King Fahd University of Petroleum and Minerals
Department of Mathematics & Statistics
Math 102 - Term 152 - Syllabus
Coordinator: Dr. Ahmet E. Tatar

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. The concept of definite and indefinite integrals;
2. The concept of Fundamental theorem of calculus;
3. Various techniques of integrations;
4. The concept of finding area, arc length, surface and volume of solid of revolution;
5. Improper integrals and techniques to solve improper integrals;
6. Infinite sequence and series and different methods to check for convergence and divergence;
7. Representing a function as power series;
8. 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: Feb 23, 2016	**Time:** TBA	
Exam II A common written exam	**Material:** 6.3 - 8.2	**Place:** TBA	25% (100 points)
	Date: April 05, 2016	**Time:** TBA	
Final Exam A common comprehensive multiple choice exam	**Material:** Comprehensive	**Place:** TBA	35% (140 points)
	Date: check registrar's website	**Time:** check registrar's website	
Online Homework	The web address for online homework is https://www.webassign.net.		5% (20 points)
Class Work	They are 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 the same instructor must be in the intervals [24,30].		10% (40 points)

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 the 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	January, 17 - 21	5.1	Areas and Distances
		5.2(1)	The Definite Integral
2	January, 24 - 28	5.3	The Fundamental Theorem of Calculus
		5.4	Indefinite Integrals and the Net Change Theorem
3	Jan, 31 - Feb, 04	5.5	The Substitution Rule
		6.1	Areas between Curves
4	February, 07 - 11	6.2	Volumes
5	February, 14 - 18	6.3	Volumes by Cylindrical Shells
		6.5	Average Value of a Function
6	February, 21 - 25	7.1	Integration by Parts
		7.2	Trigonometric Integrals
		Exam I	**Date: Feb 23, 2016; Time: TBA Location: TBA; Material [5.1 – 6.2]**
7	Feb, 28 – Mar, 03	7.3	Trigonometric Substitution
		7.4	Integration of Rational Functions by Partial Fractions + Exercise 59
8	March, 06 - 10	7.5	Strategy for Integration
		7.8	Improper Integrals (up to end of Example 8)
March, 13 - 17 Midterm Vacation			
9	March, 20 - 24	8.1	Arc Length
		8.2	Area of a Surface of Revolution
10	March, 27 - 31	11.1	Sequences
11	April, 03 - 07	11.2	Series
		11.3(2)	The Integral Test and Estimates of Sums
		Exam II	**Date: April 05, 2016; Time: TBA Location: TBA ; Material [6.3 – 8.2]**
12	April, 10 - 14	11.4	The Comparison Tests
		11.5(3)	Alternating Series
13	April, 17 - 21	11.6	Absolute Convergence and the Ratio and Root Tests
		11.7	Strategy for Testing Series
14	April, 24 - 28	11.8	Power Series
		11.9	Representation of Functions as Power Series
15	May, 01 - 05	11.10(4)	Taylor and Maclaurin Series
Comprehensive Final Exam (check registrar's website)			

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

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, 26	25, 29	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 problem-solving abilities:

1. Please do all the homework assignments on time.
2. You are urged to practice (but not memorize) more problems than the above lists.
3. You should always try to solve a problem on your own before reading the solution or asking for help.
4. If you find it difficult to handle a certain type of problem, you should try more problems of that type.
5. You should try the recitation problems before coming to class.
6. You are encouraged to solve some of the review problems at the end of each chapter.
7. The practice you get doing homework and reviewing the class lectures and recitations will make exam problems easier to tackle.
8. Try to make good use of the office hours of your instructor.