MAT 231  Calculus II
Syllabus

Course Information:
Course Prefix/Number:  MAT 231  
Course Title:  Calculus II  
Semester:  (Fall 2007)  
Class Days/Times:  TTH 5:10-6:50 pm  
Cr. 4.0  
Prerequisites:  MAT 220  
Corequisite:  None  
Methodology:  Traditional  
Transferability: (UofA) Mat 129  
Course Web URL:  http://ecc.pima.edu/~shoell  
Estimated Study Time:  12 hours per week

Instructor Information:
Name:  Steve Hoell  
US Mail:  Pima Community College  
2202 W. Anklam Rd.  
Tucson, AZ. 85709-4000  
Phone/Voice Mail:  (520) 206-7819  
E-mail:  shoell@pima.edu  
Availability:  Office hours: (By appointment)  

Instructional Materials:
Others:  Student Solution Manual. Both the textbook and the solutions manual are available in the East Campus bookstore.  A graphing calculator is required for this course. Calculators with computer algebra capabilities and QWERTY keyboards (eg., TI-89) are not permitted on quizzes and exams  

Target Audience:  Serious students of Engineering, Mathematics, and Science.
Course Description: This is a second course in calculus; major topics include the anti-derivative, the definite integral and its applications, first-order differential equations, parametric equations and representations, infinite series, and approximations of functions both locally (Taylor series) and globally (Fourier series).

Course Objectives: Upon completion of this course, the student will be able to:

1. Define, state the properties of, differentiate, and integrate the logarithmic function.
2. Define, differentiate, and integrate the exponential function; define $e$.
3. Define, differentiate, and integrate the inverse trigonometric functions.
4. Integrate rational functions.
5. Integrate products involving powers of the trigonometric functions.
6. Apply completing the square, algebraic substitution, and trigonometric substitution to integration problems.
7. Integrate by parts; integrate using partial fraction decomposition.
8. Evaluate improper integrals.
9. Solve application problems that require integration (e.g. from physics, geometry, economics, probability).
10. Solve first-order separable differential equations.
11. Solve some second-order differential equations.
12. Define and determine convergence of an infinite sequence.
14. Define a power series; determine its radius and interval convergence.
15. Construct Taylor and Maclaurin series; use them to approximate functions.
16. Integrate and differentiate power series.

Course Outline:

<table>
<thead>
<tr>
<th>Ch.</th>
<th>Description</th>
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<tbody>
<tr>
<td>7</td>
<td>Integration</td>
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<tr>
<td>8</td>
<td>Using the Definite Integral</td>
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<td>9</td>
<td>Series</td>
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<tr>
<td>10</td>
<td>Approximating Functions</td>
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<td>11</td>
<td>Differential Equations</td>
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MAT 231 Course Policies

Attendance:
- The attendance policy for this class is simple. You are all adults who have in some form paid for this class. If you do not wish to come to any session, you do not have to attend. However, no make-up quizzes will be given.

Academic Integrity:
- Violations of scholastic ethics are considered serious offenses by Pima Community College, the PHY Department and by your instructor. Students may consult the PCC Student Handbook sections on student code of conduct, on scholastic ethics and on the grade appeal procedure. Copies are available at PCC campus libraries and at http://www.pima.edu/~coadmissions/studresp.htm.
- All work done for this class must be your own. While you may discuss assignments with other class members, the final written project must clearly be your own. You may use work from books and other materials if it is properly cited. Copying from a book without proper reference or from a person under any circumstances will result in an F for the assignment, and at the instructor's discretion, possibly an F for the course.
- Students may consult the PCC Student Handbook sections on student code of conduct, on scholastic ethics and on the grade appeal procedure. Copies are available at PCC campus libraries and at http://www.pima.edu/~coadmissions/studresp.htm.

ADA Compliance:
- Pima County Community College District strives to comply with the provisions of the Americans with Disabilities Act and Section 504 of the Rehabilitation Act. Students with disabilities requiring special accommodations must notify the instructor of this need or directly contact the Disabled Student Resources Office at 206-7699. This office is located in Room L231 next to the Cashier.

Classroom Behavior:
- Because of insurance limitations, non-registered visitors are not allowed at class sessions or on field trips.
- Possession of drugs, alcohol or firearms on college property is illegal.
- Eating, drinking, smoking and soliciting are not allowed in classrooms.
- Pets, telephones, pagers and other electronic devices that distract students are not allowed in classrooms.
- Students creating disturbances that interfere with the conduct of the class or the learning of others will be asked to leave.

Course Feedback: All quizzes and exams will be graded within one week of submission.

Withdrawals:
- Students may withdraw from class at any time before Sept. 4, 2007 for a full refund. The last day to withdraw with a "W" is Nov. 5, 2007.

Workload:
- Students are expected to spend the normal amount of time required for a college course attending class sessions, doing assignments and research, reading and preparing for exams. The standard Carnegie Unit of college credit assigns 1 credit hour for each 15 hours of class time and assumes that students spend two hours working outside the classroom for each hour of classroom instruction. For a three-credit course, this translates to 100 hours per semester or an average of 12 hours per week for a 16-week semester.
MAT 231 Grading System/Policies

Course Requirements:     Course Grades:

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<tr>
<td>Final Exam</td>
<td>100 pts</td>
<td>A</td>
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<tr>
<td>Three In-Class Exams</td>
<td>300 pts</td>
<td>B</td>
</tr>
<tr>
<td>Quizzes + projects +HW</td>
<td>100 pts</td>
<td>C</td>
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Incomplete (I) grade:

- "I" grades are not awarded automatically. The student must request an "I" from the instructor who will judge the student's ability to complete the course on his or her own. Generally the student must have completed over 75% of the course requirements. Student and instructor fill out a form listing what remains to be completed as well as how and when the work will be done. "I" grades will not be re-evaluated during the final two weeks of the semester when class activities are normally at their most intense. The course must be completed by Jan 31, 2008.

Quizzes will be given unannounced during class. The top 5 scores (totaling 25 points) will be counted toward the grade. Normally, the quizzes are taken from the easier portions of the homework.

Two Projects will be assigned. They are 25 points each and are listed at the bottom of p. 6. You may collaborate with Others on the projects, but you must submit your own work (with a single name) for credit.

Homework will be assigned and collected. Solutions will be posted the day the assignment is due. No late homework is accepted.

The first leg of the AMATYC Exam will be held on Tuesday, 23 October 2007, from 3-5 pm in the Community room. Five points will be added to your exam total if you take this test.

All completed work (with the exception of the Final Exam) will be returned one week after submission.

Make-up Exams:
- Make-up exams are given in the Testing Center. They are available for a three-day period after the scheduled exam.
- The maximum score on a make-up exam is 90%.

Final Grades: Students will receive a grade transcript from the college mailed to the address given with registration materials at the end of the semester when all grades have been recorded. For privacy and security reasons, instructors may not post grades and are advised NOT to give grades over the telephone nor by email. Students who wish to check grades may use Banner service on MyPima..
# MAT 231 Class Calendar

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
<th>Deadlines</th>
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<tbody>
<tr>
<td>1</td>
<td>Aug 23</td>
<td>7.1 Integration by Substitution</td>
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<td>Aug 28</td>
<td>7.2 Integration by Parts</td>
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<td>Aug 30</td>
<td>7.3 Tables of Integrals</td>
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<td>2</td>
<td>Sept 4</td>
<td>7.4 Algebraic Identities + Trig Substitutions</td>
<td>Add/Drop with refund (9/4/07) HW #1</td>
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<tr>
<td></td>
<td>Sept 6</td>
<td>7.5 Approximating Definite Integrals</td>
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<td>3</td>
<td>Sept 11</td>
<td>7.6 Approximation Errors. Simpson's Rule</td>
<td>HW #2</td>
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<td></td>
<td>Sept 13</td>
<td>7.7 Improper Integrals</td>
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<td>4</td>
<td>Sept 18</td>
<td>7.8 Comparison of Improper Integrals</td>
<td>HW #3</td>
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<td></td>
<td>Sept 20</td>
<td>8.1 Areas and Volumes</td>
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<td>5</td>
<td>Sept 25</td>
<td>8.2 Applications to Geometry</td>
<td>HW #4</td>
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<td>Sept 27</td>
<td>8.3 Area and Arc Length in Polar Coordinates</td>
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<td></td>
<td>Exam I</td>
<td>8.4 Density and Center of Mass</td>
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<td>6</td>
<td>Oct 2</td>
<td>8.5 Applications to Physics</td>
<td>HW #5</td>
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<td>Oct 4</td>
<td>8.7 Distribution Functions</td>
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<td>7</td>
<td>Oct 9</td>
<td>8.8 Probability, Mean, and Median</td>
<td>HW #7</td>
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<td>Oct 11</td>
<td>9.1 Sequences</td>
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<td>8</td>
<td>Oct 16</td>
<td>9.2 Geometric Series</td>
<td>HW #8</td>
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<td>Oct 18</td>
<td>9.3 Convergence of Series</td>
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<td>9</td>
<td>Oct 23</td>
<td>9.4 Tests for Convergence</td>
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<td></td>
<td>Oct 25</td>
<td>11.1 Differential Equations</td>
<td>Project #1</td>
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<td>Nov 1</td>
<td>11.2 Slope Fields</td>
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<td>11</td>
<td>Nov 6</td>
<td>11.3 Euler's Method</td>
<td>HW #12</td>
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<td>Nov 8</td>
<td>11.4 Separation of Variables</td>
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<td>12</td>
<td>Nov 13</td>
<td>10.2 Taylor Series</td>
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<td>Nov 15</td>
<td>10.3 Finding and Using Taylor Series</td>
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<td>13</td>
<td>Nov 20</td>
<td>11.5 Exam III</td>
<td>HW #12</td>
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<td>Nov 22-25</td>
<td>Thanksgiving Holiday (College closed)</td>
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<td>14</td>
<td>Nov 26</td>
<td>11.6 Project #2</td>
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<td>Nov 28</td>
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<td>15</td>
<td>Dec 4</td>
<td>11.7 Project #3</td>
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<td></td>
<td>Dec 6</td>
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<tr>
<td>16</td>
<td>Dec 11</td>
<td>Final Exam</td>
<td>HW #14</td>
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<td>17</td>
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</table>
Homework Assignments

#1 7.1 p.318: 5-60(5N), 61-66,73,77,82,87,89
7.2 p.325: 1,5,8,9,12,13,16,24,-26,31,35,37,41,43,46,52,53
#2 7.3 p.330: 1-3,6,7,9,10,13,14,16,17,21,23-25,27,29,30,33,34,37
7.4 p.337: 1,2,6,8,9,13,19-21,24,29,30,32,40,46,51,54
#3 7.5 p.342: 4,7,9,13-16,21,23,25
7.6 p.347: 2,3,5,6
#4 7.7 p.355: 2,3,7-10,12,17,24,25,30,44
7.8 p.359: 5,7,9,14,19,32
#5 8.1 p.372: 2,3,5,7,9,10,11,14-16,19,21,24,25
8.2 p.380: 1,3,6,12,13,17,22-27,36,39
#6 8.3 p.389: 2,4,6,8,9,17,18,21,25
8.4 p.397: 1,3,5,6
#7 8.5 p.406: 1,5,8,10,15,17,20
8.7 p.419: 4,5,6,8,10,12
#8 8.8 p.426: 1,2,3,5,9,15
#9 9.1 p.441: 3-15 (3N), 17,18,20,21,26,27,29,31,38
9.2 p.448: 1,3,8,10,12,14,5,18,21,28
#10 9.3 p.454: 1,2,10,13,18,19,22
9.4 p.461: 1,2,5,8,10,14,20,21,24,44,46
#11 9.5 p.469: 2,3,6,9,11,14,17,24,27,28
10.1 p.484: 2,3,5,6,8,11,13,18,19,22,29,35
#12 10.2 p.489: 1,5,8,11,14,17,20,31,33,37
10.3 p.495: 2,4,7,8,16,26,27
#13 11.1 p.525: 1-4,6,9,11,14,15
11.2 p.529: 2,3,4,8
#14 11.3 p.534: 1,2,6,9
11.4 p.539: 5-35 (5N),43,44

CLASS PROJECTS

Project #1: Choose one of the following:

7.1 Taylor Polynomial Inequalities (p.365)
7.2 Slope Fields (p.365)
8.1 Volume Enclosed by Two Cylinders (p.435)
8.2 Length of a Hanging Cable (p.435)
8.3 Surface Area of an Unpaintable Can of Paint (p.435)
8.4 Maxwell's Distribution of Velocities (p.436)
9.1 A Definition of e (p.475).
9.3 Quinine (p.476).

Project #2 Illustration of Zeno's Paradox. Handed out after Exam II
Caveats:

Your instructor will make every attempt to follow the above procedures and schedules, but they may be changed in the event of extenuating circumstances.

Students submitting assignments are advised to make copies for their own protection.

If you move during the semester, please file a change of address form at any PCC campus registration office.

Acknowledgment of Receipt of Syllabus

Please sign and return the following acknowledgment to me in class.

____ I have received my MAT 231 syllabus (including course objectives, policies, requirements and schedule) and have read and understood all the enclosed materials.

____ I have no objection to receiving an occasional call from the instructor at the number given with my registration materials.

____ I prefer that the instructor not call or contact me by phone anytime during the semester.

____ I have taken Calculus I (MAT 220) ______

My current major is:

I would like to be contacted by the instructor regarding the following concerns:

________________________________________________________________________

________________________________________________________________________

Name ___________________________                  Student ID #_____________________________

Phone #_________________________                  E-mail Address_________________________