

OKLAHOMA STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS

CALCULUS I (MATH 2144-008) FALL 2010

- Instructor: Dr. Mathias Schulze
 - E-mail: mschulze@math.okstate.edu
 - Phone: (405) 744-5773
 - Office: MSCS 406
 - Office Hours: MWF 11:30-12:20 and by appointment
- Class Meeting: MWRF, 12:30-1:20pm, JB 208
- Textbook: James Stewart, *Calculus, Early Transcendentals*, Custom Edition for OSU, 6th edition, Brooks Cole (2007).
- Online Homework: <https://www.webassign.net/login.html>
- Course Web Page: <http://www.math.okstate.edu/~mschulze/teaching/10F-MATH2144>
- OSU Syllabus Attachment: <http://osu.okstate.edu/acadaffr/aa/syllabusattachment-Fall.htm>

ATTENDANCE

Because of the high correlation between poor attendance and low grades, you are expected to attend every class session. Class attendance means that you are in class on time and stay for the entire class period. Each absence without a valid reason takes away 10% from your attendance score and lowers your final grade according to the grading scheme. You are expected to participate in class discussion and you are responsible to learn the material covered in class and that in the corresponding sections in your textbook.

HOMEWORK

Homework will be assigned and submitted in the online system *WebAssign*. To get started, follow the instructions in <http://www.math.okstate.edu/~mschulze/teaching/10F-MATH2144/self-enrollment.pdf> using the *Class Key*, received by email or at the first class meeting, and the *Access Code* that comes with your textbook. You can find some useful tips for using *WebAssign* in <http://www.math.okstate.edu/~mschulze/teaching/08F-MATH2144/webassign-tips.pdf>. For any problems with *WebAssign*, go to https://www.webassign.net/user_support/student for guides, FAQs, or to contact tech support.

EXAMINATIONS

There will be 3 midterm exams and a final exam which contribute to your final grade. Date and time for each exam will be announced in class and appear online in the course schedule. Make-up exams will be given only under exceptional circumstances and if you contact me in advance. Books, notes, and electronic devices are not permitted during exams. To gain credit your answers must be clearly presented. Your work must show how you proceeded to find the answer or why your answer is correct. Scratch work should be clearly separated from what is to be graded and the final result should be marked by drawing a rectangle around it.

GRADES

The contributions to your total score will be weighted as follows.

| Contribution | Attendance | Homework | 3 Midterm Exams | Final Exam | Extra Problems |
|------------------------|------------|----------|-----------------|------------|----------------|
| Weight (final grade) | 5% | 20% | 3 x 15% | 30% | 1% each |
| Weight (6-weeks grade) | 10% | 40% | 1 x 50% | NA | NA |

Your total score will be truncated to an integer percentage and determines your final grade as follows.

| Total Score | 0-59% | 60-69% | 70-79% | 80-89% | 90-100% |
|-------------|-------|--------|--------|--------|---------|
|-------------|-------|--------|--------|--------|---------|

| | | | | | |
|---------------------|---|---|---|---|---|
| Letter Grade | F | D | C | B | A |
|---------------------|---|---|---|---|---|

Curving may be applied in form of a linear adjustment to all scores on a particular exam. I reserve the right to decide borderline cases based on class attendance and subjective impressions such as effort and conscientiousness.

HOW TO LEARN?

Your starting points are the textbook and the lecture. It is easier to follow the lecture if you have seen the material before and presented from a slightly different point of view. I strongly recommend that you read each section in your textbook at home before it is covered in class. Try to isolate what you do not understand and be prepared to ask questions during the lecture.

Do not hesitate to ask questions. If something is unclear to you in class, just ask. You can be sure that many of the other students have the same question but do not dare to ask. If you let me know what your problems are, I can adapt the lecture and make it easier for you to follow. There are no stupid questions. On the contrary, asking the right question is often an important step in the process of solving a problem.

The importance of working on example problems can not be overemphasized. Try to work on the homework problems intensively and pick additional similar problems from the exercises sections of your textbook.

Discussion is crucial to understand mathematics. I strongly encourage you to discuss both the material covered in class and your solutions of the homework problems with other students in your section. The best way to check your own understanding of a subject is to explain it to someone else.

WHERE TO GET HELP?

Ideally you solve the homework problems on your own or working with other students in your section. If you realize that you do not understand the homework problems, seek help immediately. With a backlog of not understood material it is extremely difficult to catch up with the class again.

Free tutoring and other services for this and similar mathematics courses are provided by the Mathematics Learning Resource Center (MLRC). The MLRC is located on the 4th floor of the classroom building and you need to check in for tutoring in room CLB 420. For more information, see <http://www.math.okstate.edu/mlrc>.

You are always welcome to see me in my office hour or contact me by email if you have any questions or problems. If my office hours do not fit your schedule, please contact me by email for an appointment.

COURSE SCHEDULE

The following course schedule is preliminary.

| Class Meeting | Date | Sections in Textbook | Subject/Exam | Addendum |
|---------------|-------|----------------------|--|----------|
| 1 | 08/23 | 1.1 1.2 | Four Ways to Represent a Function Mathematical Models | |
| 2 | 08/25 | 1.3 1.5 | New Functions from Old Exponential Functions | |
| 3 | 08/26 | 1.6 | Inverse Functions and Logs | |
| 4 | 08/27 | 2.1 | The Tangent and Velocity Problems | |
| 5 | 08/30 | 2.2 | The Limit of a Function | |

| | | | | |
|----|-------|------------|--|-----------|
| 6 | 09/01 | 2.2 | <i>Continued</i> | |
| 7 | 09/03 | 2.3 | Calculating Limits using the Limit Laws | |
| 8 | 09/03 | 2.3 | <i>Continued</i> | |
| - | 09/06 | - | University Holiday | |
| 9 | 09/08 | 2.5 | Continuity | |
| 10 | 09/09 | 2.5 | <i>Continued</i> | |
| 11 | 09/10 | 2.6 | Limits at Infinity; Horizontal Asymptotes | |
| 12 | 09/13 | 2.6 | <i>Continued</i> | |
| 13 | 09/15 | 2.7 | Derivatives and Rates of Change | |
| 14 | 09/16 | 2.7 | <i>Continued</i> | |
| 15 | 09/17 | 2.8 | The Derivative as a Function | |
| 16 | 09/20 | 1.1-2.8 | Review for Exam 1 | |
| 17 | 09/22 | 1.1-2.8 | Exam 1 | Solutions |
| 18 | 09/23 | 3.1 | Derivatives of Polynomials and Exponential Functions | |
| 19 | 09/24 | 3.2 | The Product and Quotient Rules | |
| 20 | 09/27 | 3.3 | Derivatives of Trigonometric Functions | |
| 21 | 09/29 | 3.4 | The Chain Rule | |
| 22 | 09/30 | 3.4 3.5 | <i>Continued</i> Implicit Differentiation | |
| 23 | 10/01 | 3.5 | <i>Continued</i> | |
| 24 | 10/04 | 3.6 | Derivatives of Logarithmic Functions | |
| 25 | 10/06 | 3.8 | Exponential Growth and Decay | |
| 26 | 10/07 | 3.9 | Related Rates | |
| 27 | 10/08 | 3.9 | <i>Continued</i> | |
| 28 | 10/11 | 3.10 | Linear Approximations and Differentials | |
| 29 | 10/13 | 3.10 | <i>Continued</i> | |
| 30 | 10/14 | 3.11 | Hyperbolic Functions | |
| - | 10/15 | - | Students' Fall Break | |
| 31 | 10/18 | 4.1 | Maximum and Minimum Problems | |
| 32 | 10/20 | 4.1 4.2 | <i>Continued</i> The Mean Value Theorem | |
| 33 | 10/21 | 4.3 4.5 | How Derivatives Affect the Shape of a Graph Curve Sketching | |
| 34 | 10/22 | - | <i>Continued</i> | |

| | | | | |
|----|------------------------|------------|---|-----------|
| 35 | 10/25 | 3.1-4.5 | Review for Exam 2 | |
| 36 | 10/27 | 3.1-4.5 | Exam 2 | Solutions |
| 37 | 10/28 | 4.4 | Indeterminate Forms and L'Hospital's Rule | |
| 38 | 10/29 | 4.4 | <i>Continued</i> | |
| 39 | 11/01 | 4.7 | Optimization Problems | |
| 40 | 11/03 | 4.7 | <i>Continued</i> | |
| 41 | 11/04 | 4.9 | Antiderivatives | |
| 42 | 11/05 | 5.1 | Areas and Distances | |
| 43 | 11/08 | 5.1 7.7 | <i>Continued</i> Approximate Integration | |
| 44 | 11/10 | 5.2 | The Definite Integral | |
| 45 | 11/11 | 5.2 | <i>Continued</i> | |
| 46 | 11/12 | 5.3 | The Fundamental Theorem of Calculus | |
| 47 | 11/15 | 5.4 | Indefinite Integrals and the Net Change Theorem | |
| 48 | 11/17 | 5.5 | The Substitution Rule | |
| 49 | 11/18 | 6.1 | Area between Curves | |
| 50 | 11/19 | 6.2 | Volumes | |
| 51 | 11/22 | 6.2 | <i>Continued</i> | |
| - | 11/24 | - | Students' Thanksgiving Break | |
| - | 11/25 | - | University Holiday | |
| - | 11/26 | - | University Holiday | |
| 52 | 11/29 | 4.9-6.2 | Review for Exam 3 | |
| 53 | 12/01 | 4.9-6.2 | Exam 3 | Solutions |
| 54 | 12/02 | 6.3 | Volumes and Shells | |
| 55 | 12/03 | 6.3 | Volumes by Cylindrical Shells | |
| 56 | 12/06 | 6.4 6.5 | Work Average Value of a Function | |
| 57 | 12/08 | 4.8 | Newton's Method | |
| 58 | 12/09 | 1.1-6.5 | Review for Final Exam | |
| 59 | 12/10 | 1.1-6.5 | Review for Final Exam | |
| 60 | 12/17 10:00-11:50am | 1.1-6.5 | Final Exam | |

EXTRA PROBLEMS

You can gain extra credit by solving extra problems assigned in class. The due date for these problems is 12/01/2010 and each of them adds 1% to your final grade.

ACADEMIC INTEGRITY

I will respect OSU's commitment to academic integrity and uphold the values of honesty and responsibility that preserve our academic community. For more information, see <http://academicintegrity.okstate.edu>.

DISCLAIMER

This syllabus may be subject to future changes and it is your responsibility to be informed. Any change of the syllabus will be announced in class and appear online.