Math 152 (Engineering Mathematics II) **Sections 513–515, 519–524** **Spring 2015**

Instructor: Dr. Mariya Vorobets

Class hours :

513–515	MWF	10:20–11:10	HELD 107
519–521	TR	11:10–12:25	BLOC 166
522–524	MWF	11:30–12:10	HELD 107

Web page: `http://math.tamu.edu/~mvorobet/Math152/S15/`

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

Office hours: TR 1:00 – 2:30 or by appointment

Recitations:

513	R 2:20–3:10	BLOC 121
514	R 3:55–4:45	THOM 121
515	R 5:30–6:20	BLOC 121
519	W 12:40–1:30	CE 134
520	W 1:50–2:40	CE 136
521	W 3:00–3:50	BLOC 149
522	R 8:00–8:50	BLOC 164
523	R 9:35–10:25	CE 136
524	R 11:10–12:00	BLOC 124

Labs:

513	T 2:20–3:10	BLOC 122
514	T 3:55–4:45	BLOC 123
515	T 5:30–6:20	BLOC 126
519	M 12:40–1:30	BLOC 123
520	M 1:50–2:40	BLOC 122
521	M 3:00–3:50	BLOC 128
522	T 8:00–8:50	BLOC 122
523	T 9:35–10:25	BLOC 123
524	T 11:10–12:00	BLOC 124

Teaching assistant:

513–515	Roman Kogan	email: `romwell@math.tamu.edu`
519–521	Shuai Ye	email: `yes1989@math.tamu.edu`
522–524	Justin Cantu	email: `justincc@math.tamu.edu`

Prerequisite: MATH 151 or equivalent.

Texts:

- J. Stewart, CALCULUS. Early Vectors, ISBN 9781428251427, will be provided in electronic book format through the WebAssign system. Buying a paper copy is optional.
- A. Gilat, MATLAB: An Introduction with Applications, 5th Edition, Wiley Publishing, ISBN 9781118629864

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: Check your official TAMU email account regularly. 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.

Online homework: Homework will be assigned online on the WebAssign system for each section and will be due regularly. You may use scratch paper, calculators etc. on the online homework. The deadlines are programmed into the computer system, so submitting your homework well before the deadline is recommended. If you submit your homework late, the computer will automatically give you a zero for the assignment and not record your answers. You are responsible for remembering to do the homework. The lowest three homework grades will be dropped at the end of the semester. For more information see `http://www.math.tamu.edu/ehmwk/`

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`

Computer labs: Computer labs will be assigned in section each week with breaks for the exams. These assignments will be done in a group. Groups will be assigned in section during the first week of classes.

Quizzes: Quizzes will be given regularly, almost every week (except exam weeks) during the recitation meeting on Thusdays. All of them are mandatory, although, a couple of worst grades will be dropped at the end of the semester. That is why, NO MAKE UP QUIZZES.

Each student has to buy pack of 15 ScanTron Forms 815E, and turn in to the TA before the 1st quiz.

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	1/6 of course grade	Feb. 19
Exam II	1/6 of course grade	March 26
Exam III	1/6 of course grade	Apr. 28
Final Exam	1/4 of course grade	
Homework	1/20 of course grade	
Quizzes	1/10 of course grade	
Lab reports	1/10 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. Exams I, II and III are common exams (same exam is given for all sections of Math 152) and are administered in the evenings from 7:30-9:30 PM. An examination room would be announced in class and posted on the course website as soon as it is assigned

A two-hour comprehensive FINAL exam will be given on

513–515	May, 11	8:00–10:00	HELD 107
519–521	May, 7	3:00–5:00	BLOC 166
522–524	May, 12	10:30–12:30	HELD 107

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 70% points, D for at least 60% points and F for less than 60% points.

Help Sessions: The Mathematics Department offers help sessions for Math 152 students. See `http://www.math.tamu.edu/courses/helpsessions.html` for more information.

Week-in-Review: There will be a week-in-review conducted by Dr. Sinjini Sengupta (Wednesdays, 7:30–9:30 PM in BLOC 166) and Dr. Kamran Reihani (the dates and times will be announced in class). Problems will be posted before each session. For more information see
`http://www.math.tamu.edu/~ssinjini/Math152/WIR.html`
and
`http://www.math.tamu.edu/~reihani/WIRSpring2015/`

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.