King Fahd University of Petroleum and Minerals
Department of Mathematics & Statistics

Math 102 – Syllabus

2012-2013 (121)
Coordinators: Dr. Ibrahim Al-Rasasi & Dr. Othman Echi

Title: Calculus II
Credit: 4-0-4
Textbook: Calculus (Early Transcendentals), by James Stewart, 6th edition, Brooks/Cole, 2008

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 Maclarin series.

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Grading Policy:

1. **Exam I:** 25% (100 points), Date: **Wednesday, Oct. 3, 2012.** A common multiple choice exam. **Material:** 5.1-6.2. **Place:** Building 54, **Time:** TBA.
2. **Exam II:** 25% (100 points), Date: **Tuesday, Nov. 20, 2012.** A common written exam. **Material:** 6.3-7.8. **Place:** Building 54, **Time:** TBA.
3. **Class Work:** 15% (60 points).
4. **Final Exam:** 35% (140 points), a **comprehensive** common multiple choice exam. Date**: Wednesday, Jan. 9, 2013 at 7:30 a.m.**

Class Work Average: The average (out of 60) of the Class Work must be in the interval [36, 45].

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 Department policy. Further, the student must provide an official excuse within one week of the missed exam.

Attendance: Attendance is a University Requirement (see p. 38 of the Undergraduate Bulletin 2006-2009.) 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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2012-2013 (121)

Week	Date	Sec.	Topics (27 sections)
1	**Sep.** 1-5	5.1 5.2*	Areas and Distances The Definite Integral
2	**Sep.** 8-12	5.3 5.4	The Fundamental Theorem of Calculus Indefinite Integrals and the Net Change Theorem
3	**Sep.** 15-19	5.5	The Substitution Rule
Sunday, Sep. 23, 2012: National Day (Holiday) ✈			
4	**Sep.** 22-26	6.1 6.2	Areas between Curves Volumes
5	**Sep.** 29 - **Oct** 3	6.2 6.3	Continued Volumes by Cylindrical Shells
Exam I: Wednesday, Oct. 3, 2012; Material: [5.1 – 6.2]			
6	**Oct.** 6-10	6.5 7.1 7.2	Average Value of a Function Integration by Parts Trigonometric Integrals
7	**Oct.** 13-17	7.2 7.3	Continued Trigonometric Substitution
Eid Al-Adha Vacation: Oct. 18-Nov. 2, 2012 ✈			
8	**Nov.** 3-7	7.4 7.5	Integration of Rational Functions by Partial Fractions + **Exercise # 57** ★ Strategy for Integration
9	**Nov.** 10-14	7.8 11.1	Improper Integrals (up to page 514 only, End of Example 8) Sequences (up to page 682 only)
10	**Nov.** 17-21	11.2	Series
Exam II: Tuesday, Nov. 20, 2012; Material: [6.3 – 7.8]			
11	**Nov.** 24-28	11.3 11.4	The Integral Test and Estimates of Sums The Comparison Tests
12	**Dec.** 1-5	11.5 11.6	Alternating Series Absolute Convergence and the Ratio and Root Tests
13	**Dec.** 8-12	11.7 11.8	Strategy for Testing Series Power Series
14	**Dec.** 15-19	11.9 11.1 0**	Representations of Functions as Power Series Taylor and Maclaurin Series (Theorems 8 & 9 are not Included.)
15	**Dec.** 22-26	8.1 8.2	Arc Length Area of a Surface of Revolution
16	**Dec.** 29 **Dec.** 30-31		A Normal Sunday Class **(Last day of classes)** **Final Exam Preparation Break**
Final Exam: Wednesday, January 9, 2013 at 7:30 a.m. (Comprehensive)			

***: Students must know Formulas 5, 6, 7, and 8 in page 369.**

****: Students must know the Maclaurin Series listed in Table I of page 743.**

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Homework and Recitation Problems

Section	Homework Problems	Recitation Problems	CAS*
5.1	2, 12, 18, 20	3, 19, 21	9
5.2	4, 6, 18, 22, 30, 33(b), 37, 47, 54, 57, 61, 70	23, 40, 42, 48, 53, 69	13, 31
5.3	2(a, b), 8, 18, 29, 41, 44, 54, 59, 66, 68, 71	13, 42, 46, 56, 70	-
5.4	14, 18, 38, 44, 58	3, 13, 31, 40, 60	45
5.5	9, 22, 32, 35, 39, 42, 46, 61, 73, 82	17, 38, 44, 68, 81	72
6.1	3, 9, 14, 17, 26, 49, 53	4, 16, 23, 50(a)	36
6.2	4, 16, 17, 36, 44, 58, 60	22, 35, 41, 51	39
6.3	4, 12, 19, 23, 38, 43	11, 16, 26, 37	36
6.5	4, 11, 14	8, 13	12
7.1	8, 12, 18, 26, 35, 38, 50, 58	11, 22, 29, 57	40
7.2	2, 14, 27, 44, 50, 58, 64	15, 26, 33, 43	51
7.3	7, 16, 21, 24, 28, 43	11, 27, 30, 34	36
7.4	6, 16, 20, 28, 36, 45**,** 60	15, 24, 30, 47, 59	54
7.5	6, 22, 23, 32, 52, 65, 75	39, 69, 78	-
7.8	8, 22, 27, 33, 40	1, 2, 6, 30, 34	-
11.1	12, 24, 36, 39, 40, 44, 64	29, 42, 66	48
11.2	9, 14 19, 24, 33, 38, 44, 51, 55	16, 29, 40, 50, 60	6
11.3	6, 10, 20, 28, 36	7, 14, 19, 30	-
11.4	4, 12, 20, 24, 28, 32	6, 13, 27, 45	-
11.5	6, 10, 14, 24, 28, 34	5, 16, 27, 32	21
11.6	6, 11, 18, 21, 26, 30	5, 14, 16, 23, 28, 33	-
11.7	2, 7, 15, 19, 24, 28, 33	17, 22, 34, 38	-
11.8	6, 17, 24, 28, 30	8, 20, 27, 29	-
11.9	4, 7, 15, 17, 26, 38(a, b)	8, 16, 25, 30, 38(c)	-
11.10	9, 20, 25, 33, 48, 55, 61, 68	12, 19, 28, 37, 64	39
8.1	8, 14, 18, 31, 41	10, 12, 33	21
8.2	10, 11, 14, 15, 26	25, 29	24

*** 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. **Do all the homework** assignments.
2. You should always try to **solve a problem on your own** before reading the solution or asking for help.
3. **Try the recitation problems** before coming to class.
4. **Solve** some of the review problems at the end of each chapter.
5. Make good use of the **office hours**.