

Greg Langkamp - Seattle Central Community College
Math& 151 – Calc I: Differential (formerly Mat 124)
Course Syllabus Winter 2009

Contact Information

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Concurrent Enrollment Required: All students taking this course must also register for CSC 102Q, which is a 3-week course on the Mathematica software program. Once you have completed this course, we will use the program in Math 151. The course begins the second week of the quarter and ends the 4th week of the quarter. Many sections of CSC102Q are being offered – please consult the SCCC website for section days, times, and openings.

Prerequisites: PreCalculus II (Math& 142 or Mat 123) with a 2.2 or better (at SCCC), or SCCC placement exam. You must meet the prerequisite to stay in this class, or to overload this class.

If you met the prerequisite for this course by passing a placement test, be aware that the accuracy of such tests is fairly low. If you suspect that you are in the wrong course, please come and see me ASAP.

Waitlist Policy: After I take attendance for 2 days, I will know how many seats can be added to the course. Those students on the electronic waitlist who *attend the first 2 days* will have highest priority for being accepted into the course. (There is no guarantee that anyone will be signed into the course.) Students on the waitlist should be prepared to show proof of their prerequisites before I sign them in.

Classroom: These course sections meet daily in the new science and math (SAM) building. No food or drink is allowed in the classroom. Water bottles with tight lids can be kept in your book bag under the desks. Please keep the classroom clean--if you make a mess, clean it up!

Course Materials:

- a) REQUIRED: Textbook: Stewart, *Calculus: Concepts and Contexts*, 3rd Edition, Thomson Brooks/Cole Publishers, 2005.
- b) REQUIRED: Course Notes ≈ \$2.75: available at the SCCC copy center (3rd floor main bldg.)
- c) REQUIRED: Pencils and eraser, graph paper, small ruler, and colored pencils.
- d) REQUIRED: USB Flash drive (a.k.a. thumb drive) to store computer files.
- e) REQUIRED: TI-83/84 graphing calculator. Needed by the 2nd day of the quarter. Some calculator models may not be allowed in this class because they are too powerful. These include, but are not limited to, the TI-89 and TI-92. Check with me ASAP!
- f) OPTIONAL: *Student Solution Manual* and *Student Study Guide* to accompany Stewart text.

Internet Access: This course requires that you access the internet several times each week. A printer is not necessary, although may be useful. Students who do not have internet access at home will need to use computers in the SCCC computer labs, in a local library, etc

Calculators: It is also assumed that you have some experience using a graphing calculator. If not, then you should start learning and get help *immediately* in the 1st floor tutoring lab (SAM 100). There is also graphing calculator help at my website.

Renting Calculators: TI-83+ calculators are available to rent for \$20/quarter. You will need to pay \$20 to the school cashier (on the first floor of the main building), bring the receipt to me, and then fill out a contract. I will only rent you a calculator if you are enrolled in the class.

Course Contents: This is the first course in differential calculus. Topics include a brief review of pre-calculus, limits and continuity, the definition of the derivative, differentiation rules, higher-order derivatives, Taylor polynomials, applications of derivatives, and anti-derivatives. Most of the material is in Stewart chapters 1-4. Below is an approximate week-by-week guide to the course.

| Week | Topic |
|------|---|
| 1 | Pre-calculus review |
| 2 | Limits and continuity |
| 3 | Rates of change, the derivative |
| 4 | Higher order derivatives , Exam #1, Derivatives of poly. and exp. funcs. |
| 5 | Product & Quotient rules, applications |
| 6 | Derivatives of trig functions, Chain Rule |
| 7 | Implicit Differentiation, Derivatives of Log funcs. and Log Differentiation |
| 8 | Exam 2, Taylor polynomials, Related Rates applications |
| 9 | Maximum and minimum values, derivatives and shapes of curves |
| 10 | L'Hospital's Rule, Optimization |
| 11 | Anti-derivatives, Final Exam |

WAMAP: This course will make use of WAMAP, an online course-management program and assessment tool. One feature in WAMAP is that it allows me to post class announcements and important documents for everyone to read. A second major feature of WAMAP is its internal message system, which allows you and me to contact members of the class. WAMAP messaging is for class use only – not for other personal correspondence! A third feature of WAMAP is that it houses an enormous number of online math problems to use for practice or graded homework. I will register you in WAMAP for this course. More information will come during the first week.

Teaching/Learning format: I believe the best way for students to learn is to do the math, rather than listen to a teacher tell them how to do the math. As a teacher, I pursue this by keeping lecturing to a minimum, and having students work in groups on relevant problems. The benefit of group work is that students are actively engaged in the learning process, and feel more comfortable asking questions and suggesting strategies in the company of peers. (I know that I didn't like to shout out questions in front of the class.) I strongly support this classroom structure.

So what should you expect in class? Each day will vary somewhat, but in general, I'll take a few questions regarding the past night's homework. I then may lecture a little (but sometimes I don't) and then you'll be turned loose to work in groups on several problems. The only way that a group can work is for all students to attend. Since we sometimes start group activities immediately, it is unacceptable to arrive late to class. (I understand that there are occasional, unexpected crisis that prevent this.) Remember what a wise student once said: "Coming to class every day makes studying at home much easier."

Your success in this class depends on your active participation in the group process. Many of you have experience with this mode of learning from previous math courses at SCCC. If not, try it, don't fight it. Most students enjoy the chance to work with others, learn more, and make a few friends.

Workload for this course: You should expect to spend *on average* 2-3 hours per day for this course outside of class; this time will consist of reading your textbook, reading your class notes, doing homework problems from the textbook and WAMAP, studying for quizzes and exams, and preparing for special class days. On the first day of each week I will hand out a "Weekly Notes and Assignment" sheet.

Textbook homework: For each section in the textbook I will assign a small sample of homework problems. Most of these problems are odd-numbered with answers in the back of the text and worked-out solutions in the Student Solution Manual. Each Monday I will collect homework from several of the sections. To note:

- I will grade your textbook homework based on completeness and presentation – not on accuracy.
- When submitting your homework, make sure that all sections are placed in order and stapled together.
- For each section, keep all problems in order. Write problem numbers clearly so that they are easy to find.
- Writing on both sides of the paper is fine, but do not crowd your work.
- The total number of points each week is 5.

You should attempt to do all the textbook problems. For group and classroom discussions to be effective, you must stay on top of the homework! Doing homework pays off -- I often base quiz and exam problems on text homework.

WAMAP homework and preview problems: Each week you will get a WAMAP online homework assignment that is graded on accuracy. The online homework will be due on Mondays. Each homework set will correspond approximately to the same sections that you are handing in from the textbook. Each WAMAP question will initially be worth 2 points, with partial credit possible. The maximum overall grade for the WAMAP homework will be scaled to 50 points.

There will be a WAMAP “Preview Problem” for many of the sections in Chapters 2, 3, and 4. Preview problems are designed to encourage you to read a section before I lecture on the topic. Each problem is worth 1 point and you get unlimited attempts to answer the problem.

In WAMAP you are allowed two (2) “Late Passes.” Each Late Pass will allow you to postpone the due date for any one homework or preview assignment by 24 hours.

Grading (subject to some modifications):

- Weekly Textbook Homework (drop lowest)..... 5 points each/50 total
- Weekly WAMAP Homeworkscaled to 50 points total (about 5 points per assignment)
- WAMAP Preview problems (drop lowest)... about 20 points total
- In-class worksheets (no makeups)..... 2-3 points each
- Quizzes (drop lowest).....20 points each (sometimes w/ group)
- Projects (1 or 2 of them)..... 15-20 points each
- Hourly exams (2 of them)..... 100 points each
- Final exam..... 150 points

Grades will be computed according to the formula: $Grade \approx 0.073(\text{percentage correct}) - 2.96$.

The table below shows the minimum percentage that you need to get a particular grade in the course.

| Grade | min % | Grade | min % | Grade | min % | Grade | min % |
|-------|--------|-------|--------|-------|--------|-------|--------|
| 4.0 | 95.00% | 3.1 | 82.73% | 2.2 | 70.45% | 1.3 | 58.18% |
| 3.9 | 93.64% | 3.0 | 81.36% | 2.1 | 69.09% | 1.2 | 56.82% |
| 3.8 | 92.27% | 2.9 | 80.00% | 2.0 | 67.73% | 1.1 | 55.45% |
| 3.7 | 90.91% | 2.8 | 78.64% | 1.9 | 66.36% | 1.0 | 54.09% |
| 3.6 | 89.55% | 2.7 | 77.27% | 1.8 | 65.00% | 0.9 | 52.73% |
| 3.5 | 88.18% | 2.6 | 75.91% | 1.7 | 63.64% | 0.8 | 51.36% |
| 3.4 | 86.82% | 2.5 | 74.55% | 1.6 | 62.27% | 0.7 | 50.00% |
| 3.3 | 85.45% | 2.4 | 73.18% | 1.5 | 60.91% | | |
| 3.2 | 84.09% | 2.3 | 71.82% | 1.4 | 59.55% | | |

Further course policies

In general, by signing up for this course you are expected to attend every day and be present for quizzes, exams, and class problems. If you need to be absent during the quarter for any reason (work, home issues, illness, vacation, childcare, etc) your absence may lower your grade.

Late homework is not accepted. No make-up quizzes are allowed (but you can drop your lowest quiz score).

If you are absent on the day of an exam, **YOU MUST CONTACT ME BEFORE CLASS BEGINS!!** I will try to schedule a make-up exam, providing that you have been attending class regularly and you can take the make-up at a reasonably convenient time.

Electronic devices: All cell phones, pagers, and other such electronic equipment are to be turned off during class.

Special Accommodations : Students with documented disabilities who need course accommodations, have emergency medical information or require special arrangements for building evacuation should contact the instructor within the first week of class.

Final Exam: Monday, March 23, 10:30am-12:30pm same classroom

Final Note: Information in this syllabus may be modified during the quarter.