King Fahd University of Petroleum and Minerals
Department of Mathematics & Statistics
Math 102 - Term 161 - Syllabus
Coordinator: Dr. Jamal Hussain Al-Smail

Title Calculus II

Credit 4-0-4

Textbook Calculus: Early Transcendentals, 7th Edition, Metric International Version, by James Stewart, Brooks/Cole (2012)

Description Definite and indefinite integrals of functions of a single variable. Fundamental Theorem of Calculus. Techniques of integration. Applications of the definite integral to area, volume, arc length and surface of revolution. Improper integrals. Sequences and series: convergence tests, integral, comparison, ratio and root tests. Alternating series. Absolute and conditional convergence. Power series. Taylor and Maclaurin series.

Learning Outcomes Upon completion of this course, students should be able to understand:

1. Comprehend the concept of definite and indefinite integrals;
2. Comprehend the concept of Fundamental theorem of calculus;
3. Apply various techniques of integrations;
4. Comprehend the concept of finding area, arc length, surface and volume of solid of revolution;
5. Apply improper integrals and techniques to solve improper integrals;
6. Describe infinite sequence and series and different methods to check for convergence and divergence;
7. Comprehend the representation of a function as a power series;
8. Describe Taylor and Maclaurin series representation of functions.

Grading Policy

Exam I A common, multiple choice exam	**Material:** 5.1 - 6.2	**Place:** TBA	25% (100 points)
	Date: October 25, 2016	**Time:** 5:45-7:45 pm	
Exam II A common, written exam	**Material:** 6.3 - 8.1	**Place:** TBA	25% (100 points)
	Date: December 06, 2016	**Time:** 5:45-7:45 pm	
Final Exam A common, comprehensive, multiple choice exam	**Material:** Comprehensive	**Place:** TBA	35% (140 points)
	Date: January 18, 2017	**Time:** 7:00-10:00 pm	
Online Homework	The web address for online homework is https://www.webassign.net.		5% (20 points)
Class Work	It is based on quizzes, class tests, or other class activities determined by the instructor. Any quiz or test under class activity should be of written type and not of multiple-choice type. The average x (out of 40) of class activities of the sections taught by an instructor must be in the intervals [28,30].		10% (40 points)
Passing Grade	A student must score at least 50% (200 points) to pass the course.		

Exam Questions The questions of the common exams are based on the examples, homework problems, recitation problems, and the exercises of the textbook.

Missing Exam I or Exam II No makeup exam will be given under any circumstance. When a student misses Exam I or Exam II for a legitimate reason (such as medical emergencies), his grade for this exam will be determined based on an existing formula, which depends on his performance in the non-missed exam and in the final exam.

Attendance Attendance is a University Requirement. A DN grade will be awarded to any student who accumulates 12 unexcused absences (lecture and recitation).

Academic Integrity All KFUPM policies regarding ethics apply to this course.

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Pacing Schedule

Week	Date (2016)	Section	Topics
1	September, 18-21	5.1	Areas and Distances
		5.2[(1)]	The Definite Integral
September, 22 National Day Holiday			
2	September, 25-29	5.2	The Definite Integral
		5.3	The Fundamental Theorem of Calculus
3	October, 02-06	5.4	Indefinite Integrals and the Net Change Theorem
		5.5	The Substitution Rule
4	October, 09 -13	6.1	Areas between Curves
5	October, 16-20	6.2	Volumes
		6.3	Volumes by Cylindrical Shells
6	October, 23-27	6.5	Average Value of a Function
		7.1	Integration by Parts
		Exam I	**Date: October 25, 2016; Time: 5:45-7:45 pm Location: TBA; Material [5.1 – 6.2]**
7	Oct, 30 – Nov, 3	7.2	Trigonometric Integrals
		7.3	Trigonometric Substitution
8	November, 06-10	7.4	Integration of Rational Functions by Partial Fractions + Exercise 59
		7.5	Strategy for Integration
November, 13 - 17 Midterm Vacation			
9	November, 20-24	7.8	Improper Integrals (up to end of Example 8)
		8.1	Arc Length
10	Nov, 27 – Dec, 1	8.2	Area of a Surface of Revolution
11	December, 04-08	11.1	Sequences
		11.2	Series
		Exam II	**Date: December 06, 2016; Time: 5:45-7:45 pm Location: TBA ; Material [6.3 – 8.1]**
12	December, 11-15	11.3[(2)]	The Integral Test and Estimates of Sums
		11.4	The Comparison Tests
13	December, 18-22	11.5[(3)]	Alternating Series
		11.6	Absolute Convergence and the Ratio and Root Tests
14	December, 25-29	11.7	Strategy for Testing Series
		11.8	Power Series
15	January, 01-05	11.9	Representation of Functions as Power Series
*	January, 08	11.10[(4)]	Taylor and Maclaurin Series *: Normal Thursday Classes

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Notes: **Students are expected to know the following:**
(1) Formulas 5, 6, and 7 on page 374.
(2) The "Remainder Estimate for the Integral Test". Example 5a and Example 6 are excluded.
(3) The "Alternating Series Estimation Theorem". Example 4 is excluded.
(4) The Maclaurin Series listed in the table on page 762.

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Recitation and Suggested Homework Problems

Sec	Suggested Homework Problems	Recitation Problems	CAS*
5.1	2, 14, 19, 22	3, 20, 23	11
5.2	4, 6, 18, 22, 30, 33, 37, 44, 47, 51, 58, 61, 63	1, 17, 23, 40, 42, 48, 52, 57	13, 31
5.3	2(a,b), 8, 16, 29, 43, 46, 56, 63, 70, 72, 75	13, 44, 48, 57, 74	-
5.4	14, 18, 38, 46, 60	3, 13, 31, 40, 62	47
5.5	19, 23, 38, 39, 59, 62, 86, 90, 91	28, 43, 69, 87	76
6.1	13, 17, 22, 23, 31, 55	4, 12, 52(b)	36
6.2	4, 16, 17, 33, 42, 49, 54	12, 34, 39, 56	37
6.3	4, 12, 19, 22, 38, 45	11, 16, 26, 37, 47	36
6.5	6, 9, 14	4, 13	12
7.1	8, 12, 18, 30, 39, 42, 54, 62	11, 21, 22, 26, 33, 61	44
7.2	2, 10, 27, 41, 50, 58, 64	15, 26, 34, 43	51
7.3	8, 16, 21, 24, 28, 41	11, 27, 30, 34	36
7.4	6, 16, 20, 28, 36, 45, 62	15, 24, 30, 47, 61	55
7.5	6, 22, 23, 32, 52, 67, 73	39, 71, 80	-
7.8	8, 22, 27, 33, 40	1, 2, 7, 30, 34	-
8.1	8, 14, 18, 31, 41	10, 12, 33	21
8.2	10, 11, 14, 15	16, 33	24
11.1	14, 30, 42, 55, 70, 76	37, 44, 74	58
11.2	15, 20, 25, 30, 41, 44, 52, 62, 67	22, 35, 46, 59, 74	12
11.3	6, 10, 20, 30, 40	8, 12, 19, 32	-
11.4	4, 10, 24, 32, 36	6, 13, 27, 45	-
11.5	6, 10, 12, 23, 34	5, 15, 24, 32	22
11.6	5, 11, 18, 21, 28, 32	4, 13, 16, 23, 30, 37	-
11.7	5, 8, 17, 18, 20, 32, 38	14, 23, 24, 31	-
11.8	8, 17, 24, 28, 30	9, 20, 27, 29	-
11.9	4, 9, 14, 16, 28, 40(a,b)	8, 17, 32, 40(c)	-
11.10	12, 20, 33, 49, 54, 60, 67	17, 32, 56, 59, 68	39

***: CAS problems require the use of a technology tool (e.g., graphing calculators or a computer). You are encouraged to do these problems in order to enhance your understanding of the concepts involved.**

Tips on how to Enhance your mathematical skills and Achieve Better grades:

1. First, Consult your instructor immediately whenever you need help.
2. Take notes during classes and study your notes and textbook on the same day.
3. Do each homework assignment immediately.
4. Master the examples and homework problems of each section plus the recitation problems.
5. Try solving the recitation problems before coming to class.
6. When practicing some problems, Time yourself to finish your solution before reading answers. That is, Adapt yourself to the exam environment.
7. Solve some of the review problems at the end of each chapter.
8. Last and most important, Study in the Library.