I. COURSE INFORMATION

Meeting Time & Place: MW 12:00-1:50 PM in CS-114 (class)
TR 12:00-1:50 PM in CI-222 (lab)

Professor: Dr. Alex Sadovski  e-mail: Alexey.Sadovski@tamucc.edu

Office Phone: 825-2477  Office: CI-338

Office Hours: MTWR 11:00-12 noon. TR 1:00-2:00 PM

For the lab you also need the lab manual which is available on the web at

http://math.tamucc.edu/labs/.

II. COURSE DESCRIPTION

In this course we will deal with integrals of functions in one variable. The course begins with
the basics of integration, the substitution rule and the logarithms defined as integrals. Then
the applications of integration and techniques of integration are introduced. Finally,
differential equations are introduced followed by some topics on infinite sequences and
series.

III. PREREQUISITES FOR THE COURSE

MATH 2413 (Calculus I), or Instructor’s Consent.

IV. TEXT and OTHER SUPPLIES REQUIRED

Text: The required textbook for the course is “Calculus: Early Transcendentals” by James
Stewart, 7th edition

Technology: A graphing calculator is advisable for this class. The math program support the
TI-83 plus, but in general you can use any graphing calculator.

V. STUDENT LEARNING OUTCOMES

SLO #1. Most real applications of the definite integral are developed starting from its
definition. You will understand the definition of the definite integral as the limit of Riemann
sums, and use it to translate word problems into integrals. This goal corresponds roughly to
Chapters 5, and 6 of the textbook, as well as Lab 3. You'll learn this idea through classroom
interaction and work on the homework and lab mentioned above.

SLO #2. The result of SLO #1 will be definite integrals, which must then be evaluated
analytically or numerically. You will be able to analyze the algebraic pattern of functions in
integrals to determine the best anti-derivative technique for those integrals. This goal
corresponds roughly to Chapter 7 of the text, as well as Labs 8-10. You'll learn anti-
derivative methods and how to decide among them through classroom interaction and work
on the homework and labs mentioned above.
SLO #3. Taylor series and differential equations are critical topics for later study in mathematics. You will understand the purpose for, and simple mathematical methods of, differential equations and Taylor series. This goal corresponds to Chapters 9 and 11 of the text, as well as Lab 9. You'll learn about differential equations and Taylor series through classroom interaction and work on the homework and labs mentioned above.

VI. INSTRUCTIONAL METHODS AND ACTIVITIES
Methods and activities for instruction include: Lectures, seminars, discussions, laboratories, some demonstrations using technology, and group activities.

VII. EVALUATION AND GRADE ASSIGNMENT
The method of evaluation and the criteria for grade assignment will be based on the following weights:

- Two midterm exams: 30%
- Quizzes: 30%
- Labs: 20%
- Final Exam (Comprehensive): 20%

Grading Scale: Grades will be based on the following percentages:
- A = 90.00 - 100%
- B = 80.00 - 89.99%
- C = 70.00 - 79.99%
- D = 60.00 - 69.99%
- F = below 60%

VIII. TENTATIVE COURSE SCHEDULE
The sequence of topics is listed below and the rate of covering them depends on students achievements.

<table>
<thead>
<tr>
<th>Section</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1</td>
<td>Areas and Distances</td>
</tr>
<tr>
<td>5.2</td>
<td>The Definite Integral</td>
</tr>
<tr>
<td>5.3, 5.4</td>
<td>The Fundamental Theorem of Calculus, Indefinite Integrals and the Net Change Theorem</td>
</tr>
<tr>
<td>5.5, 5.6</td>
<td>The Substitution Rule, The Logarithm Defined as an Integral</td>
</tr>
<tr>
<td>6.1</td>
<td>Area between Curves</td>
</tr>
<tr>
<td>6.2, 6.3</td>
<td>Volumes, Volumes by Cylindrical Shells</td>
</tr>
<tr>
<td>6.4, 6.5</td>
<td>Work, Average Value of a Function</td>
</tr>
<tr>
<td></td>
<td>Chapter 5 and 6 Review</td>
</tr>
<tr>
<td>7.1</td>
<td>Integration By Parts</td>
</tr>
<tr>
<td>7.2</td>
<td>Trigonometric Integrals</td>
</tr>
<tr>
<td>7.3</td>
<td>Trigonometric Substitution</td>
</tr>
</tbody>
</table>
7.4 Integration of Rational Functions by Partial Fractions
7.5, 7.6 Strategy for Integration, Integration using Tables and Computer Algebra Systems
7.7 Approximate Integration
7.8 Improper Integrals
9.1 Modeling with Differential Equations
9.2 Direction Fields and Euler’s Method
9.3, 9.4 Separable Equations, Exponential Growth and Decay
9.5 The Logistic Equation
Chapter 7 and 9 Review
11.1 Sequences
11.2 Series and Convergence Tests (*)
11.8 Power Series
11.9 Representations of Functions as Power Series
11.10 Taylor and Maclaurin Series
11.11 The Binomial Series
11.12 Applications of Taylor Polynomials
Gateway Test

IX. CLASS POLICIES
- **Class work and Quizzes** will be given periodically in the class and/or lab and should be completed for the grade.
- **Homework** will be assigned after each lecture and students will be given opportunity to ask questions about the homework at the beginning of each lecture. Students should do as many problems as necessary from each category to understand the concepts.
- Students will be given **Lab Assignments** that will be designed to help integrate basic models and a discovery method of learning.
- **Attendance required**, exceptions are sickness, job and family emergencies, but I will not use class roll at any time, because it is your responsibility to be in class and attend to the process of learning (see also II.2.), and **attendance has a huge impact on your test grades**.
- Please, **print your name** on all assignments and tests: your professor is not a decoding device.
- If you have questions you MUST ask, you have the right to interrupt lecture or discussion at any time (see also II.1).
- I am always open for all questions and discussions during the class and office hours. You can always arrange meeting with me at any other time suitable for both sides.
- **No multi-choice tests, all tests will consist of problems you have to solve from the beginning to the end. Partial credit will be given for any parts of problems solved. The policy is open books and notes, no talking, no cheating.**
- **No open books and notes during quizzes.**
- **Assignments must be turned on time.**
- There is **no social promotion** in my classes. **Grades** are given only for **knowledge acquired** (see also II.9.).
II. Unofficial part.
   II.1. There are no "stupid" questions, there are only bad teachers.
   II.2. All you do, you do it for yourself, not for the professor.
   II.3. Do not be concerned about grades, be concerned of knowledge, because grades are
         the steepest increasing function of knowledge (here is an example of math
         language).
   II.4. Do not be afraid of problems, let them be afraid of you.
   II.5. Only doing nothing may be without mistakes. If you don’t make errors, you don’t
         learn anything.
   II.6. Do not be nervous - it may be only worse.
   II.7. Common sense is the base of all decisions, together with knowledge they can do
         almost everything (even pass this course!).
   II.8. Keep your particles together.
   II.9. The only valid excuse for not knowing the subject is a sudden death.

X. ACADEMIC HONESTY
Academic Honesty: university students are expected to conduct themselves in accordance with
the highest standards of academic honesty. Academic misconduct for which a student is subject to
penalty includes all forms of cheating, such as illicit possession of examinations or examination
materials, forgery or plagiarism.

XI. DISABILITY SERVICES
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides
comprehensive civil rights protection for persons with disabilities. Among other things, this
legislation requires that all students with disabilities be guaranteed a learning environment that
provides reasonable accommodation of their disabilities. If you believe you have a disability
requiring an accommodation, please contact the Disability Services Office at (361) 825-5816 or
go to the office at Driftwood 101.

XII. GRADE APPEALS PROCESS
As stated in University Rule 13.02.99.C2, Student Grade Appeals, a student who believes that he
or she has not been held to appropriate academic standards as outlined in the class syllabus,
equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the
course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal.
A student with a complaint about a grade is encouraged to first discuss the matter with the
instructor. For complete details, including the responsibilities of the parties involved in the
process and the number of days allowed for completing the steps in the process, see University
Rule 13.02.99.C2, Student Grade Appeals, and University Procedure 13.02.99.C2.01, Student
Grade Appeal Procedures. These documents are accessible through the University Rules Web site
at http://www.tamucc.edu/provost/university_rules/index.html. For assistance and/or guidance in
the grade appeal process, students may contact the Office of Student Affairs.