**East China Normal University**
**International Summer Session**

**MAT12 Calculus II**

**Term: July 5th –August 8th, 2018**
**Instructor:** Bernard Brooks
**Home Institution:** Rochester Institute of Technology
**Office hours:** 12:40-1:50 Monday and Wednesday
**Email:** bpbsma@rit.edu
**Teaching Assistant: TBD**

## *Course Description*

*This course builds on concepts introduced in MAT 11. It focuses on techniques of integration, applications of integration, differential equations, infinite sequences, infinite series, and Taylor's Theorem. This course is a standard second semester course in calculus.*

*Prerequisite: MAT 11 or equivalent 1st semester calculus course.*

## Course Overview

The course emphasizes the understanding of concepts, and using them to solve physical problems. The course covers techniques of integration including integration by parts, partial fractions, improper integrals, applications of integration, representing functions by infinite series, convergence and divergence of series, parametric curves, polar coordinates, vectors, and plane geometry.

## Course Goals:

A student who satisfactorily completes this course should:
  1. know calculus definitions, concepts, rules, vocabulary, and mathematical notation.
  2. be able to develop logical arguments and communicate them in written form.
  3. have an understanding of the usage and application of mathematical abstraction.
  4. have the necessary manipulative skills required for solving problems in calculus.
  5. gain knowledge and appreciation of calculus as a tool in solving applied problems.

## *Required Text*

*(M. Weir and J. Hass, Thomas' Calculus: Early Transcendentals, 12th edition, Addison-Wesley, (Pearson,)Reading, MA.  ISBN: 978-0-321-58876-0*
**On Coursesmart as eText: ISBN-13 9780321640932**

## *Academic Honesty*

Students are expected to maintain high standards of academic honesty. Specifically, unless otherwise directed by the professor, students may not consult other students, books, notes, electronic devices or any other source, on examinations. Failure to abide by this may result

in a zero on the examination, or even failure in the course.

## Course Hours

The course has 25 class sessions in total. Each class session is 110 minutes in length, for a total of 2750 minutes of in-class time. The course meets from Monday to Friday from July 5 to August 8. ECNU awards 4 credits for this course. Different universities may count course credits differently. Consult officials at your own home institution.

## Attendance

Summer school is very intense and to be successful, students need to attend every class. Occasionally, due to illness or other unavoidable circumstance, a student may need to miss a class.  ECNU policy requires a medical certificate to be excused. Any absence may impact on the student's grade. Moreover, **ECNU policy is that a student who has more than 3 absences will fail the course. Arriving late or leaving early will count as a partial absence.**

## Grading Policy

ECNU awards grades of A, A-, B+, B, B-, C+, C, D, and F.  Most colleges and universities do not award transfer credit for grades of D or F.

In this course, grading will be based on the following:
- 20% **Daily** homework quizzes
- 30% Midterm exam
- 40% Final exam
- 10% Classroom engagement (attendance, attention, participation in discussions)

## General expectations:

Students are expected to:
- *Attend all classes and be responsible for all material covered in class and otherwise assigned. Any unexcused absence may impact a student's grade. Moreover, ECNU policy is that a student who has more than 3 absences will fail the course. Arriving late or leaving early will count as a partial absence.*

- *Complete the day's required reading and assignments* <u>before</u> *class*

- *Review the previous day's notes before class; make notes about questions you have about the previous class or the day's reading*
- *Participate in class discussions and complete required written work on time.*
- *Refrain from texting, phoning or engaging in computer activities* <u>unrelated</u> *to class during class  Students who do not do this will be asked to leave the class*

- *While class participation is welcome, even required, you are expected to refrain from private conversations during the class period.*

## *Course Schedules*

The planned schedule sketched out below may be modified to suit the interests or abilities of the enrolled students or to take advantage of special opportunities or events that may arise during the term.

**WEEK ONE: July 5-11**
Thurs: Introductions, review of substitution
Fri: Integration by parts,                          quiz on Thurs. material
Mon: Trigonometric integrals                        quiz on Fri. material
Tues: Trigonometric substitution                    quiz on Mon. material
Wed: Integration by partial fractions,              quiz on Tues. material

**WEEK TWO: July 12-18**
Thurs: Simpson's rule, improper integrals,          quiz on Wed. material
Fri: comparison test                                quiz on Thurs. material
Mon:   Area between curves                          quiz on Fri. material
Tues:   Volumes w/ cross-sections                   quiz on Mon. material
Wed:   Volumes of revolution                        quiz on Tues. material

**WEEK THREE: July 19-25**
Thurs: average value, arc length                    quiz on Wed. material
Fri:  midterm review                                quiz on Thurs. material
Mon:             **Midterm Examination (35%)**
Tues: review the midterm, surfaces of rotation
Wed: parametric curves                              quiz on Tues. material

**WEEK FOUR: July 26-Aug. 1**
Thurs: polar coordinates                            quiz on Wed. material
Fri: Sequences and series                           quiz on Thurs. material
Mon: Integral test, estimating sums                 quiz on Fri. material
Tues: Comparison test, alternating series           quiz on Mon. material
Wed: Ratio test, interval of convergence            quiz on Tues. material
                 LAST DAY TO DROP CLASSES

**WEEK FIVE: Aug. 2-10**
Thurs: Taylor, Maclaurin series                     quiz on Wed. material
Fri: Power series                                   quiz on Thurs. material
Mon: Binomial series                                quiz on Fri. material
Tues: summary and review for final exam             quiz on Mon. material
Wed:             **Final Cumulative Examination (45%)**