

Math 221: Calculus

Credit Hours: 4

Semester and Year: Fall 2008

Meeting Time and Place: MRC 416, MWF 12:10pm, R 12noon.

Final: Friday 12th December 12:50-2:50 MRC 416

Instructor: Dr Michael Wodzak (Assoc Prof)

Office Room: MRC 525

Office Phone: 3659

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Office Hours:

Course Description: Applications of the integral and techniques of integration. Trigonometric, logarithmic and exponential functions.

Course Prerequisites: Grade of C or higher in MAT220

Required Texts: *Calculus: Concepts and Contexts (2nd Edition)*, James Stewart. (Brooks-Cole, 2001)

Course-Specific Intended Student Learning Outcomes:

1. The student will expand and apply skills and knowledge gained in the first semester of Calculus to the topics of integration and applications of integration.
2. The student will gain knowledge and skills, and the ability to apply these, to a variety of situations which are encountered in the world of mathematics, science, or engineering.
3. The student will further improve his/her ability to communicate mathematical ideas and solutions to problems.
4. The student will improve her/his problem-solving ability.
5. The student will see growth in his/her mathematical maturity.
6. The student will continue to build a foundation of the study mathematics or other mathematically-oriented discipline.

General Education Core Abilities Addressed in Course:

Core Abilities (The first three MUST be included on all university General Education Syllabi)
<p>Thinking: Students engage in the process of inquiry and problem solving.</p> <ul style="list-style-type: none"> • Students will be exposed to the logic of mathematical proof • Students will develop their problem-solving skills • Calculus is a major intellectual development in human history and students will think through the concepts
<p>Ethical Decision Making: Students respond to ethical issues, using informed value systems. Students will develop their ability to come to logically valid decisions based on reasonable premises, which is the foundation of all ethical decision making.</p>
<p>Communication: Students speak and write to suit varied purposes, audiences, disciplines, and contexts.</p> <ul style="list-style-type: none"> • Students will develop their skills of written mathematical communication, specifically learning to properly use the language and notation of the Calculus • Students will develop their verbal mathematical communication skills, both in small groups and in class discussions
<p>Cultural Sensitivity: Students understand their own and other cultural traditions and demonstrate a respect for the diversity of the human experience. Students will be exposed to the history and development of the Calculus and be aware that it</p>

comes from a particular cultural context.
<p>Community Involvement: Students demonstrate social responsibility by serving their communities. Students will work in groups, learning to share their ideas and skills, and respecting the ideas and skills of others</p>

Assessment Procedures:

Semester grades in this course will be awarded according to a standard scale:

729—810pts	(90% and above)	= A
648—728pts	(80%--89%)	= B
567—647pts	(70%--79%)	= C
486—566pts	(60%--69%)	= D
Less than 486pts	(Below 60%)	= F

Semester grades are calculated purely on a points basis, that is, the letter grades you earn on individual exams are purely guidelines for you to gauge your progress. For example, if you miss a particular grade on an exam by a certain number of points, it is still possible to make up those points (and get into that grade bracket) in other parts of the course, perhaps on the next exam. On the other hand, just because you got a good grade on one test, you should realize that you can lose enough points to get into a lower grade bracket by doing poorly in another area of the course. Once again: it is points that count.

Homework questions 100 pts.

(Full credit is given for each completed assignment)

Homework will be due one class week after it has been assigned. Any questions regarding how to do particular homework problems will be welcomed in the intervening class meetings or in my office but not in class on the day that the homework is due. Late homework will be penalized by a deduction of 20% of the assigned grade for each schoolday -- including schooldays on which class does not meet -- that the work is late, so that, if the work is one week late, it will not receive any points. You may, however, still hand the work in so that you can benefit from corrections and be certain you know how to do a question that could well appear on an exam

Practice Exams 100 pts

Each exam (including the final) will be preceded by a group review. There will be 4 of these and each is worth 25 points.

Examinations 300 pts

There will be three in class exams worth 100 pts apiece, and lasting 50 minutes each.

Participation 50 pts

Participation points are easy to acquire and you probably already know how to get them; don't chat to your neighbors when I'm lecturing (asking a neighbor to help if you didn't understand what I said is, however, always acceptable). General politeness counts. Cheerfulness, engagement, willingness to push buttons on your calculator, asking me to clarify if you are stuck, taking advantage of my office hours, these are all, to quote the Sound of Music, a few of my favorite things.

Labs 160 pts

There will be eight labs each of which carries 20 pts

Cumulative Final Examination 200 pts

Total 810 pts

Attendance Policy:

You can afford to miss no more than the equivalent of one week of class. Any more absences are a dangerous loss of classtime percentage. Once you have had 3 **unexcused** absences, every unexcused absence from that point onward will incur a penalty of **10 pts** from your participation and attendance score.

Make up exams situations will be considered on a case-by-case basis, but invariably they require as much forewarning as possible -- and documentation. You know when the exams are; please do not book flights home, or your wedding, etc, etc on those dates. If your, or your best friend's, or your uncle's hairdresser's poodle's (if you're from the Coast) wedding is already booked for any of those dates, please let me know ASAP. I will not give make up tests without good reason, and if you should miss a test that is not made up, your score for that test will be zero.

The sad fact is that it is a rare semester when some student doesn't have to rush home to tend a family crisis, or bury a loved one. Often this interferes with exams. Should such sadness happen to you, I will need to ask you for some sort of verification (obituary, hospital record, etc) and then we will try to get your semester moving again.

Homework: Let me urge you to make it a regular part of your day to try working the homework problems. There will never be enough time for us to go through every listed problem in class, and it is probably unrealistic to think that you will be able to find the time to work through every listed problem, but you should at least spend some time thinking about virtually every problem, and working the more interesting or challenging to completion. The daily homework assignments will not generally be collected or graded. They are intended to structure your learning so that you regularly challenge yourself to see that you understand the material we are looking at. The important thing is that you at least look at all the assigned problems. You should also feel free to work other problems if you deem it necessary for your comprehension of the content. You should view homework assignments as a test to see how well you understand the material and you should bring to the next class any questions you might have. However, from time to time, certain homework problems will be assigned and collected as mentioned above. I will award semester points for homework by calculating the percentage you got on all assigned homework and awarding this as a score out of 100pts

Americans with Disability Act:

If you are a person with a disability and require any auxiliary aids, services or other accommodations for this class, please see me or Jane Eddy in MC 332 (796-3194) within 10 days to discuss your accommodation needs.

Academic Honesty:

Viterbo students are expected to follow a policy of academic honesty. The willful violation of these standards will result in actions being taken against students who are caught engaging in such unethical conduct.

Violations of that integrity may include cheating, plagiarism, falsification of information, and other similar or related conduct. See *Viterbo University Student Handbook and Planner* for complete policy

Non-Discriminatory Policy: I belong to and subscribe to a tradition that does not permit me to judge any person. All I feel permitted and qualified to judge is your performance in my class. I will base that judgment only on your performance, not on any past experiences we may have had, and certainly not on who you are as a person. I suppose I should, at this point, mention race, gender and creed. Quite honestly, these issues are as irrelevant to my assessment of your performance in this class as what you had for breakfast.

This does not mean that who you are is irrelevant; I will do my best to tailor my teaching to your needs.

You should also know that your performance in this class will not change my opinion of you as a person. I will absolutely not think any the worse of your intelligence, or worse, of yourself, because you find any of the work in this course difficult.

Schedule, Fall Semester 2008

25 Aug [4.9] Anti-derivatives	p 334 #1-15 odd, 25, 43
27 Aug [5.1] Area, Distance	p 355 #1-7 odd, 11-15 odd
28 Aug [5.2] The Definite Integral	p 367 #1-11 odd
29 Aug	p 367 #15, 19, 21, 29
<i>(n.b. This is the last day to add or change sections of a class)</i>	
1 Sep	Labor Day Break ;-)
3 Sep [5.3] Evaluating Definite Integrals	p 377 #1, 3, 9-27 odd, 49
4 Sep Lab #1 (20pts)	
5 Sep [5.4] The Fundamental Theorem of Calculus	p 386 #3-15 odd, 19
8 Sep [5.5] Substitution Rule	p 395 #1-27 odd, 37-45 odd
<i>(9 Sep: Last day to take a course Credit/No Credit)</i>	
10 Sep [5.6] Integration by Parts	p 401 #1-21 odd
11 Sep	p 401 #25-33 odd
12 Sep Lab #2 (20pts)	
15 Sep [5.7] More Integration Techniques	p 408 #1-15 odd
17 Sep	p 408 #17-31 odd
18 Sep [5.8] Integration Tables, Using CAS	p 414 #1-21 odd, 25
19 Sep Group Practice Exam #1 (25 points)	
22 Sep EXAM #1 (100 Points)	
24 Sep [5.9] Approximation Techniques	p 425 # 1-9 odd, 15-19 odd
25 Sep [5.10] Improper Integrals	p 436 #1-23 odd
26 Sep	p 436 #39-49 odd
29 Sep [6.1] More on Areas	p 452 #1-13 odd, 21, 23, 27
1 Oct [6.2] Volumes – Solids of Rotation	p 463 #1-13 odd
2 Oct	p 463 #21, 23, 35
3 Oct Lab #3 (20pts)	
6 Oct [6.3] Arc Length	p 471 #1-7 odd, 11, 17, 21
8 Oct [6.4] Average Value of a Function	p 475 #3-11 odd
9 Oct Group Practice Exam #2 (25 points)	
10 Oct EXAM #2 (100 points)	
13 Oct [6.7] Probability and Random Variables	p 498 # 1-7 odd
<i>(n.b. This is the last day for submitting D/F slips)</i>	
15 Oct	p 498 # 9-13 odd
16 Oct Lab #4 (100pts)	
<i>(n.b. This is the last day to drop a full semester course and have it removed from the record)</i>	
17 Oct Mid-Semester Break ;-)	
20 Oct [7.1] Differential Equations	p 511 #1-9 odd
22 Oct [7.2] Directions Fields, Euler's Method	p 519 #1-15 odd, 21
23 Oct [7.3] Separable Differential Equations	p 527 #1-13 odd, 19, 29, 35
24 Oct Lab #5 (100pts)	
27 Oct [7.4] Exponential Growth and Decay	p 538 #1, 3, 5, 9, 13
29 Oct [7.5] Logistic Equations	p 548 #1-7 odd
30 Oct [7.6] Predator-Prey Systems	p 555 #1-7 odd
31 Oct Lab #6 (100pts)	
3 Nov Group Practice Exam #3 (25 points)	

(n.b. This is the last day to drop a full semester course with a grade of "W")

- 5 Nov **EXAM #3** (100 points)
6 Nov [8.1] Sequences p 571 #1-27 odd, 35, 37
7 Nov [8.2] Series p 580 #3-19 odd, 29, 31, 33, 39
- 10 Nov [8.3] Integral and Comparison Tests p 591 #1-21 odd, 27, 29
12 Nov [8.4] Other Convergence Tests p 598 #1-17 odd
13 Nov Lab #7 (20pts)
14 Nov [8.5] Power Series p 604 #3-17 odd
- 17 Nov [8.6] Representing Functions as Power Series p 610 #1-13 odd
19 Nov [8.6] Continued p 610 #15-29 odd
20 Nov [8.7] Taylor and Maclaurin Series p 621 # 1-13 odd, 17-41 odd
21 Nov [8.8] Binomial Series p 625 #1-13 odd
- 24 Nov [8.9] Applications of Taylor Series p 633 #3-23 odd
26 Nov **Thanksgiving Break**
27 Nov **Thanksgiving Break**
28 Nov **Thanksgiving Break**
- 1 Dec [8.10] Using Series to Solve Differential Equations p 633 #2-23 odd
3 Dec Lab #8 (20pts)
4 Dec Review ...
- (n.b. This is the last day to request a grade of Incomplete)*
5 Dec Group Practice Final Exam (25 points)

Final Exam (200 Pts): **FRIDAY DEC 12th 12:50—2:50**