Prerequisite: MATH 2253

Content: A continuation of MATH 2253. Topics include differentiation and integration of transcendental functions, integration techniques, indeterminate forms, L'Hopital's rule, improper integrals, infinite sequences and series, Maclaurin and Taylor series, conic sections, and polar coordinates.

Section: 013 (CRN 21428) Time: 7:30-9:10pm Days: M W Room: D 220 Credit: 4 Credit Hours
Instructor: Dr. Bi Roubolo Vona Office: D 152
Office Hours: M T W R: 1:00-1:50 PM; M W: 4:30-5:30 PM, and by appointment (limited)
Tel: 678-915-7235 Email: bvona@spsu.edu

Assessment:
- Four Tests (pick best 3): 20% each. Bi-Weekly Quizzes: 10%
- Final exam (cumulative): 25%. Attendance & Participation: 5%

Standard Grade Scale: 90-100 = A; 80-89 = B; 70-79 = C; 60-69 = D; Below 60 = F.

A homework assignment shall be given every Wednesday. A short quiz will be given in class at the beginning of the class on the 2nd following Monday on the topics of the homework. Homework will not be collected. There will be no make up for the bi-weekly quizzes. The two (2) lowest quiz grades will be dropped. Additional homework practice problems are listed on pages 2-3 of this syllabus. The four regular written tests will be based mainly (content wise) on the intervening weekly homework sets, with some problems taken from the additional practices material. Any request for a make-up for a regular test (not quiz, not final exam) must be received by the instructor prior to the starting time of the scheduled test. Students are restricted to at most one make-up test (not quiz). The final exam will be cumulative.


Learning Outcome: Upon successfully completing this course students should be able to:
1. Compute derivatives and integrals for common transcendental functions, and analyze their graphs.
2. Find indefinite and improper integrals using different integration techniques, apply l'Hopital's rule for indeterminate forms.
3. Use various tests to determine series convergence, perform standard operations with convergent power series, find Taylor and Maclaurin representations.
4. Write parametric equations of conic sections; sketch their graphs in polar and Cartesian coordinates, use conic sections to solve applied problems.

Miscellaneous Dates:
- Classes begin: Monday, January 7
- Martin Luther King Jr. Holiday: Monday, January 21
- Last day to withdraw with a grade of W: Tuesday, February 26
- Spring Break: Sunday, March 3 – Saturday, March 9
- Last day of classes: Monday, April 29
- Final Exams: May 1-May 7 (Exact Date & Time to be determined later)

Quiet Learning Environment:

Telephones, pagers, and other communication devices must be set for inaudible signal while in the classroom. Eating, foul language and excessive talking, and unauthorized visitors will not be tolerated. The instructor reserves the right to exclude student(s) exhibiting such disruptive behavior from the class session.

Students with disabilities who believe that they need accommodations in this class are encouraged to contact the counselor working with disabilities at 678-915-7244 as soon as possible to better insure that such accommodations are implemented in a timely fashion.

Academic Misconduct: Information about the SPSU Honor Code and the misconduct procedure may be found at http://spsu.edu/honorcode/.
Text: *Calculus, 7E*, by James Stewart, 7th edition (Brooks/Cole)

NC = do not use any calculator, with the exception noted below; C = use the calculator without restriction.

NOTE: For some problems marked NC, it is allowable (and useful) to use the calculator for graphing ONLY.

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Section (in Stewart)</th>
<th>Homework</th>
<th>Test/Exam</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Inverse functions, Exponential Functions and their Derivatives</td>
<td>6.1, 6.2</td>
<td>(pg. 390) NC: 3-13, 21, 23, 25, 27, 33, 35-42 (pg 428) NC: 1-9odd, 11-14, 15, 17-37odd, 49, 65-74</td>
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<td>2</td>
<td>Logarithmic Functions, Derivatives of Logarithms Functions</td>
<td>6.3, 6.4</td>
<td>(pg. 434) NC: 1-14, 21, 23, 27-51odd, 53, 81-92 (pg. 444) NC: 3-10, 25-41odd; C: 11, 15</td>
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<td>3</td>
<td>Inverse Trigonometric functions, Indeterminate forms &amp; l'Hôpital's rule</td>
<td>6.6, 6.8</td>
<td>(pg. 459) NC: 1-11odd, 22, 23-33, 38, 59-70</td>
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<tr>
<td>4</td>
<td>Indeterminate forms &amp; l'Hôpital's rule</td>
<td>6.8</td>
<td>(pg. 477) NC: 1, 3, 7-25odd, 29-35odd, 41, 49, 55, 57, 59, 61</td>
<td>Test 1</td>
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<tr>
<td>5</td>
<td>Integration by parts, Trigonometric integrals</td>
<td>7.1, 7.2</td>
<td>(pg. 492) NC: 1, 2, 3-23odd, 27-35odd, 37, 39 (pg. 500) NC: 1-39odd</td>
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<tr>
<td>6</td>
<td>Trigonometric substitution, Partial fractions, Strategies for Integration</td>
<td>7.3, 7.4, 7.5</td>
<td>(pg. 507) NC: 1, 2, 3, 5-19odd, 23, 25, 27, 29 (pg. 516) NC: 1-4, 7, 9, 11-27odd, 39, 41, 47</td>
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<tr>
<td>7</td>
<td>Strategies for Integration, Improper integrals</td>
<td>7.5, 7.8</td>
<td>(pg. 523) NC: 1-51odd (pg. 551) NC: 1, 2, 5-39odd, 41, 49-54</td>
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<tr>
<td>8</td>
<td>Sequences</td>
<td>11.1</td>
<td>(pg. 724) NC: 1, 3, 5, 9, 13, 23-51odd, 73, 75, 77</td>
<td>Test 2</td>
</tr>
</tbody>
</table>
| 9 | Series, Integral test, Comparison tests | 11.2, 11.3, 11.4 | (pg 735) NC: 1, 5, 7, 16, 17, 27-47odd, 57, 59, 61, 63  
(pg. 744) NC: 1, 3-25odd, 27, 29  
(pg. 750) NC: 1, 3-31odd |
|---|---|---|---|
| 10 | Alternating series, Absolute convergence and the ratio and root tests | 11.5, 11.6 | (pg. 755) NC: 1, 3-19odd, 27, 29  
(pg. 761) NC: 1, 3-29odd, 31, 35 |
| 11 | Convergence testing strategies, Power series | 11.7, 11.8 | (pg. 764) NC: 1-27odd, 31-37odd  
(pg. 769) NC: 3-19odd, 23, 25, 27 |
| | | | **Test 3** |
| 12 | Representation of functions as power series, Taylor & Maclaurin series | 11.9, 11.10 | (pg. 775) NC: 3, 5, 9, 15, 17, 25, 29  
(pg. 789) NC: 5, 7, 9, 13, 15, 16,17, 19, 29, 31, 33, 47, 49 |
| 13 | Applications of Taylor Polynomials, Curves defined by parametric equations | 11.11, 10.1 | (pg. 798) NC: 3, 5, 7, 9; C: 13, 17, 19  
(pg. 665) NC: 5, 7, 9, 11, 13, 14 |
| 14 | Calculus with parametric curves, Polar coordinates | 10.2, 10.3 | (pg. 675) NC: 1, 3, 5, 7, 11, 13, 17  
(pg. 686) NC: 1-6, 7-12, 29-43odd |
| 15 | Areas in polar coordinates, Conic sections | 10.4, 10.5 | (pg. 692) NC: 1, 2, 6, 9, 17, 19, 23, 27  
(pg. 700) NC: 1-7odd, 11, 13, 15, 19, 21, 23, 25, 27, 29 |
| | | | **Test 4** |
| | | | **Final Exam** |