MATH 1596 Fall 2012 — Honors Calculus I

MTuWThF 11 – 11:50 EduE 36

(5 credits, prereq 1250 or 3 1/2 years high school math including trig, dept consent, a grade of C- or better in all prereq courses)

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Office Hours: M 12–1 and 3–4, Tu 1–2, W 12–1, Th 2–3, F 12–1 and by appointment

Textbook:
Calculus, Early Transcendentals, Seventh Ed. 2012 by James Stewart, Cengage Learning, ISBN 9780538497909 (or the enhanced version with Web Assign, ISBN 9781111649579).
We may be also using additional resources that will be provided to you when needed.

Course Goals and Objectives:
Master and understand basic concepts, methods, and techniques of calculus. Honors Calculus I (Math 1596) will cover the same topics as the regular Calculus I (Math 1296) but with more rigor and more depth. More emphasis will be placed on proofs, more challenging (interesting) HW will be assigned and less time will be spent in class on examples. Students should expect to spend more time outside class on assignments. For high-ability students with excellent preparation and curiosity about mathematics.

Course Content (topics covered):
We will cover Chapter 1–6 and Section 7.1. We may skip some sections if needed. A detailed list of sections is on the last page of this syllabus.

Attendance requirements and penalties:
While regular attendance is highly recommended and very welcome, it is not mandatory and absences will not be penalized. Obviously, we will often in assignments, tests, and proofs performed in class refer to previously mentioned material which may not always be easily found in the book. Therefore, missing classes may cause difficulties in meeting the course standards.

Assignments:
There will be assignments posted every Friday, updated on Tuesday, and due on Wednesday at the beginning class. The assignments will be graded. The assignment with the lowest score will be dropped. An assignment is assumed to be **your own work**! Therefore, you can collaborate with other people when preparing for the assignment, but you have to work alone when you are actually doing it. Also, you cannot use any kind of solutions to assigned problems that can be found in manuals, on Internet, or elsewhere.

Additional Homework:
There will be homework exercises from almost every class. The problems will be posted on the web but are not to be handed in. If you need help with your homework and/or assignment, you can talk to your GTA, go to the Tutoring Center located in Solon Campus Center 40 (http://www.d.umn.edu/tutoring/), or come to me during office hours.

Quizzes:

There will be a quiz every Friday except for the weeks when there is a test. The quiz with the lowest score will be dropped. Days for assignments and quizzes are subject to discussion and change.

Tests:
There will be three tests. Tentative dates are weeks 4, 8, and 12. They will be given outside of the regular class periods to allow for extra time. The material to be covered in the tests will be announced in class. Some tests or their parts can be open book. Missing a test is a serious matter. In order to schedule a make-up test, you must have a written medical excuse.

Extra Credit:
Extra credit is given in the form of bonus point. Details in class.

Final Exam:
Will be held on Thursday, December 20 at 12 PM in the regular classroom. The Final Exam is cumulative. It can be an open book exam.

Grading:
Your grade in this course will be based on:
Assignments   = 20%
Quizzes   = 20%
Tests   = 45%
Final Exam   = 15%

Grading scale:
The grades are based on UMD Grading Policy: http://www.d.umn.edu/vcaa/GradingandTranscripts.html
Your grade in this course will be determined as follows:

91–100 A (Achievement that is outstanding relative to the level necessary to meet course requirements)
86–90   A–

81–85   B+
76–80   B (Achievement that is significantly above the level necessary to meet course requirements)
71–75   B–

66–70   C+
61–65   C (Achievement that meets the course requirements in every respect)
56–60   C–

50–55   D
below 50 F

Students with Disabilities:
It is the policy and practice of the University of Minnesota Duluth to create inclusive learning environments for all students, including students with disabilities. If there are aspects of this course that result in barriers to your inclusion or your ability to meet course requirements – such as time limited exams, inaccessible web content, or the use of non-captioned videos – please notify the instructor as soon as possible. You are also encouraged to contact the Office of Disability Resources to discuss and arrange reasonable accommodations.   Please call 218-726-6130 or visit the DR website at www.d.umn.edu/access for more information.

Cell Phones:
Cellular telephones and other communication devices are prohibited during quizzes and exams. Having any communicating device out during an exam will be considered cheating and result in an immediate zero. Also note it is discourteous and a distraction to have ringing phones during class time. If you do not turn off your ringer you may be asked to leave the room.

Pictures and videos:
Photographs and video cannot be taken without prior instructor's consent. If a verbal consent is given, they cannot be made public (e.g., on internet) without written consent of instructor and UMD administration.

Policies:
The following policies apply:
http://www.policy.umn.edu/Policies/Education/Education/SYLLABUSREQUIREMENTS_APPA.html
http://www.duluth.umn.edu/vcaa/SyllabusStatements.html
http://www.d.umn.edu/vcaa/GradingandTranscripts.html
All students at the UMD must be in compliance with the student conduct code in the policies and procedures section of the 2005-2007 University Catalog, specifically in this course with regards to scholastic dishonesty. Academic integrity is of utmost importance and all procedures and sanctions will be followed as per the university catalog.

The University of Minnesota is committed to the policy that all persons shall have equal access to its programs, facilities and employment without regard to race, religion, color, sex, national origin, handicap, age, veteran status or sexual orientation.

Student learning outcomes as they relate to the course objectives
- Demonstrate mastery of fundamental mathematical concepts and techniques
- Apply mathematical techniques appropriately
- Recognize the power of mathematics to model real life situations
- Demonstrate competence and confidence in the workforce
- Maintain a desire for learning
- Communicate mathematics to non-technical audiences as well as to peers

If you don't understand what I mean by this, you are not alone. I don't understand it either, but I am mandated to include it here by the Syllabus Policy http://www.duluth.umn.edu/vcaa/Syllabus.html

Academic Dishonesty—Prohibited Conduct:

All forms of academic dishonesty are prohibited, including (but not limited to):

1. submission of false records of academic achievement

2. cheating on assignments or examinations

3. submitting sentences or ideas as your own without proper acknowledgment or citation (plagiarizing)

4. altering, forging, or misusing a University academic record or forging the signature of any member of the University community

5. taking, acquiring, using, or circulating test materials without faculty permission

6. acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement

7. facilitating academic dishonesty by helping another student to violate the academic integrity policy, such as providing course work for another student to turn in as his or her own effort or taking an exam for another student

8. presenting as one's own a plot, succession of ideas, or list/outline of another without proper acknowledgment

9. attending a class, completing an assignment, or taking a quiz/test in the name of another student

10. copying, editing, using, or deleting computer files without permission

11. altering or viewing computer records, dispensing or releasing information gained via unauthorized access, modifying computer programs or systems, or interfering with the use or availability of computer systems or information

12. bribing or attempting to bribe, promising favors, or making threats with the intention of affecting a grade, a record, or an evaluation of academic performance

13. purchasing or otherwise presenting work as your own when it was done by another person

14. submitting the same paper or generally similar papers to meet the requirements of more than one course without the approval and consent of all faculty members of all such courses

15. depriving another student of necessary study or research materials or in any way impeding another student's work and pursuit of education

16. submitting falsified data, such as bibliographic resources and experimental data or altering graded academic work/quizzes/tests and resubmitting them in order to get a higher grade (fabrication)

17. intentional use, misuse, or alterations of University materials or resources in an attempt to make them inaccessible to others (e.g., altering passwords, unauthorized use of computer accounts, violation of library procedures, intentional misuse or destruction of educational materials)

Course Content:

Chapters	Sections
1 Functions and Models 5 sections Week 1–2	1.1 Four Ways to Represent a Function 1.2 Mathematical Models 1.3 New Functions from Old Functions 1.5 Exponential Functions 1.6 Inverse Functions and Logarithms
2 Limits and Derivatives 8 sections Week 2–4	2.1 The Tangent and Velocity Problems 2.2 The Limit of a Function 2 3 Calculating Limits Using the Limit Laws 2.4 The Precise Definition of a Limit 2.5 Continuity 2.6 Limits at Infinity; Horizontal Asymptotes 2.7 Derivatives and Rates of Change 2.8 The Derivative as a Function
3 Differentiation Rules 10 sections Week 5–8	3.1 Derivatives of Polynomial and Exponential Function 3.2 The Product and Quotient Rules 3.3 Derivatives of Trigonometric Functions 3.4 The Chain Rule 3.5 Implicit Differentiation 3.6 Derivatives of Logarithmic Functions 3.7 Rates of Change in the Natural and Social Sciences 3.8 Exponential Growth and Decay 3.9 Related Rates 3.10 Linear Approximations and Differentials
4 Applications of Differentiation 8 sections Week 9–11	4.1 Maximum and Minimum Values 4.2 The Mean Value Theorem 4.3 How Derivatives Affect the Shape of a Graph 4.4 Indeterminate Forms and l'Hospital's Rule 4.5 Summary of Curve Sketching 4.7 Optimization Problems 4.8 Newton's Method (if time permits) 4.9 Antiderivatives
5 Integrals 5 sections Week 12–13	5.1 Areas and Distances 5.2 The Definite Integral 5.3 The Fundamental Theorem of Calculus 5.4 Indefinite Integrals and the Net Change Theorem 5.5 The Substitution Rule
6 Applications of Integration 5 sections Week 14–15	6.1 Areas between Curves 6.2 Volumes 6.3 Volumes by Cylindrical Shells 6.4 Work (optional) 6.5 Average Value of a Function (optional)
7 Techniques of Integration	7.1 Integration by Parts