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

# Math 201 – Syllabus

**2012-2013 (122)**

**Coordinators:** Dr. I. Ahmad, Dr. J. Abuihlail and Dr. A. Bonfoh

---

**Title**: Calculus III

**Credit**: 3-0-3

**Textbook**: Calculus (Early Transcendentals), by James Stewart, 6th edition, Brooks/Cole, 2008

**Description**: These courses are designed as an introduction to the fundamental concepts of calculus and analytic geometry. The concepts studied in Math 201 include solid analytic geometry, vectors and surfaces, differentiation of functions of several variables and multiple integrals.

**Prerequisites:** The students must review the material of MATH 001/002/101/102 which is required in the contents of MATH 201

**Grading Policy:**

1. **Exam I**: 25% (100 points), **Date: Tuesday, February 26, 2013**. [ **common exam**.] **Material:** 10.1-12.4. **Place:** Building 54, **Time:** 8:30p.m.-10.30p.m.
2. **Exam II**: 25% (100 points), **Date: Saturday** April 06, 2013. [ **common exam.**] **Material:** 12.5-14.7. **Place:** Building 54, **Time:** 8:30p.m.-10.30p.m.
3. **Class Work**: 15% (60 points). It is based on quizzes (around 5 quizzes), homework, or other class activities determined by the class instructor. Any quiz or test under class activity should be of written type, not in the format of MCQ.
4. **Final Exam**: 35% (140 points), [**comprehensive common exam**.] **Date: Monday**, May 20, 2013 **at** 8:00 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:** 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 9 unexcused absences.

**Academic Integrity:** All KFUPM policies regarding ethics apply to this course. The students are advised to discuss their grievances/problems with course instructor in a respectful manner.

*The course instructor has the right to report a student's misconduct in the class, instructor's office or at the exam site to the chairman's office. The complaint will be forwarded to the Dean of Sciences & the Dean, Student Affairs for appropriate investigation.*

# Math 201 Syllabus

**2012-2013 (122)**

**Note**: *The pace of coverage given in the syllabus is tentative and may be adjusted by each instructor as per need.*

| Week | Date | Sec. | Text Sections (25) |
|---|---|---|---|
| 1 | Jan. 26-30, 2013 | 10.1<br>10.2 | Curves Defined by Parametric Equations<br>Calculus with Parametric Curves |
| 2 | Feb. 02-06 | 10.3<br>10.4 | Polar Coordinates<br>Areas and Lengths in Polar Coordinates |
| 3 | Feb. 09-13 | 12.1<br>12.2 | Three-Dimensional Coordinate Systems<br>Vectors |
| 4 | Feb. 16-20 | 12.3<br>12.4 | The Dot Product<br>The Cross Product + Exer. 43 p.793<br>**(End of Exam I Material)** |
| 5 | Feb. 23-27 | 12.5<br>12.6 | Equations of Lines and Planes<br>Cylinders and Quadric Surfaces<br>**Review for Exam I (up to discretion of instructor)** |
| **Exam I: Tuesday, February 26, 2013; Bld 54, Time: 8.30p.m.-10.30p.m Material: [10.1 – 12.4]** | | | |
| 6 | March 02-06 | 14.1<br>14.2 | Functions of Several Variables<br>Limits and Continuity |
| 7 | March 09-13 | 14.2<br>14.3<br>14.4 | Continued<br>Partial Derivatives<br>Tangent Planes & Linear Approximation |
| 8 | March 16-20 | 14.4<br>14.5<br>14.6 | Continued<br>The Chain Rule<br>Directional Derivatives and the Gradient Vector |
| **Midterm Vacation: March 21-29, 2013** | | | |
| 9 | March 30-<br>April 03 | 14.6<br>14.7 | Continued<br>Maximum and Minimum Values **(End of Exam II Material)** |
| **Exam II: Saturday, April 06, 2013; Bld 54, Time: 8.30p.m-10.30p.m Material: [12.5 – 14.7]** | | | |
| 10 | April 06-10 | 14.8 | Lagrange Multipliers |
| 11 | April 13-17 | 15.1<br>15.2<br>15.3 | Double Integrals over Rectangles<br>Iterated Integral<br>Double Integrals over General Regions |
| 12 | April 20-24 | 15.3<br>15.4 | Continued<br>Double Integrals in Polar Coordinates |
| 13 | April 27-May 01 | 15.6<br>15.7 | Triple Integrals<br>Cylindrical Coordinates (also, relation to rectangular coord.) |
| 14 | May04-08 | 15.7<br>15.8<br>15.8 | Triple Integrals in Cylindrical Coordinates<br>Spherical Coord. (also, relation to rectangular & cylind. coord.)<br>Triple Integrals in Spherical Coordinates |
| 15 | May 11-15 | | **Review/Catch up material (as planned by the course instructor)** |
| **Final Exam: Monday, May 20, 2013 at 8:00 a.m. (Comprehensive Exam)** | | | |

# Homework/Practice Problems: Math 201 (122)

**Note:** Each Class Instructor will announce the Weekly Homework Problems from the following list or other sources as may be determined by him.

| Section | Suggested HW/Practice Problems from the Text |
|---|---|
| **10.1** | 1,3,7,12,24,27,28,33,37 |
| **10.2** | 6,8,14,25,29,36,42,57,61 |
| **10.3** | 9,16,22,29,42,45,56,58,60,67 |
| **10.4** | 3,6,8,12,17, 23.28,31,35,42 |
| **12.1** | 6,10,14,18,21,23,32 |
| **12.2** | 1,4,8,18,24,28,39 |
| **12.3** | 1,2,4,8,10,11,14,17,23,37,41,52 |
| **12.4** | 2,9,12,26,33,36,39,45 |
| **12.5** | 1,3,15,16,17,30,38,51,61,66,70 |
| **12.6** | 2,5,9,11,21-28,29,36 |
| **14.1** | 1,2,6,11,30,32 |
| **14.2** | 3,7,10,11,28,37,39 |
| **14.3** | 1,4,5,18,21,51,66,89,90 |
| **14.4** | 3,13,16,20,24,32 |
| **14.5** | 4,8,16,17,22,28,50,52 |
| **14.6** | 3,5,9,15,23,27,36,38,41,48,59 |
| **14.7** | 1,3,5,11,30,36,40,44,47 |
| **14.8** | 1,4,10,23,25,39,40,44 |
| **15.1** | 3,6,8,12,17 |
| **15.2** | 4,5,8,11,14,19,28,36 |
| **15.3** | 3,5,10,16,23,39,44,46,50,52,56 |
| **15.4** | 1,3,8,10,14,17,21,33 |
| **15.6** | 2,8,10,18,28,32,34 |
| **15.7** | 2,4,6,8,17,20,22,28 |
| **15.8** | 2,4,6,10,18,20,24,26,39 |

**Note**

Students are encouraged to do **Word & CAS** problems which may require the use of a technology tool (e.g., graphing calculators or a computer). These problems enhance understanding of the concepts involved.

**Tips on how to enhance your problem-solving abilities (by compliments of Dr. Al-Rasasi)**

1. Do all the homework assignments on time.
2. Practice (but not memorize) more problems than the above lists.
3. 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. Review the last lecture before coming to class.
6. Solve some of the review problems at the end of each chapter.
7. Practicing homework problems and reviewing the class lectures will make exam problems easier to tackle.
8. Visit your instructor in his office hours. Always bring partial solution of the questions which you want to discuss with your instructor.