Syllabus for MATH 1342, Calculus 2 for Science and Engineering

Northeastern University, Spring 2015

Instructor: Neranga Fernando, Ph.D.

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Office hours: Mondays and Wednesdays 3.30 pm – 5.30 pm, or by appointment.

Meeting times and location: MWR, 8.00 am – 9.05 am at Shillman Hall 220.

Textbooks: *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#calculus

The PDF is priced at $9.95, while the black and white (grayscale) soft-back printed version is $29.95. The PDF textbook contains a link, at the beginning of each section, to one or more free video lectures, by Prof. Massey, on the contents of that section. The PDF has hyperlinked Tables of Contents, Indices, and cross-references; you may need to activate the Forward and Back buttons in your PDF viewer to take full advantage of the hyperlinks. To use the textbook on an iPad, we recommend the GoodReader app.

It is absolutely **NOT** required that you purchase a printed textbook.

Web Materials: All class announcements, material, and grades will be posted on Blackboard.

Homework and Quizzes: Homework will NOT be collected. An in-class quiz will be given on every Thursday starting from the second week. No quizzes will be given during weeks 6 and 12. It is strongly advised that you do all of assigned homework since the quizzes will closely resemble the homework problems. The lowest quiz score will be dropped. A missed quiz will be counted in the dropped lowest score; there will be NO make-up quizzes.

Tests and Final exam:

There will be two tests, and a cumulative final exam in this course. The tests are 65-minute in-class tests; they will be on Thursdays, February 19 and March 26.

Final exam will be on May 01, 2015 from 3.30 pm to 5.30 pm. Location of the final exam is to be determined. **Check for exam schedule conflicts as soon as possible**. 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 registrar's website.

Snow days: If classes are cancelled due to snow, or for other official reasons, any scheduled quiz or test will occur on the next class meeting.

Grading: The course grade will be determined as follows:
Final exam: 40%
Tests: 40% (20% each)
Quizzes: 20%

Letter grades are determined numerically:

$A \geq 93$, $92 \geq A- \geq 90$, $89 \geq B+ \geq 87$, $86 \geq B \geq 83$, $82 \geq B- \geq 80$,
$79 \geq C+ \geq 77$, $76 \geq C \geq 73$, $72 \geq C- \geq 70$, $69 \geq D+ \geq 67$, $66 \geq D \geq 63$,
$62 \geq D- \geq 60$, $F \leq 59$

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:

Course TA Information:

Name : Antoni Rangachev
Office : 537 NI
Office Phone Number: 617-373-5673
Office Hours : Tuesdays 5.30pm - 7pm, Wednesdays 1pm – 2.30pm
Email: rangachev.a@husky.neu.edu

Name : Boris Tsvelikhovskiy
Office : 463 LA
Office Phone Number : 617-373-4195
Office hours : Mondays and Wednesdays 1 pm - 2.30 pm
Email : tsvelikhovskiy.b@husky.neu.edu

Recitation meetings: Tuesdays: 7.00 – 9 pm, 11 Kariotis.

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 9:00 pm the previous day. See http://www.northeastern.edu/csastutoring/setting-up-appointments/ For more information about peer tutoring.

The College of Engineering also provides tutoring for Calculus. See http://www.coe.neu.edu/coe/undergraduate/studentservices/tutoringinCOE.html for details.

The PDF textbook contains links at the beginning of each section to online full-length, free, video lectures on the contents of that section. These videos can also be accessed by going to www.centerofmath.org. In addition, there are video solution links for select exercises. If there is a discrepancy between how the videos present material and how your instructor presents material, you should follow your instructor's presentation, but you should discuss the matter with your instructor.

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. Massey, at d.massey@neu.edu.

Academic Honesty: Collaboration on quizzes, tests and final exam is not allowed. From Student Code of Conduct (see http://www.northeastern.edu/osccr/academicintegrity): "A necessary prerequisite to the attainment of the goals of the University is maintaining complete honesty in all academic work. Students are expected to present as their own only that which is clearly their own work in tests and in any material submitted for credit. Students may not assist others in presenting work that is not their own. ... Offenders are subject to disciplinary action." For more on Academic Integrity see: http://www.northeastern.edu/registrar/courses/cat1213-univ-proc.pdf

Note the Following Dates:

January 26, *is the last day to elect pass/fail for Spring-15 class*
February 2, *is the last day to drop a Spring-15 class without a W grade*
February 4, *is the last day to file a Final Exam Conflict Form for Spring-15 classes*
April 7, *is the last day to drop a Spring-15 class with a W grade*

Important:

1) Any student with a disability is encouraged to meet with the instructor during the first week of classes to discuss accommodations. The student must bring a current Memorandum of Accommodations from the Disability Resource Center (DRC).

2) If you are an athlete and have conflicts with an important class activity (quiz, mid-term, or final), you should let your instructor know before the end of second week of classes. You should also bring an official letter from the Office of Athletics.

3) All electronic devices (mobile phones, laptops etc.) should be turned off during class time, quizzes, tests and final exam.

Syllabus: Syllabus is subject to change**.** It is your responsibility to be aware of any changes the instructor may make to the syllabus as they are announced in class. Students are responsible for all information given when they are absent.

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

Schedule of Topics and Suggested Homework Exercises

Week 1: January 12 – 16

§1.1 Recall anti-derivatives #2, 3, 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, 9, 11-14

Monday, January 19, Martin Luther King Jr.'s Birthday, no classes

Week 2 (partial): January 20 – 23

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

§2.6 Numerical Techniques #1, 20, 23, 25, 26

Week 3: January 26 – 30

§3.1 Displacement and Distance Traveled #1, 2, 10, 11, 19, 26, 32, 45, 46

Appendix A: Introduction to vectors

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

Week 4: February 2 – 6

§3.4 Area Swept Out and Polar Coordinates #1-3, 7, 9, 13, 14

§3.5 Volume #1, 2, 8-11, 13, 29, 39, 48, 51

§3.7 Mass and Density #7, 15, 18, 25, 27

Week 5: February 9 – 13

§3.8 Centers of Mass and Moments #7, 8, 15, 16, 21

Review

Test 1

Monday, February 16, President's Day, no classes

Week 6 (partial): February 17 – 20

§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

Week 7: February 23 - 27

§4.2 Approximation of Functions (1st day) #1-3, 6, 9, 11, 16, 19-21, 23, 32

§4.2 Approximation of Functions (2nd day) #1-3, 6, 9, 11, 16, 19-21, 23, 32

§4.3 Error in Approximation (1st day) #1, 2, 5, 13, 21

Week 8: March 2 – 6

§4.3 Error in Approximation (2nd day) #1, 2, 5, 13, 21

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

§5.1 Theorems on Sequences #1-9, 17, 19, 20, 27, 28, 30

March 9 – 13, Spring break

Week 9: March 16 - 20

§5.2 Basic Theorems on Series #1-5, 11-13, 21-26, 31-33, 45, 47, 51, 52, 55

§5.3 Non-negative Series (1st day) #2-7, 11-13, 17, 19, 22-25, 27, 29, 31, 33, 35, 38, 40, 42

§5.3 Non-negative Series (2nd day) #2-7, 11-13, 17, 19, 22-25, 27, 29, 31, 33, 35, 38, 40, 42

Week 10: March 23 - 27

§5.4 Series with Positive and Negative Terms #1-5, 9, 10, 13, 15, 21, 22, 33-36, 42

Review

Test 2

Week 11: March 30 – April 3

§1.1 Euclidean Space #1, 4-10, 13-18, 23, 24

§1.2 R^n as a vector space #1, 3, 5, 7, 9, 10, 13-16, 19-21, 23-24, 27, 29, 33, 36, 41-43, 45, 46

§1.3 Dot product, angles, and orthogonal projection #1-4, 9-12, 17-19, 22, 23, 27-30, 33-35, 45-48

Week 12: April 6 – 10

§1.4 Lines, planes, and hyperplanes #1-4, 9-12, 13-17, 19, 21-23, 27-30

§1.5 Cross product #1-4, 9-12, 17-20, 27-29, 31, 35, 37, 41

Week 13: April 13 – 17

§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, 2, 4, 7-10, 15, 17-19, 21, 27, 28

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

Monday, April 20, Patriot's Day, no classes

Week 14 (partial): April 21 – 22

Review

Thursday, April 23, reading day

April 24, and April 27 – May 1 final exams