

**King Fahd University of Petroleum and Minerals**  
**Department of Mathematics & Statistics**  
**Math 102 – Syllabus**  
**2012-2013 (121)**  
**Coordinators: Drs. Al-Rasasi & Echi**  
**Instructor: Kassem Mustapha**

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**Title:** Calculus II  
**Credit:** 4-0-4  
**Textbook:** Calculus (Early Transcendentals), by James Stewart, 6<sup>th</sup> 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.

**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). It is based on quizzes (36 points, around 4 quizzes), homework (16 points) and attendance (8 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 (x out of 60) of the Class Work of the sections taught by the same instructor should 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:**

- A DN grade will be awarded to any student who accumulates 12 unexcused absences (lecture and recitation).
- Any student arrive to the class late by five minutes or more will be awarded "L". Each "2L" will be equivalent to one absent.

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

## Math 102 Syllabus 2012-2013 (121)

Week	Date	Sec.	Topics (27 sections)
1	Sep. 1-5, 2012	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
☪ <b>Sunday, Sep. 23, 2012: National Day (Holiday)</b>			
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
☪ <b>Exam I: Wednesday, Oct. 3, 2012; Material: [5.1 – 6.2]</b>			
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
<b>Id al-Adha Vacation: Oct. 18-Nov. 2, 2012</b>			
8	Nov. 3-7	7.4 7.5	Integration of Rational Functions by Partial Fractions + <b>Exercise # 57 ★</b> 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
☪ <b>Exam II: Tuesday, Nov. 20, 2012; Material: [6.3 – 7.8]</b>			
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 11.10**	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 ( <b>Last day of classes</b> ) <b>Final Exam Preparation Break</b>
<b>Final Exam: Wednesday, January 9, 2013 at 7:30 a.m. (A Comprehensive Multiple Choice Exam)</b>			

\*: 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.

## Math 102 (121)

### 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. 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 problems, 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.