

Syllabus: Math 1342 – Calculus 2 for Science and Engineering

(Northeastern University, Summer Session 1 2016)

Instructor: Prasanth George

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Office hours: MTW 12:00-1:00pm, or by appointment.

Text: *Worldwide Integral Calculus, with infinite series*, by David B. Massey and *Worldwide Multivariable Calculus*, by David B. Massey. PDF and printed versions available at: <http://www.centerofmath.org/textbooks/index.html>. It is absolutely *not* required that you purchase a printed textbook.

Exercises: Please see suggested homework problems on the last page of this syllabus. These problems will not be collected but problems on quizzes and exams will be similar in nature. If you have questions on the exercises, it will be essential for you to come to my office hours, make special appointments to see me or go for tutoring in the Mathematics Department or in the College of Engineering.

Midterm Exam: There will be a midterm exam on Thursday, June 9 in class. This exam will cover all topics covered during the first 4 weeks of classes. If you miss the midterm for any reason, your final exam score will replace your midterm exam score. NO makeup exam will be given.

Quizzes: There will be a quiz every week.

Quiz 1: Thursday May 12

Quiz 2: Thursday May 19

Quiz 3: Thursday May 26

Quiz 4: Thursday June 2

Quiz 5: Thursday June 16

Quiz 6: Wednesday June 22

Each quiz will cover the material covered up to and including the Tuesday's lecture prior to that day. The lowest quiz score will be dropped at the end. There will be no makeup quizzes. If you miss a quiz, it will be counted as your lowest quiz score.

Final Exam: There will be a cumulative final exam in this course on June 27 or 28. Exact time and location will be announced later. *Check for exam schedule conflicts as soon as possible.* Do not make your travel plans to conflict with the final exam schedule. Only two finals at the same time or three in one day is a University recognized legitimate reason to be excused from taking the final at the scheduled time. Students with such a conflict should complete a final exam conflict form, available on the registrars website.

Grading: The course grade will be determined as follows:

Final exam: 40%

Midterm: 30%

Quizzes: 30%.

Letter grades are determined numerically:

$$\begin{array}{llll} A > 92, & 92 \geq A- > 89, & 89 \geq B+ > 86, & 86 \geq B > 82, \\ 82 \geq B- > 79, & 79 \geq C+ > 76, & 76 \geq C > 72, & 72 \geq C- > 69, \\ 69 \geq D+ > 66, & 66 \geq D > 62, & 62 \geq D- > 59, & F \leq 59. \end{array}$$

The grade I (Incomplete) will be given only if you have a good attendance record, have missed the final exam for a good reason, and otherwise are doing passing work. An incomplete is given at the discretion of the instructor.

Additional Resources: The Mathematics Department Tutoring Center is in Room 540B, Nightingale Hall. This peer tutoring is free. Peer tutoring appointments can be booked via MyNEU under TUTORING. Although you can walk in, it is really best to sign up in advance. Tutoring requests are scheduled by students in real-time and confirmed by email. Next-day appointments must be booked by 9:00pm the previous day. For more information about peer tutoring see:

<http://www.northeastern.edu/csatutoring/setting-up-appointments/>
The College of Engineering also provides tutoring for Calculus.

Issues with the course/instructor: If you have issues with this course and/or instructor which you are not comfortable discussing with your instructor, you should contact the Teaching Director, Prof. David Massey.

TRACE: Please complete TRACE evaluations at the end of the semester.

Note about Syllabus: The instructor may make changes to the syllabus if necessary. Please keep yourself aware of such changes. The weekly calendar on the next page is tentative and we may be slightly ahead or behind at any point. This is not unusual. We may skip some sections if we don't get enough time and such decisions will be made at appropriate times during the semester.

Topics and Exercises:

Week 1: May 9-12

§1.1 Recall anti-derivatives #2, 5, 7, 9, 11, 15, 19, 23, 26

§1.1 Integration by Parts #32, 33, 34, 36, 37, 39, 41

§1.3 Integration by Partial Fractions #1, 3, 7, 11-14

§2.5 Improper Integrals #1, 4, 5, 9-11

§2.6 Numerical Techniques (Simpson's Rule only) # 1, 20, 22, 23, 25, 26

Week 2: May 16-19

§3.1 Displacement and Distance Traveled #1, 2, 10, 11, 19, 23

§3.3 Distance Traveled in Space and Arc Length #1, 3, 19, 21, 24

§3.5 Volume 1, 2, 10, 11, 13, 39, 48

Week 3: May 23-26

§3.7 Mass and Density # 15-18

§3.8 Center of Mass # 7-11

§3.9 Work and Energy #1, 3, 5, 8, 9, 13, 23, 25, 29, 39, 42

§4.1 Approximating Polynomials #1-3, 7-11, 15, 16, 20

§4.2 Approximation of Functions #1-3, 9, 11, 16, 19-21, 23, 32

Week 4 (partial): May 30-June 2

§4.3 Error in Approximation #1, 2, 5, 13, 21

§4.4 Functions as Power Series #1-3, 5, 7, 11, 13, 15

§5.1 Theorems on Sequences

§5.2 Basic Theorems on Series #21, 23-27, 32, 35,

Week 5: June 6-9

§5.3 Non-negative Series # 1, 3, 4, 5, 6, 7, 11, 31,

§5.4 Series with Positive and Negative Terms # 20, 21, 22, 35, 36, 39

Midterm Review

Midterm Exam (covers up to §4.4) on June 9

Week 6: June 13-16

§1.1 Euclidean Space #1-10

§1.2 \mathbb{R}^n as a vector space #1, 3, 7, 9, 13, 15, 19-21, 27, 29, 33, 36

§1.3 Dot product, angles, and orthogonal projection #1-4, 9-12, 27-30, 33-35

§1.4 Lines, planes, and hyperplanes #1-4, 9-12, 13-17, 23

Week 7: June 20-23

§1.5 Cross product #1-4, 9-12, 27-29, 31, 35, 37

§1.6 Functions of a single variable #1, 4, 5, 7, 9, 10, 18, 19, 21-25, 29, 33-35

§1.7 Multivariable Functions 1, 4

§2.1 Partial derivatives #1, 2, 5, 7, 13, 16, 18, 19, 22, 27, 29, 32, 34

Review

June 27th and 28th: Final exams