**King Fahd University of Petroleum and Minerals**
**Department of Mathematics & Statistics**
# Math 102 – Syllabus
**2008-2009 (082)**
<u>**Coordinator: Dr. Husain Al Attas**</u>

**Title**:  Calculus II
**Credit**:  4-0-4
**Textbook**:  Calculus (Early Transcendentals), by J. Stewart, 5$^{th}$ edition, Thomson, 2003
**Description**:  Definite and indefinite integrals of functions of a single variable. Fundamental Theorem of Calculus. Techniques of integration. Application 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.

## Grading Policy

1. Exam I: 25% (100 points), a common multiple choice exam. It will be on Tuesday, March 31, 2009.
2. Exam II: 25% (100 points), a common written exam. It will be on Tuesday, May 12, 2009.
3. Class Work: 15% (60 points). It is based on quizzes (around 5 quizzes), homework, or other class activities determined by the instructor. Any quiz or test under class activity should be of written type and not of a multiple choice type.
4. Final Exam: 35% (140 points), a comprehensive common multiple choice exam.

**Class Work Average.** The section average X of the Class Work out of 60 should satisfy

$$X \in [36,45].$$

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

**Missing an Exam**: 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 his average performance. 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).

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

# Math 102 Syllabus
## 2008-2009 (082)
### Coordinator: Dr. Husain Al Attas

| Week | Date | Sec. | Topics (28 sections) |
|---|---|---|---|
| 1 | Fen. 28-March 5** | 5.1 | Areas and Distances |
| | | 5.2* | The Definite Integral |
| | | 5.3 | The Fundamental Theorem of Calculus |
| Thursday March 5, 2009 is a Normal Wednesday Class | | |
| 2 | March 7-11 | 5.3 | The Fundamental Theorem of Calculus (Continued) |
| | | 5.4 | Indefinite Integrals and the Net Change Theorem |
| | | 5.5 | The Substitution Rule |
| 3 | March 14-18 | 5.5 | The Substitution Rule (Continued) |
| | | 5.6 | The Logarithm Defined as an Integral |
| | | 6.1 | Areas between Curves |
| 4 | March 21-25 | 6.1 | Areas between Curves (Continued) |
| | | 6.2 | Volumes |
| | | 6.3 | Volumes by Cylindrical Shells |
| 5 | March 28-April 1 | 6.5 | Average Value of a Function |
| | | 7.1 | Integration by Parts |
| Tuesday, March 31, 2009: Exam I (25%): 5.1-6.2 (A Multiple Choice Exam) | | |
| 6 | April 4-8 | 7.2 | Trigonometric Integrals |
| | | 7.3 | Trigonometric Substitution |
| 7 | April 11-15 | 7.4 | Integration of Rational Functions by Partial Fractions + Exercise #55 |
| | | 7.5 | Strategy for Integration |
| 8 | April 18-22 | 7.8 | Improper Integrals (up to page 536 only, End of Example 8) |
| | | 11.1 | Sequences (up to page 708 only) |
| Midterm Break April 25 to May 1, 2009 | | |
| 9 | May 2-6 | 11.2 | Series |
| | | 11.3 | The Integral Test and Estimates of Sums |
| 10 | May 9-13 | 11.4 | The Comparison Tests |
| Tuesday, May 12, 2009: Exam II (25%): 6.3-11.3 (A Written Exam) | | |
| 11 | May 16-20 | 11.5 | Alternating Series |
| | | 11.6 | Absolute Convergence and the Ratio and Root Tests |
| 12 | May 23-27 | 11.7 | Strategy for Testing Series |
| | | 11.8 | Power Series |
| 13 | May 30-June 3 | 11.9 | Representations of Functions as Power Series |
| | | 11.10*** | Taylor and Maclaurin Series (Remainder Theorem is not included) |
| 14 | June 6-10 | 8.1 | Arc Length |
| | | 8.2 | Area of a Surface of Revolution |
| 15 | June 13-16 | | Review and/or Catching up |
| Final Exam: A Comprehensive Multiple Choice Exam, Date is to be announced | | |

*: Students must know Formulas 4, 5, 6, 7 in page 383.
**: Thursday, March 5, 2009 is a Normal Wednesday Class.
***: Students must know the Maclaurin Series listed in the Table of page 767.

## King Fahd University of Petroleum and Minerals
## Department of Mathematics & Statistics
# Math 102 (082)
# Homework and Recitation Problems

| Section | Homework Problems | Recitation Problems | CAS* |
|---|---|---|---|
| **5.1** | 3, 12, 18, 20 | 2, 21,22 | 9 |
| **5.2** | 1, 18, 23, 27, 34, 37, 52, 68 | 9, 28, 40, 48, 61 | - |
| **5.3** | 2, 8, 27, 42, 50, 53, 61 | 48, 52, 55, 62 | - |
| **5.4** | 8, 13, 34, 35, 54 | 25, 40, 45, 56 | - |
| **5.5** | 12, 22, 36, 43, 60, 65, 80 | 38, 44, 57, 73 | 71 |
| **5.6** | 1(a), 3 | 4 | - |
| | | | |
| **6.1** | 4, 14, 18, 24, 29, 47 | 10, 26, 46 | 33 |
| **6.2** | 4, 12, 36, 43, 49, 58 | 6, 16, 35, 57 | 40 |
| **6.3** | 5, 11, 16, 23, 37 | 12, 19, 26, 38 | 36 |
| **6.5** | 7, 10, 14 | 4, 13 | 11 |
| | | | |
| **7.1** | 8, 12, 16, 28, 35, 46, 52, 58, 63 | 10, 22, 29, 34, 48 | 38 |
| **7.2** | 3, 15, 30, 42, 56, 61 | 10, 38, 45, 48 | - |
| **7.3** | 8, 21, 26, 30, 41 | 5, 12, 28, 34 | 37 |
| **7.4** | 6, 9, 20, 28, 46, 54, 58 | 22, 37, 40, 50, 57 | 52 |
| **7.5** | 14, 23, 32, 52, 59, 69, 70 | 31, 44, 65, 68, 78 | - |
| **7.8** | 2(a, c), 8, 23, 28, 30, 40 | 2(b, d), 22, 37, 59 | - |
| | | | |
| **11.1** | 6, 14, 18, 34, 35, 39, 51, 59 | 12, 25, 32, 58 | 43 |
| **11.2** | 9, 12, 20, 26, 29, 33, 40, 45, 50 | 14, 23, 32, 44, 53 | 5 |
| **11.3** | 8, 10, 19, 24, 25, 30 | 12, 20, 28, 32 | - |
| **11.4** | 4, 12, 24, 27, 32 | 6, 15, 28, 37 | - |
| **11.5** | 4, 10, 14, 24, 27, 32 | 16, 17, 28, 34 | 22 |
| **11.6** | 5, 11, 16, 21, 28, 30, 33 | 4, 9, 24, 26 | - |
| **11.7** | 5, 6, 14, 17, 22, 29, 35, 38 | 8, 18, 23, 31 | - |
| **11.8** | 6, 17, 24, 27, 30 | 8, 20, 29 | - |
| **11.9** | 4, 9, 11, 14, 18, 25, 38(a, b) | 8, 16, 30, 38(c) | - |
| **11.10** | 1, 10, 14, 28, 40, 46, 51, 56 | 18, 30, 48, 52, 60 | - |
| | | | |
| **8.1** | 6, 8, 16, 31, 37 | 12, 20, 29 | 3 |
| **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.