SYLLABUS

Course Code	*Course Num.*	*Course Name*	*Credit Hours*	*Lec.*	*Lab.*	*Tut.*	*Private study*	*Pre-requisites*	*Course Level*	*Teaching Language*
MAT	**103**	**Calculus (2)**	**4**	**3**	**0**	**2**	**5**	**MAT101**	**2**[1]	**English**

A. Course Description

Enhance and reinforce the knowledge of Calculus, gained by the Students in Calculus (1), with other topics which are essential to proceed to next courses in all programs. This course describes the most important ideas, theoretical results, and examples of definite integrals, infinite series, system of linear equations, matrices, determinants and ordinary differential equations. The course includes the essential fundamentals of these topics. The emphasis is on calculations, and some applications are mentioned.

B. Course Outcomes

At the end of this course the student will be able to:

- Be familiar with different techniques of integration.
- Use convergence tests to analyze the behavior of infinite series.
- Use matrices concept and methods of linear algebra.
- Apply techniques for solving first, second and higher order differential equations.

C. References:

Required Textbook

- *Calculus,* R. T. Smith and R. B. Minton, McGraw-Hill, 4th Ed., 2012.
- *Linear Algebra*, Gareth Williams Jones and Bartlett, 6th Ed., 2008.

Other references:

- *Advanced Engineering Mathematics*, Dennis G. Zill, Warren S. Wright, Jones & Bartlett Publishers, 5th Ed., 2014.
- *Linear Algebra,* Schaum's Outline, S. Lipschutz, M. Lipson, McGraw-Hill, 3rd Ed., 2000.

[1] *B.Sc. in Chemistry.*

D. Topics Outline

1. **Definite Integrals:** Review of the Formulas and Techniques, Area Between two Curves, Substitution in Definite Integrals, Integration by Parts, Trigonometric Techniques of Integration, and Integration of Rational Functions Using Partial Fractions.
2. **Infinite Series:** Infinite Series **(**Convergence and Divergence) Integral Test, P-Series Test, Comparison Test, and Limit Comparison Test, Alternating Series, Absolute Convergence, Ratio Test and Root Test, Power Series.
3. **System of Linear Equations, Matrices, and Determinants:** Solving Linear Systems, Matrix Notation, Augmented Matrix of a Linear System, Reduced Echelon Form a Matrix –Gaussian and Gauss Jordan Elimination, Algebra of Matrices, Inverse of a Square Matrix and Determinants.
4. **Ordinary Differential Equations:** First Order Ordinary Differential Equations, Separable Equations and Integrating Factor, Second Order Ordinary Differential Equations.

E. Office Hours

Office hours give students the opportunity to ask in-depth questions and to explore points of confusion or interest that cannot be fully addressed in class.

F. Exams & Grading System

The semi-official dates of the exams for this course are:

- **Midterm 1:** 6th or 7th week.
- **Midterm 2:** 11th or 12th week.
- **Quizzes & Homeworks:** During the semester.
- **Final Exam:** 16th week.

Your course grade will be based on your semester work as follows:

Midterm 1: 20 %	**Midterm 2:** 20 %	**Final Exam:** 40 %
Quizzes, Homework, Attendance & Participation: 20 %		

The grading distribution:

A$^+$	A	B$^+$	B	C$^+$	C	D$^+$	D	F
[95, 100]	[90, 95)	[85, 90)	[80, 85)	[75, 80)	[70, 75)	[65, 70)	[60, 65)	[0, 60)

G. Student Attendance/Absence

Only three situations will be considered as possible excused absences:

- Occurrence of a birth or death in the immediate family will be excused. ("Immediate family" is defined by the University as spouse, grandparents, parents, brother, or sister).
- Severe illness in which a student is under the care of a doctor and physically unable to attend class will be excused. Students are not excused for a doctor's appointment. Do not make appointments that conflict with rehearsals. Notes from the University Health Center will be accepted.

Executive Rules for Study Regulations and Exams
goo.gl/ykm7t3