Prince Sultan University
Department of Mathematical Sciences
Syllabus
MATH 113
Second Semester 2011-2012 (Term 112)

Course : MATH 113
Title : Calculus II
Instructor : Dr. Younis Zaidan
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Office Hours: Sat/Mon: 12:20 – 1:20, Sun/Tue: 11 – 12, Tue: 9 – 10

Mathematics Department Website: www.psu.edu.sa/math

Course Description:
This course introduces the students to various topics such as the concept of antiderivatives, integrals (definite and indefinite), the fundamental theorem of calculus and applications of definite integrals to find area, volume, arc's length and surface area. Furthermore, the course continues in another direction covering the concept of sequences and infinite series.

Textbook: Calculus: Early Transcendental Functions. 4th Ed. By R. Smith & R. Minton.

Topics of the Course:
- Introduction to Integrals (14 Hours).
- Areas and Volumes (12 Hours).
- Techniques of Integration (14 Hours).
- Sequences and Series. (20 Hours).

Course Objectives:
- Understand integration as the reverse process of differentiation and definite integral as the limit of Riemann sums
- Use different integration methods to evaluate integrals involving algebraic, exponential, logarithmic, trigonometric and Hyperbolic functions
- Apply integration techniques to solve practical problems in science and geometry
- Use methods of numerical integration to evaluate integrals that can not be solved by known methods
- Study the convergence of series using several tests and determine famous infinite sums.

Exams:
- Two major exams will be given during the semester each of which is worth 20% of your total grade.
- A final exam will be given at the end of the term including all the subjects covered during the course. The final exam weighs 40% of your total grade.

Class attendance:

- Students are required to attend all classes starting from the first day of the semester.
- Attendance will be taken at the start of the lecture. If a student enters the classroom **after 5 minutes,** he will be marked **absent.**
- No excuses for missing classes, including medical reasons, are accepted. No makeup quizzes will be given.
- **DN Grade** will be issued to a student who misses 16 classes. This means he cannot enter any more classes or exams. (1^{st} warning: 6 absences, 2^{nd} warning: 11 absences).
- In case a student misses a class, he must contact any one of his classmates to get all information and topics covered of classes he missed.
- From the past experience, **absence** is the biggest reason for failing. So make sure you attend all classes.

Grading Policy:

The class grade is expected to reflect the performance of the student throughout the semester and is based on quizzes, exams, homework, and class participation as follows:

Two major Exams	**40%**
Participation	**5%**
Quizzes & HW	**15%**
Final Exam	**40%**
Total	**100%**

Calculators:
Scientific Calculators are required in this course. Graphing Calculators are not allowed.

Use of Electronic Devices:

Use of electronic devices in the classroom is not allowed (mobile phones, laptops…etc). The only allowed device is the calculator approved by your instructor.

Tips on how to enhance your problem-solving abilities:

- Attend all classes.
- Do all the homework assignments on time. It is impossible to really understand math without solving problems.
- You are urged to practice (but not memorize) more problems than the ones assigned.
- You should always try to solve a problem on your own before reading the solution or asking for help.
- If you find it difficult to handle a certain type of problems, you should try more problems of that type.
- You are encouraged to solve some of the review problems at the end of each chapter.
- The practice you get doing homework and reviewing the class lectures will make exam problems easier and quicker to solve.
- Make good use of the office hours of your instructor.

Course Schedule:

Week	Date	Sec.	Material
1	January 28 – Feb. 1	4.1 4.2	Antiderivatives Sums and Sigma Notation
2	February 4 – 8	4.2 4.3	Sums and Sigma Notation Area
3	February 11 – 15	4.4 4.5	The Definite Integral The Fundamental Theorem of Calculus
4	February 18 – 22	4.5 4.6	The Fundamental Theorem of Calculus Integration by Substitution
5	February 25 – 29	5.1 5.2	Area Between Curves Volumes of Solids: Slicing, Disks and Washers Methods
6	March 3 – 7	5.2 5.3	Volume: Slicing, Disks and Washers Volumes by Cylindrical Shells
7	March 10 – 14	5.4 6.1	Arc Length and Surface Area Review of Formulas and Techniques
	First Major Exam: Monday March 12th 2012 at 4:00 pm from section 4.1 to 5.4		
8	March 17 – 21	6.2 6.3	Integration by Parts Trigonometric Techniques of Integration
	March 24 – 28	**Midterm Vacation**	
9	March 31 – April 4	6.3 6.4	Trigonometric Techniques of Integration Integration of Rational Functions Using Partial Fractions
10	April 7 – 11	6.6 8.1	Improper Integrals Sequences of Real Numbers
11	April 14 – 18	8.1 8.2	Sequences of Real Numbers Infinite Series
12	April 21 – 25	8.3 8.4	The Integral Test and Comparison Tests Alternating Series
13	April 28 – May 2	8.4 8.5	Alternating Series Absolute Convergence and the Ratio Test
14	May 5 – 9	8.5 8.6	Absolute Convergence and the Ratio Test Power Series
	Second Major Exam: Monday May 8th 2012 at 4:00 pm from section 6.1 to 8.5		
15	May 12 – 16	8.6	Power Series Review