Math 110 - Transition to Calculus

Spring 2019

Instructor: Nicolas Petit, Pierce Hall 126
E-mail: nicolas.petit@emory.edu
Meeting times: MWF 1:00-1:50 PM, Seney 215
Tentative Office Hours:
Tu 3-5 PM, Wed 10-11:30 AM, Fri 2-4 PM
and by appointment.

Course Content and Goals: Mathematics 110 provides students with an integrative approach to Calculus I that includes the necessary precalculus topics. Broadly speaking, the precalculus topics we will cover include a review of algebra; functions; trigonometric, inverse trigonometric, logarithmic and exponential functions. Calculus topics include limits, continuity, the definition of the derivative, differentiation, extrema, antiderivatives and optimization problems. A tentative calendar of topics is provided at the end of this syllabus.

Text Material: J. Stewart, *Single-variable Calculus, early Transcendentals*, 8th edition preferred. A copy of the book is on reserve in the library. Further resources will also be posted on Canvas.

Grading: Course grades will be determined as follows:

Online homework (WeBWorK)	75 points
Turn-in homework	75 points
Participation	50 points
Gateway Exam	100 points
Out-of-class tests (2×150 pts)	300 points
In-class tests (2×100 pts)	200 points
Final Exam	200 points
Total	1000 points

Letter grades will be determined based on the total points each student earns: A: at least 900 points; B: 800-899 points; C: 700-799 points; D: 600-699 points; F: fewer than 600 points. Plus and minus grades will be assigned for sums of points near cut-off values.

Online Homework: in this class, we will use the online homework platform WeBWorK. A short set of problems will be assigned daily, and must be completed within the allotted time (typically, the deadline will be the beginning of the next lecture + 24 hours). After an assignment closes you won't be able to make any changes, so make sure to complete them ahead of the deadline. Note that every person gets the same type of problem, but with slightly different values; so you are welcome to work together on the homework, but every person will have a slightly different answer (that is constructed in the same way). Be also aware that you will typically have a finite amount of chances to submit the answer to every problem; so make sure to preview your answer before you submit it, to make sure it looks the way you want. You can find our WeBWorK website at this link.

Turn-in Homework: besides the regular WeBWorK, you will also be regularly assigned a homework set whose solutions you'll be asked to turn in. This is to ensure you're able to correctly solve problems and neatly present your computations and solutions. The sets will be assigned roughly on a weekly basis (every 3-4 lectures) and due at the beginning of class on the designated date. The homework will be graded satisfactory/unsatisfactory: a satisfactory grade shows an understanding of the concepts behind the problems and nearly-flawless algebra; conversely, an unsatisfactory grade involves bad algebra mistakes and a lack of understanding of the concepts. No late homework will be accepted,

but the lowest homework grade will be dropped.

Participation: Coming to class and participating in the group work activities makes the difference between succeeding and failing in the class. To motivate you to be an active member of the class, you'll be assigned a participation grade. Any student that regularly comes to class, is attentive, participates and generally contributes to a positive classroom atmosphere will get the full amount of points. Conversely, being unjustifiably absent or late for class, being inattentive (e.g. by looking at your cellphone) or not engaging in group work are all things that will lower your participation grade.

Gateway Exam: In order to pass this course the student must pass an examination in algebra, graphs and transcendental (trigonometric, inverse trig, logarithmic and exponential) functions. The student will be allowed three chances to pass it. While each gateway exam will have different problems, the format and content of the exams will be identical. The dates of these exams are listed in the tentative class schedule at the end of this syllabus; more information will be distributed as we approach the first Gateway exam. The first two exams will be on Tuesday/Thursday mornings, from 8:30 to 9:30 AM; please warn me as soon as possible of any conflicts.

Midterms: There will be two in-class exams and two out-of-class exams, whose dates are listed in the tentative calendar at the end of this syllabus. The in-class exams are taken during regular class time and be 50 minutes long; anybody that doesn't require accommodations is expected to take the in-class tests at the allotted time. The out-of-class exams will be on Thursday mornings, from 8 to 9:30 AM; please warn me as soon as possible of any conflicts. Mathematics is a subject that consistently builds on itself, so all exams are comprehensive (though they will mostly focus on the recent material). The lowest midterm grade will be replaced by your final grade if and only if doing so improves your average.

Final Exam: The final exam will be given at the time assigned by the registrar and will be comprehensive. Rescheduling a final exam is rarely accommodated and must be approved by the associate dean of academic affairs.

Laptop/Cell Phone policy: While laptops and phones are not formally banned from the class (after all, some of you might like to take notes on them), if you use them make sure to not get distracted by the other apps you have on it. In case you're wondering, yes, I can tell.

Inclusivity: Students with a documented disability who anticipate barriers related to the format or requirements of this course, or presume to have a disability (e.g. mental health, attention, learning, vision, hearing, physical or systemic) and are in need of accommodations this semester should contact the Office of Accessibility Services (OAS) as soon as possible to learn more about the registration process and steps for requesting accommodations.

Students who are currently registered with OAS who do not receive an accommodation notification letter within the first week of class must notify OAS immediately by emailing `adsroxford@emory.edu`. Students who have accommodations in place are encouraged to coordinate a face to face meetings with the instructor to communicate specific needs for the course as it relates to approved accommodations. All discussions with OAS and faculty members concerning the nature of a student's disability remain confidential. For additional information regarding OAS and how to register, please visit the website: `equityandinclusion.emory.edu/access`.

Support Services: Students should utilize the following resources:

- **Office Hours:** Office hours will be posted on Canvas. These times may vary due to meetings and other obligations, but most afternoons should have some availability. I also have an open

door policy: if my office door is open I'm happy to talk with you and answer any questions you might have. I am typically in my office between 10 and 5 PM every weekday. You are strongly encouraged to come to office hours if you have questions: remember, there are no dumb questions.

- **Canvas:** Announcements and important documents will be posted on the course's Canvas site. The student is responsible for regularly checking the site for new announcements and resources, including homework assignments and handouts.
- **Math Center:** Student tutors are available in the Math Center (in Pierce 116) Monday through Thursday afternoons. In addition, some tutors are available for free one-on-one tutoring; you can sign up for these at `http://oxford.emory.libcal.com`. Additional online resources from the Math Center are available at `http://www.oxfordmathcenter.com`.
- **Study Groups:** When used appropriately, study groups can be a useful tool in learning mathematics. Study groups should complement and enrich individual study of course material; with particular regard to homework assignments, it is suggested that study groups discuss completed (or attempted) assignments rather than work through homework problems for the first time.

The Honor Code of Oxford College applies to all work submitted for credit in this course. By submitting such work, you pledge that work was done in accordance with the rules stipulated on the assignment and in this syllabus.

TOPICS BY DAY
Math 110, Spring 2019

Monday	Tuesday	Wednesday	Thursday	Friday
Jan 14th	Jan 15th	Jan 16th **1** Class introduction; exponents	Jan 17th	Jan 18th No Class
Jan 21st No Class (MLK Day Holiday) *Drop/Add Ends on Jan 23*	Jan 22nd	Jan 23rd **2** Factoring and fractions	Jan 24th	Jan 25th **3** Equation and inequalities
Jan 28th **4** Basic Functions	Jan 29th	Jan 30th **5** Piecewise-defined functions and absolute values	Jan 31st	Feb 1st **6** Composition of functions
Feb 4th **7** Trigonometric functions	Feb 5th	Feb 6th **8** Trigonometric Identities	Feb 7th	Feb 8th **9** Trigonometric Equations
Feb 11th **10** Test 1 review	Feb 12th	Feb 13th **11** Test 1 (in-class)	Feb 14th	Feb 15th **12** Inverse trig functions
Feb 18th **13** Exponentials and logarithms	Feb 19th	Feb 20th **14** Exponential and logarithmic equations	Feb 21st	Feb 22nd **15** Definition of limit
Feb 25th **16** Computing limits algebraically	Feb 26th Gateway exam 1st try (8:30 AM)	Feb 27th **17** Limits to infinity	Feb 28th	Mar 1st **18** Continuity (I)
Mar 4th **19** Continuity (II)	Mar 5th	Mar 6th **20** Test 2 review	Mar 7th Test 2 (8:00am)	Mar 8th **21** Limit definition of the derivative

Monday	Tuesday	Wednesday	Thursday	Friday
Mar 11th No Class (Spring Break)	Mar 12th	Mar 13th No Class (Spring Break)	Mar 14th	Mar 15th No Class (Spring Break)
Mar 18th **22** The derivative function	Mar 19th	Mar 20th **23** Basic derivative rules	Mar 21st Gateway 2nd try (8:30 AM)	Mar 22nd **24** The product and quotient rule
Mar 25th **25** Derivatives of trig functions	Mar 26th	Mar 27th **26** The chain rule	Mar 28th	Mar 29th **27** Derivatives of logarithms
Apr 1st **28** Derivative practice/test 3 review	Apr 2nd	Apr 3rd **29** Test 3 (in-class)	Apr 4th	Apr 5th **30** Absolute maxima and minima
Apr 8th **31** Local maxima and minima; Concavity	Apr 9th	Apr 10th **32** Antiderivatives	Apr 11th	Apr 12th **33** The u-substitution rule
Apr 15th **34** Practice with antiderivatives	Apr 16th	Apr 17th **35** Test 4 review	Apr 18th Test 4 (8:00am)	Apr 19th **36** Optimization
Apr 22nd **37** Optimization II	Apr 23rd	Apr 24th **38** Gateway 3rd try (in-class) or Optimization III	Apr 25th	Apr 26th **39** Final review
Apr 29th **40** Jeopardy!	Apr 30th Reading Day	May 1st	May 2nd	May 3rd Final exam 2-5 PM