Math 152 (Calculus II)   **Sections 201-202**   **Spring 2017**

Instructor: Dr. Mariya Vorobets

Class hours : TR 2:20 – 3:35, HELD 105

Web page: `http://math.tamu.edu/~mvorobet/Math152/S17_H/`

Office: BLOC 223A, e-mail: `mvorobet@math.tamu.edu`

Office hours: MWF 10:00 a.m. – 12:00 p.m. or by appointment

Recitations:

201	M 9:10 – 10:00	CVE 222
202	M 10:20 – 11:10	CVE 222

Labs:

201	W 9:10 – 10:00	BLOC 124
202	W 10:20 – 11:10	BLOC 124

Teaching assistant. Jimmy Corbin; e-mail: `jxc8004@math.tamu.edu`

Prerequisite. MATH 151 or equivalent.

Texts.

- J. Stewart, CALCULUS. Early Vectors, Aggie Edition, Thompson Publishing,
  Brooks/Cole, ISBN 0534493483

- A. Gilat, MATLAB: An Introduction with Applications, 3rd Edition, Wiley Publishing,
  ISBN 0470108770

- **WebAssign Account Access Code:** WebAssign will be used to access the ebook for
  this course. In order to use WebAssign, you must purchase an access code. For access
  code and textbook purchasing information and options, please see the Student Information
  Page at `http://www.math.tamu.edu/courses/eHomework/`

Course Web Page. The course web page will be my main source of communication to you
aside from class and office hours. Check the course page regularly for announcements, exam
information and the course schedule.

The Mathematics Department has a web-page for Math 152
`http://www.math.tamu.edu/courses/math152/`

Here you can find a description of the course, approximate weekly schedule, past exams,
help session schedules and other information.

Email Policy. You are responsible for any information I send via email. Because of the privacy
rights, I cannot discuss grades via email or over the phone. Please include your name and the
section number in the subject line.

Calculator Policy: Calculators are not allowed on exams or quizzes, although they may be
used on homework assignments. Use of a calculator on a quiz or exam is considered academic
dishonesty and will be reported to the Aggie Honor Council.

Suggested homework. Selected problems from your textbook will be assigned but NOT graded. You are strongly recommended to do all of them which will provide a valuable practice for both on-line HWs and exams. For list of suggested HWs see:

> http://www.math.tamu.edu/courses/math152/currenthw.html

Reciations and computer labs. One of your recitation meetings is designed to participate in weekly activities. During this the students will work in groups of 3 or 4 to complete the activity with the supervision/help of the TA. The students will turn this in for a weekly graded assignment. During the other recitation time students will work on the assigned matlab. During recitations students also will have a quiz (usually one per week) and will ask the TA questions over homework. If time permits, I will administer quizzes during lecture. All of the quizzes are mandatory, although, a couple of worst grades will be dropped at the end of the semester.

Grading. Your grade will be determined by three exams, a cumulative final exam, and a laboratory grades. The weights of each of these are as follows.

Exam I	20% of course grade
Exam II	20% of course grade
Exam III	20% of course grade
Final Exam	20% of course grade
Activities	5% of course grade
Quizzes	10% of course grade
Lab reports	5% of course grade

You must bring either your student ID or your driver's license to each of the above exams. There will be no extra credit under any circumstances.

The *tentative* midterms dates are: Exam I – Feb. 16 , Exam II – March 23, Exam III – April 20. Midterms will be given during the regular class time.

I may curve any grade and will then compute the course grade by the following rule: A for at least 90% points, B for at least 80% points, C for at least 67% points, D for at least 57% points and F for less than 57% points.

Final Exam: The final exam will be a cumulative (comprehensive) exam and is required for all students. If your final exam grade is higher than your lowest taken midterm grade, the grade on your final will replace your lowest test grade in the course grade calculation.
A two-hour comprehensive FINAL exam will be given on Tuesday, May 9, at 1:00 – 3:00 in HELD 105.

Help Sessions and Week-in-Review. The Mathematics Department offers help sessions for Math 152 students. See

> http://www.math.tamu.edu/courses/helpsessions.html for more information.

There will be a week-in-review conducted by Dr. Mariya Vorobets and Dr. Kamran Reihani. The dates and times will be announced in class. Problems will be posted before each session. See

> http://www.math.tamu.edu/courses/weekinreview.html for week-in-review information.

Weekly Schedule

Week 1 Sections 6.4, 6.5, 7.1. Review of the Fundamental Theorem of Calculus, integration by substitution, area

Week 2 Sections 7.1, 7.2. Area ctd, volumes by slicing, disks, washers

Week 3 Sections 7.3, 7.4. Volume by cylindrical shells, work

Week 4 Sections 7.5, 8.1, 8.2. Average value, integration by parts, trigonometric integrals

Week 5 Sections 8.3, 8.4. Trigonometric substitution, partial fractions. **Exam 1** (Covers through Section 8.2).

Week 6 Sections 8.9, 9.3, 9.4. Improper integrals, arc length, surface area of revolution.

Week 7 Section 10.1, 10.2. Sequences and Series

Week 8 Sections 10.2, 10.3. Series, convergence tests

Week 9 Section 10.4. Absolute Convergence, convergence tests. **Exam 2** (Covers through Section 10.3).

Week 10 Sections 10.5, 10.6. Power Series, representing functions as power series

Week 11 Sections 10.7, 10.9. Taylor and Maclaurin Series, applications of Taylor series

Week 12 Section 11.1,11.2. 3 D coordinates, vectors, dot product

Week 13 Section 11.3. Cross Product. Thanksgiving falls on this week in the fall.

Week 14 13.4. Polar Coordinates. **Exam 3** (Covers through Section 11.3).

Week 15 Review for Final. Last week of class has redefined days. See Important Dates for more details.

Make-up Policy. No make-ups will be given without written evidence of an official University excused absence (see *University Student Rules*). In addition, you must notify me **NO LATER** than the end of the second working day after the missed assignment:

> ... the student must notify his or her instructor in writing (acknowledged e-mail message is acceptable) prior to the date of absence if such notification is feasible. In cases where advance notification is not feasible (e.g. accident or emergency) the student must provide notification by the end of the second working day after the absence. This notification should include an explanation of why notice could not be sent prior to the class. (Section 7.3 of the *University Student Rules*)

***If no such notice is given, the rights to a make-up are forfeited. Specifically, in the case of injury or illness, students are required to obtain a confirmation note from a health care professional affirming date and time of a medical office visit regarding the injury or illness. I will NOT accept the "Explanatory Statement for Absence from Class" form as sufficient written documentation of an excused absence.

Late Work Policy. Late work (for which you do not have a University approved excused absence) will NOT be accepted. This includes all written and online assignments.

Scholastic Dishonesty. Copying work done by others, either in-class or out-of-class, is an act of scholastic dishonesty and will be prosecuted to the full extent allowed by University policy. Collaboration on assignments, either in-class or out-of-class, is forbidden unless I grant permission.If you cheat on an assignment, you will receive a zero. Also, you will be reported to the University.

Remember the Aggie Code of Honor: **"An Aggie does not lie, cheat, or steal or tolerate those who do."**

For more information about the Honor Council Rules and Procedures visit the web site: http://www.tamu.edu/aggiehonor

Copyright notice. All course materials (both printed and web-based) are protected by U.S. Copyright Laws. No multiple copies can be made without written permission by the instructor.

Students with disabilities. 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, in Cain Hall, Room B118, or call 845-1637. For additional information visit http://disability.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 physical 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.