Math 152: Engineering Calculus II
Spring 2016, Sections 534-536 and 540-542

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Office Hours:	Tuesday 3:00pm - 4:00pm,
	Wednesday 12:30pm - 2:30pm,
	Thursday 10:00am - 10:45am,
	and other times by appointment

Teaching Assistants:

- Sections 534-536: Qing Zhang (`zhangqing@math.tamu.edu`)
- Sections 540-542: Amanda Hoisington (`amanda.h@math.tamu.edu`)

Course Content: Integration techniques and their applications (area, volumes, arc length, work), improper integrals, analytic geometry, vectors, infinite series, power series, Taylor series, computer algebra.

Resource Material: The textbook Stewart's Calculus: Early vectors, ISBN: 9781428251427, will be provided in electronic book format thru the WebAssign system. Buying a paper copy is optional. The solution manual is also optional but will give detailed solutions to the odd problems. The computer labs will use the textbook: *Matlab: An Introduction with Applications 5th edition*, by Amos Gilat, published by Wiley. ISBN: 9781118629864.

Prerequisite: MATH 151 or equivalent. Credit will not be given for both MATH 152 and 172.

Calculator Policy: Calculators will NOT be allowed on quizzes or exams, but will be allowed on online homework.

Grading Policy: Your grade will be determined by three exams, a cumulative final exam, and a laboratory grade (quizzes, computer labs, and online homework). The weights for each of these are as follows.

3 Exams	50%	Exam 1: February 18		A = 90-100	
Homework Average	10%	Exam 2: March 24		B = 80-89	
Quiz Average	10%	Exam 3: April 26		C = 70-79	
Matlab Assignments	5%			D = 60-69	
Final Exam	25%			F = 0-59	
Total	100%				

The Final Exam will be comprehensive. If your section number is 534-536, then it will be on Tuesday, May 10th from 8am-10am. If your section number is 540-542, then it will be on Thursday, May 5th from 3:00pm-5:00pm. Keep these dates in mind when making travel plans for the end of the semester.

Exams: The exams are common exams and will be held from 7:30pm-9:30pm. If you miss the exam for an university approved reason, a makeup can be taken. The makeups are scheduled by the department and times and locations will be provided if needed. Once an exam is returned, a makeup for that exam will not be given. If you believe that you have a valid reason for receiving a makeup after the exams have been returned, make an appointment to talk to me. Any question regarding grading/scoring must be done within one week of the return of the exam, and cannot be done the day the exam is returned.

Quizzes: You will have weekly quizzes during your lab. You will also have group work during recitation, which will not be graded. Missed quizzes cannot be madeup, but the two lowest quiz grades will be dropped when calculating the quiz average.

Online Homework: The online homework will be worked and submitted in the WebAssign system. The homework for a section will be due approximately 3 days after the lecture over that material. For every assignment, you may request an extension of an additional two days. Any problem submitted during the extension period will only recieve half credit. At least one homework assignment will be dropped when computing the average.

Matlab Assignments: You will have weekly computer assignments using `MATLAB`. The lab schedule is posted on the MATH 152 course homepage. Labs will be done in teams and each team will turn in *one* lab report.

Class Announcements, E-mail Policy and Communications: Class announcements will be posted to my class web page and sent to your university e-mail account. Be sure to regularly check your e-mail account. If you send me an e-mail, please include your name and course information(i.e.class and section) as well as any additional information that I might need to help respond to your e-mail.

Week in Review: The department offers a weekly review covering material taught in the previous week. A link to this review (as well as links to previous reviews) will be posted on my web page. The time and location are still being determined and will be posted on my web page and the departmental web page.

Help Sessions: The Math department offers a help session for this course. See my web page or the department's web page for times and locations.

Attendance, Absence, and Makeup Work Policies:
- Attendance is strongly encouraged.
- You will only be allowed to makeup an exam for a university excused absence (see the University Student Rules for a list of the excused absences). Proof must be shown before any makeup is allowed.
- You will not be allowed to makeup a quiz. However, the two lowest quiz grades will be dropped when calculating the quiz average.
- The last day to Q-Drop this class is **April 19th**.

A.D.A. Policy Statement: 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 for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637.

For additional information, visit `http://disability.tamu.edu`.

Copyright Policy: The handouts used in this course are copyrighted. By "handouts," I mean all materials generated for this class, which include but are not limited to syllabi, quizzes, exams, in-class materials, review sheets, and additional problems sets. Because these materials are copyrighted, you do not have the right to copy the handouts, unless I expressly grant permission.

Scholastic Dishonesty: *An Aggie Does Not Lie, Cheat, or Steal or Tolerate Those Who Do.* The Aggie Code of Honor will be enforced in this course. For the purpose of this course, cheating will be defined as (but not limited to) access or use of unauthorized material during exams and quizzes, collaboration between students during exams, quizzes or assignments for which group work is not allowed, perusal of another student's work during exams and quizzes, copying other student's work or allowing other students to copy your work on any assignment, quiz or exam, and having unauthorized programs or other information stored on calculators when these calculators are accessible during an exam or quiz. Note: Falsifying documentation is considered scholastic dishonesty and may result in a grade of F* for the course.

For additional information about Aggie Honor System, please visit: `http://aggiehonor.tamu.edu`

Learning Outcomes: This course is focused on quantitative literacy in mathematics as applied to Engineering and Physics. Upon successful completion of this course, students will be able to:
- Use the concepts of definite integrals to solve problems involving area, volume, work, and other applications.
- Use substitution, integration by parts, trigonometric substitution, and partial fractions to evaluate definite and indefinite integrals.
- Apply the concepts of limits, convergence, and divergence to evaluate different types of improper integrals.
- Determine convergence or divergence of sequences and series.
- Use Taylor and MacLaurin series to represent functions.
- Use Taylor or MacLaurin series to integrate functions not integrable by conventional methods.
- Understand and apply vector operations such as dot and cross product in three dimensions.
- Use Computer Algebra Systems such as `MATLAB` to solve non-routine problems.

Course Objectives

Critical Thinking: The following critical thinking skills will be assessed on in-class quizzes and exams:

- Students will use graphs and visual skills to formulate and evaluate definite integrals to calculate areas, volumes, work, and surface areas of revolution.
- Students will analyze definite and indefinite integrals to determine and apply appropriate methods of evaluation of these integrals.
- Students will apply logical reasoning to determine the convergence or divergence of improper integrals and evaluate convergent improper integrals where appropriate.
- Students will apply logical reasoning to determine the convergence or divergence of sequences and series and evaluate convergent sequences and series where appropriate.
- Students will use Taylor and Maclaurin series to represent functions which cannot be integrated conventionally.
- Students will apply appropriate error estimates to determine the accuracy of integration using Taylor and Maclaurin series.

Integrative Learning: The following integrative learning skill will be assessed on computer lab assignments:

- Students will apply mathematical and logical reasoning skills to use Computer Algebra Systems such as `MATLAB` to solve problems in Physics and a variety of Engineering fields.

Problem Solving: The following problem solving skills will be assessed on in-class quizzes and exams:

- Students will formulate and evaluate definite integrals to solve practical problems involving work and average value of a function.
- Students will use geometric series to model and solve numerical and practical problems.
- Students will apply operations of vectors in three dimensions to applications such as work and torque.

Communication: The following written communication skills will be assessed on in-class quizzes and exams:

- Students will clearly explain problem-solving strategies and analysis used to answer questions concerning topics discussed in class.
- Students will use appropriate theorems to present clear written arguments in support of the convergence or divergence of improper integrals, sequences, and series.

Quantitative Literacy: The following quantitative literacy skills will be assessed on in-class quizzes and exams:

- Students will interpret a given integral as the area of an appropriate 2-dimensional region, volume of an appropriate solid, or area of an appropriate 3-dimensional surface.
- Students will use appropriate calculations to analyze the convergence or divergence of series.