King Saud University
College of Science
Differential and Integral Calculus
Course Syllabus
Second Semester 1443

1. Course General Information:

Course Title: Differential and Integral Calculus	**Course Code:** MATH 203
Course Level: 3	**Course Prerequisite:** MATH 106, MATH 107 **Co-requisites for this course (if any):** None
Lecture Time: 10-11 am or 11-12 am	**Credit Hours:** 4

2. Faculty Member Responsible for the Course:

Name	Rank	Office Number and Location	Office Hours	Email Address
Dr. Aymen Ben Amira	Assistant Professor	Building 4, AA129/2		abenamira@ksu.edu.sa

3. Course Description:

Students are introduced to: Convergence of Sequences and Series, Different types of tests for convergence, Alternating series and its convergence, Power series, Radius and interval of convergence of a Power Series, Maclaurin and Taylor series, Double integrals, techniques of evaluating double integrals, Applications to Area and Volume of bounded Regions, Double integrals in polar coordinates, Triple integrals, Finding mass center of mass and moments of Inertia of plane and solid regions, Line integrals, Green's Theorem, Work done by a force, Divergence, Curl of a vector filed, Path independence of a line integral, Surface integrals, Flux of a force through a surface, Divergence and Stokes theorem.

4. Course Academic Calendar

Week	Basic material to be covered
(1-2)	Introduction to sequences and Series, Convergence and Divergence, Finding sum of a convergent series in certain cases, Basic Comparison test and Limit Comparison test. Integral test and P-Series.
(3-4)	Ratio test and Root test, Alternating series, Power series, Interval and Radius of convergence, Maclaurin Series and Taylor series, Approximating certain irrational numbers and certain integrals using these series.
(5-6)	Double integrals, Reversing the order of the double integral, Double integrals in polar coordinates, Area and volume of bounded regions. Triple integrals.
(7-9)	Mass, Center of mass, Moment of Inertia of planar and solid regions. Use of Cylindrical and Spherical coordinates.
(10-12)	Line integrals, Work done by a force, Path independence of a line integral, Green's theorem. Surface integral and Flux of a force through a surface.
(12-15)	Divergence and Curl of a force, Divergence theorem, use of divergence theorem to find the flux of a force through a closed surface. Stoke's theorem.
(16)	Final Examination

5. Course Objectives:

The main purpose for this course is to introduce the following concepts:

- Series and Sequences their convergence and divergence. Tests of convergence, of series, Power series and its interval of convergence, Developing a function in Maclaurin and Taylor series and applications to approximation.
- Double integral and Triple integrals and techniques of evaluating these integrals and their applications to evaluating area and volume of bounded regions.
- Path integrals, and Green's Theorem, Surface integrals and Flux of a force through a surface.
- Divergence and Curl of a force, Divergence theorem. Application of Divergence theorem for finding flux of a force through a closed surface.
- Stoke's theorem.

6. Course References:

6.1 Textbooks:

1- Calculus, Swokowski, Olinick an Pence, Sixth Edition, PWS Publishing Company, Boston-1992.

7. Methods of Assessment:

Course Assessment	Mark
Class activates (in class quizzes, and homework)	10
Midterm exams I	25
Midterm exams II	25
Final Examination	40
Total	**100**

8. Attendance Policy:

Absence from lectures and/or tutorials shall not exceed 25%. Students who exceed the 25% limit without an accepted medical or emergency excuse shall not be allowed to take the final examination and shall receive a grade of "DN" for the course.