

Syllabus Guidelines and Information for Math 141 Fall 2019

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Please refer to the universities' requirements for syllabi

<https://policies.ncsu.edu/regulation/reg-02-20-07/>

Please see and adhere to the code of student conduct, students with disabilities and the attendance policies

NCSU POL11.35.01 – Code of Student Conduct

NCSU REG02.20.03 – Attendance Regulation

NCSU REG02.20.01 – Academic Accommodations for Students with Disabilities

Specific Notes:

1. State your **name**(write it as you would have them use it; Ms. Dempster for example, not Elizabeth. Whatever you prefer but I'd recommend last names with your students.)
State **your office and your office hours**. You may want to give your email and also your email "directions"
 - I write to please sign all your emails with your full name and the class and section you are in.
 - You may also want to manage expectations about how often you'll read and respond to emails; remind them they can always come up to you before or after class if there was an email that you have not responded to yet but they want to check you got it. I've had emails go to spam or trash for no apparent reason; we don't want to miss an email that might have sensitive or personal information. I've also gotten "avalanches of emails" and again, you don't want to ignore something important like the loss of a family member, sickness, hospitalizations....
 - I also tell them that if it is "just a question about homework", I might just wait and respond in class. Remind that email is not a "help desk" for homework questions.
2. State "**other places for help**" after the office hours since our schedules cannot always fit with our students' schedules. I also like them to go to these places for help with specific homework questions; I think its good for them to work in groups and to get help somewhere; either in office hours, help rooms; dorm rooms; etc. I believe working together on homework and studying is why you come to a university! (Or at least one good reason.)
 - MMC - Math Multimedia Center Sas 2105
 - <https://math.sciences.ncsu.edu/undergraduate/courses-faq/math-multimedia-center/>
 - UTC – Undergraduate Tutorial Center

<https://tutorial.dasa.ncsu.edu/>

3. State the **attendance policy** for your course. You must take attendance but you can decide how you'll weigh it into your grading.
 - Some teachers say fewer than 3-5 absences and your exam score can replace a test score
 - My policy is that if they miss fewer than 5 times, I add a 5 point bonus to their Webassign averages.
4. You'll want a course description and what the prerequisite is for Math 141; here is the description that has been used by many in the department.
 - **Course Description:** First of three semesters in a calculus sequence for science and engineering majors. Functions, graphs, limits, derivatives, rules of differentiation, definite integrals, Fundamental Theorem of Calculus, applications of derivatives and integrals.
 - **Prerequisite for Math 141:** Placement into Math 141 by a variety of ways; the math placement test or by taking Math 111. A student must show sufficient mastery of Precalculus materials: Algebra, Trigonometry and Fundamentals of Geometry.
5. Explain the policy on **homework**; it is administered through **Webassign** and that their **textbook** is purchased at the same time as when they purchase access to their homework in Webassign.
 - Your homework will be submitted online. You must purchase access to the homework for this course at <http://webassign.ncsu.edu>
 - Text: Posted on your Webassign website, Calculus for Scientists and Engineers, Volume 1 by Franke, Griggs and Norris
6. State the percentages of how the **course components make up their final grade**.
Give the percentages of what you want each element of the course to count. Mine is as follows:
 - Homework 10%
 - Test Average 60% (3 tests in summer so 20% each; 4 tests during the regular semester so 15% each)
 - Exam 30%

Make sure you decide ahead of time what your make up test policy is and how you will decide if an absence is excused or not. (please see reference to how students can get excuses verified through the office of Academics and Students' Affairs)

You'll also want to give the conversion of what percentage earns what final grade. I use a 10 point scale with 2% points at top and bottom for + and - grades. So 98% and above is A+; 92-97% is A etc.

7. Give the **dates of the tests and the exam**; the exam schedule is by the day and time of the class.

(see calendars below for tests dates)

Link for exam schedules for summer

<https://studentservices.ncsu.edu/calendars/exam/#sumi>

8. State if you are using **Moodle for the course**. If so, explain what the student can expect to find on your Moodle site.
- I use Moodle for all class notes; both typed outlines ahead of class sometimes and scanned notes from the notes I write on the doc camera.
 - I also use Moodle for its grade book. That way the students can see their grades posted online.
 - I also use Moodle for announcements; this way when you send an email to the class; it is recorded and saved under announcements.
 - I also use Moodle to post “old sample tests” for them to use for reviewing along with other review sheets and extra problems.
 - I also use the attendance feature of Moodle for keeping records of attendance. There is a new feature I might try this coming year; a secure code goes out, the students enter the code and moodle records it. You can also have your t.a.’s just check off who is in attendance on Moodle by a signed roll sheet or by a seating chart.

9. State the **Disability Resources Office** information and that you will adhere to making the class as accessible as possible; emphasize that they must register with the disability resource office; you cannot give additional time or considerations without it coming from and going through this office. Make every effort to protect the student’s privacy. Tell them to go through that office and to meet with you to discuss anything personal in an office appointment with you so you are not talking about personal issues in front of other students.

<https://dro.dasa.ncsu.edu/>

10. State the **counseling services office** or the “**care** website” for students to contact when they (or someone they know) are in crisis. Again make sure to respect the student’s privacy while letting them know there are wonderful resources available to them for confidential help.

There is also NCSU cares site that is helpful for students in crisis

<https://prevention.dasa.ncsu.edu/nc-state-cares/about/>

<https://counseling.dasa.ncsu.edu/>

11. Make note of the **Division of Academic and Student affairs**

This is important for absence verification. (I’ve had students use this when a family member has suddenly died or been hospitalized or when the student has been hospitalized)

<https://dasa.ncsu.edu/students/absence-verification-process/>

12. Class Learning Objectives by lesson and sections in the text

After the topics; I'll put the topics into the calendars for Summer I, Summer II and suggested Fall'19.

Here is the **list of topics** below I'll write how I put the topics into a daily calendar for the fall semester.

- Lesson 1-Sec.1&.3 Go over syllabus and tell the students .1 and .3 are review "Precalculus materials"; I usually give "quiz type questions" from these sections to have them self assess if they are prepared for Calculus 1. (inverse trigonometric questions; difference quotient with a rational function, solving inequalities with absolute values; solving inequalities with rational functions; graphing logarithmic & exponential functions; graphing piece-wise functions...)
- Lesson 2-Sec.2 Conic Sections ; Distance formula, Circles, Ellipses, Hyperbolas and Parabolas.
- Lesson 3-Sec.4 Parametric Equations; going back and forth with Cartesian and sketching graphs
- Lesson 4 -1.2 Definition of a limit; rigorous epsilon-delta definition; getting them used to the idea of a proof; a limit can exist or not; infinity as a limit; left and right hand limits.
- Lesson 5-1.3 Limit Definition of Continuity; review graphing piece-wise functions for the examples; have them understand the difference between the idea of continuous at a point ("drawing without lifting your pencil" and the rigorous limit definition to show or not show a function is continuous at $x=a$).
- Lesson 6-1.4 Average Rate of Change and Instantaneous rate of change with velocity example; discuss the slopes of secant lines and slopes of tangent lines with graphs.
- Lesson 7-1.1 This is the first section of the chapter but I think it's a good overview/review of the entire chapter 1.
- Lesson 8-2.1 Definition of the Derivative; comes after section 1.4 which is the same idea but 2.1 defines the word derivative. (Review difference quotient with basic types of functions; linear; quadratic, cubic, square root and rational and taking the limit with each to get the derivative; show the graphs of the functions with the graphs of the derivatives)

Lesson 9-2.2	Basic Differentiation Rules ; Derivatives of Sum and Differences of functions; Constant Multiple Rule; Product Rule ; Quotient Rule
Lesson 10-2.3	Power Rule and Rational Functions' derivatives;; Derivative of Polynomials; Higher Derivatives
Lesson 11-2.4	Trigonometric Functions' derivatives
Lesson 12-2.5	Chain Rule for derivatives of composite functions
Lesson 13-2.6	*Very long section; two days Implicit Differentiation (1 st and 2 nd derivatives) Use to prove other derivative rules; exponential & log Inverse Trigonometric Functions' derivatives Logarithmic Differentiation
Lesson 14-2.7	Application – Related Rates
Lesson 15-3.1	Chapter 3 is all kinds of applications of the derivative Newton's Method(finding zeros of functions; iterative formula) Linearization (using tangent lines for approximations)
Lesson 16-3.2	Extreme Values; Critical Numbers ; Absolute Extrema on closed intervals ; Extreme Value Theorem ; Rolle's Theorem; Mean Value Theorem
Lesson 17-3.3	Shape of a Curve ; Increasing and Decreasing on closed intervals; The First Derivative Test; Concavity and the 2 nd Derivative ; Concavity on open intervals; Point of inflection; The Second Derivative Test; Overall Analyzing a function and its graph using derivatives
Lesson 18-3.4	Optimization
Lesson 19-3.5	L'Hopital's Rule for limits (different cases) Theorem with 0/0 and inf/inf Other Indeterminate cases
Lesson 20-3.6	The differential and anti-derivatives of a function
Lesson 21-4.1	Areas and Riemann Sums; Summation formulas
Lesson 22-4.2	The Definite Integral; (limit definition) Properties of the definite integral (big chart ; 9 properties listed)
Lesson 23-4.3	The Fundamental Theorem of Calculus (Two parts to it)
Lesson 24-4.4	The method of Substitution for Integration
Lesson 25-4.5	Integration by Parts for Integration
Lesson 26-5.1	Areas between curves
Lesson 27-5.2	Volumes of Revolution by washers and disk method Volumes of Revolution by shells method

Calendar Fall Semester 2019

1/2 week 0

Wed., August 21 Lesson 1 .1 and .3
(recitation)

Fri. Aug. 23 Lesson 2 .2 Conic Sections

Week 1

Mon, Aug. 26 Lesson 3 .4 Parametric Equations
(recitation)

Wed, Lesson 4 1.2 Limit Definition
(recitation)

Fri. Lesson 5 1.3 Continuity

Week 2

Mon. Sept 2 No Classes
(recitation)

Wed. Lesson 6 1.4 Average Rates; Velocity
(recitation)

Fri. Lesson 7 1.1 Overview of Limits

Week 3

Mon. Sept 9 Lesson 8 2.1 Defn of Derivative
(recitation)

Wed., Sept 11 Review Class Day

Recitation day for TEST #1 Lessons 1 – 8 Thursday Sept 12th

Fri. Lesson 9 2.2 Rules of Derivatives

Week 4

Mon. Sept 16 Lesson 10 2.3 Rules of Derivatives
(recitation)

Wed Lesson 11 2.4 Trigonometric Func's Derivatives
(recitation)

Fri Lesson 12 2.5 The Chain Rule

Week 5

Mon. Sept 23 Lesson 9-12 Practicing all the derivative rules;
(Or can start 2.6)
(recitation)

Wed Lesson 13 2.6 Implicit Differentiation
(recitation)

Fri Lesson 13 2.6 Further derivative rules

Week 6

Mon. Sept 30 Lesson 14 2.7 Related Rates
(recitation)

Wed Lesson 14 2.7 Related Rates
(recitation)

Fri. Review

Week 7 (Fall Break week)

Mon October 7 **Test #2 in class Monday or Tuesday - Check on Physics**
Recitation Maybe Test #2 day

Wed. Lesson 15 3.1 Newton's Method

Fall break – no classes Thurs10 – Fri11

Week 8

Mon October 14 Lesson 15 3.1 Linearization and Newton's method
(recitation)

Wed. Lesson 16 3.2 Extrema
(recitation)

Fri. Lesson 17 3.3 Overall Graphing

Week 9

Mon October 21 Lesson 18 3.4 Optimizations
(recitation)

Wed Lesson 18 3.4 Optimizations; start 3.5 L'Hopital's
(recitation)

Fri Lesson 19 3.5 L'Hopital's Rule

Week 10

Mon. October 28 Lesson 20 3.6 Antiderivatives
(recitation)

Wed. Review

Recitation for Test #3 (lessons 15 – 20) Thursday, October 31

Fri. Lesson 21 4.1 Areas

Week 11

Mon. Nov 4 Lesson 22 4.2 Definition of Definite Integral
(recitation)

Wed Lesson 22 4.2 Properties of Definite Integral
(recitation)

Fri Lesson 23 4.3 Fundamental Theorem(part 1)

Week 12

Mon. Nov 11 Lesson 23 4.3 Fundamental Theorem(part 2)
(recitation)

Wed Lesson 24 4.4 Change of variables
(recitation)

Fri Lesson 25 4.5 Integration by parts

Week 13

Mon Nov 18 Lesson 24 & 25 Mixed Integration practice
(recitation)

Wed. Review

Recitation day for Test #4 Lessons 21 – 25 Thursday, Nov 21st

Fri. Lesson 26 5.1 Areas between curves

Week 14 (Thanksgiving Week)

Mon. Nov 25 Lesson 27 Volumes of revolution by Disk/Washers
(recitation)

Week 15 (Last)

Mon. Dec 2 Lesson 27 Volumes of revolution by shells method
(recitation)

Wed. Lesson 27 Volumes both ways
(recitation)

Fri, Dec 6th Last day of classes Review day