; 09.00 AM - noon)**

Quizzes/Assignments/Attendance/Participation 10%

Instruction:

- Class Attendance: Attendance is required and will be taken regularly. All students are required to come to lectures on time and stay for the entire lecture period, dress properly and turn off any communication devices. Should you miss class; your first step should be to get notes from a fellow student and try to understand the material on your own. Only then approach the instructor during the office hours if you have questions. **Students who miss more 30% of classes will not be allowed to take the final exam and will automatically fail (Grade F) the course.**

- Quizzes: There will be ten-minute quizzes held occasionally without prior notification. No make-up quizzes will be given for any reason.

- Make-up Exams: Due to an unexpected illness or accident, the instructor will give a make-up exam to student(s) with legitimate evidences under the instructor's consideration. Student's result will be counted 80% of the total scored toward the missed exam portion.

Class Decorum: If you engage in a behavior that is disruptive to the class, you will be asked to leave the classroom and will automatically receive a score of zero on your weekly quiz and class participation.

ACADEMIC CALENDAR
SEMESTER 2/2020

Semester 2/2020 (January 20 - May 19, 2021)	
Classes Begin	January 20, 2021
Add-drop period	January 25 - 29, 2021
Tuition payment period	January 30 - February 2, 2021
*Makha Bucha Day**	*February 26, 2021*
Mid-term Examination Period	March 10 - 16, 2021
Withdrawal period with "W" on record	March 24 - May 6, 2021
*Chakri Memorial Day**	*April 6, 2021*
*Songkran Day Festival**	*April 12 - 18, 2021*
*Substitution for Visakha Bucha Day**	*April 26, 2021*
*Coronation Day**	*May 4, 2021*
*Royal Ploughing Ceremony Day**	*May 11, 2021*
Last day of class for Semester 2/2019	May 19, 2021
Final exam period	May 20 - June 5, 2021
*Visakha Bucha Day**	*May 26, 2021*
*Queen Suthida's Birthday**	*June 3, 2021*

** Public Holiday, No Classes during this period*