SYLLABUS

MTH 111 – Calculus I, Section B – Spring 2024

Instructor: Dr. Sofya Chepushtanova

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Class Meetings:

- MTWRF 09:00-09:50 am, SLC 411

Office Hours: SLC 408, MWF 10:00-10:50 am and W 01:00-02:50 pm or by appointment.

Course Description and Objectives: Calculus of functions of one variable. Topics include functions, limits and continuity, derivatives, and integrals. Course will focus on applying conceptual aspects of calculus to modeling and solving problems from across the sciences and engineering.

Students successfully completing this course should:

- Understand the notions of limit, derivative, and integral and their applications in understanding the graphs of functions and computing areas.
- Be able to effectively compute limits, derivatives and some antiderivatives of algebraic and transcendental functions.
- Be able to apply limits and derivatives to determine the concavity and extrema of functions and sketch the graphs of functions.
- Be able to apply limits, derivatives, and integrals to solve problems in the sciences and engineering.

Textbook: University Calculus, Early Transcendentals, 4th edition, by Hass, Weir, and Thomas; Pearson. **Follow instructions in my email to register for Pearson MyLab Math courseware (etext + homework) via LIVE (D2L).**

Prerequisites: Student must have completed MTH 100 *with a grade 2.0 or better* or meet the math placement criteria.

Attendance: Attendance at all classes is expected (unless you are sick), and repeated absence is sufficient grounds for failure from the course. I will be taking attendance for each class. I will also adhere to the Wilkes University Policy regarding class attendance policies (see the Wilkes Student Handbook). In particular, after 5 consecutive instructional hours of unexcused absences from a class, students may be readmitted to the class only by action of the Office of Student Affairs and the department chairperson concerned. *Remember that poor attendance is a major contributor to poor performance!*

Calculator: Calculators can be used as a helpful tool to analyze functions. You may want a calculator to help with homework, but NO calculators will be allowed (or needed) on exams. For your homework, a useful online graphing calculator is Desmos:
`https://www.desmos.com/calculator`.

Suggested Practice Problems: For your practice, I offer a number of *suggested* practice problems for each section from the textbook, see the last page the syllabus (not graded).

Homework, Quizzes, Exams: There will be regular MyLab Math online homework assignments and in-class quizzes. The two lowest homework scores and one lowest quiz score will be dropped. *Note: No makeups will be given for any missed homework or quiz.* (Note that the MyLab Math orientation assignment is not graded, but you are recommended to go through it to learn how to use MyLab Math.)
There will be four midterm exams and a cumulative final exam. *Assuming your attendance in class is satisfactory, your final exam grade will be substituted in place of your lowest midterm exam score if it is higher than your lowest exam score.* No makeups will be given for exams unless there is a documented justification on why the student was unable to take the exam on the specified date. The student should make every effort to contact me IN ADVANCE if he/she is unable to attend an examination to make such a request.

Grade Distribution: Your percentage score in this course will be computed from the following components:

ITEM	**Percentage**
MyLab Math Online Homework	5%
In-Class Quizzes	5%
Highest 2 Midterm Exam Grades	17% each
Lowest 2 Midterm Exam Grades	13% each
Final Exam	30%
TOTAL	100%

and your final grade will be assigned from the score you earn as follows:

Raw Score	0 to 59%	60 to 64%	65 to 69%	70 to 74%	75 to 79%	80 to 84%	85 to 89%	90 to 100%
Grade	0	1.0	1.5	2.0	2.5	3.0	3.5	4.0

Expectations: In addition to good attendance, you should plan to study 2-3 hours outside of class for each hour in class. You are expected to *read the textbook for comprehension.* It gives a detailed account of the material of the course. *Note that it is your responsibility to learn the material.* The instructor's job is primarily to provide a framework, to guide you in doing your learning of the concepts and methods that comprise the course. If you are experiencing difficulty, go to your instructor's office hours for extra help. Form a study group of classmates who are also committed to mastering calculus. Use Wilkes tutoring services. Remember: mathematics is not a spectator sport, you must practice the skills yourself to learn the material.

Drop Policy: If you wish to drop from the course, I will give my permission during the first ten weeks of the semester. Thereafter you will need the permission of the Dean. Be aware that

poor performance in the course will not be a sufficient reason for the Dean's permission to be granted.

Academic Integrity: By submitting homework, quizzes, and exams you certify that this is your own work. You are encouraged to discuss homework solution strategies with fellow students but the final submission **MUST BE YOUR OWN**. Misrepresenting someone else's work as your own (plagiarism) or doing MyLab Math problems with the aid of a computer algebra system are examples of cheating. If there is evidence that exam work you hand in is not your own, the first time you will receive a zero on the exam and the second time you will receive a grade of 0 in the course. **Put simply: do not cheat. I have no patience for academic dishonesty.**

Cell Phones should be switched to silent mode (or turned off), and put out of sight during class time. **NOTE: THE USE OF CELL PHONES DURING EXAMS IS EXPRESSLY FORBIDDEN AND WILL RESULT IN A GRADE OF 0.**

Email Etiquette: Please refer to the following tutorial on how to communicate with your instructor via email:
`https://marktomforde.com/academic/undergraduates/Email-Etiquette.html`. View an email to a professor as a professional interaction. How you choose to interact conveys your level of seriousness and professionalism.

Next two pages: tentative course schedule and a list of suggested exercises

Tentative schedule:
Topics Covered, Assignments, and Exams
MTH 111 B, Calculus I Spring 2024

Week of	**Topics**	**Exams & Assignments**
1/16	Sections 1.1-1.6: What is calculus? Precalculus review including functions and their properties, algebraic and graphical properties of functions; trigonometric, exponential, and logarithmic functions	Orientation Homework, Diagnostic Quiz
1/22	Sections 1.6-2.2: Completion of precalculus review; slopes of secant lines; average rate of change of a function; the notion of limit, instantaneous rate of change and slopes of tangent lines	Homework 1, Quiz 1
1/29	Sections 2.2-2.5: Limit laws; evaluating limits algebraically; calculating one-sided limits; continuity	Homework 2, Quiz 2
2/5	Sections 2.5, 2.6: Continuity; limits involving infinity and asymptotes of graphs	Homework 3, Exam I (2/9)
2/12	Sections 3.1-3.3: Tangent lines revisited; derivative at a point; derivative as a function; differentiation rules	Homework 4, Quiz 3
2/19	Sections 3.3-3.5: More on differentiation rules; instantaneous rate of change revisited; derivatives of trigonometric functions	Homework 5, Quiz 4
2/26	Sections 3.6, 3.7: The Chain Rule; implicit differentiation	Homework 6, Quiz 5
3/4	SPRING BREAK (NO CLASSES)	Homework 7
3/11	Sections 3.8-3.10: Derivatives of inverse functions and logarithms; derivatives of inverse trigonometric functions; related rates	Homework 8, Exam II (3/15)
3/18	Sections 3.11, 4.1-4.2: Linearization; extreme values of a function; the Mean Value Theorem	Homework 9, Quiz 6
3/25	Sections 4.2-4.4: Corollaries and applications of the Mean Value Theorem; the first and second derivative tests; concavity and inflection points; introduction to curve sketching HOLIDAY RECESS 3/28 and 3/29 (no classes)	Homework 10
4/1	Sections 4.4-4.5: Continue curve sketching; L'Hôpital's Rule	Homework 10, Exam III (4/5)
4/8	Sections 4.6-4.8: Optimization; Newton's method (time permitting); antiderivatives	Homework 11, Quiz 7
4/15	Sections 5.1-5.3: Computing finite sums; sigma notation; the definite integral	Homework 12, Quiz 8
4/22	Sections 5.3-5.5: Properties of definite integrals; the Fundamental Theorem of Calculus; indefinite integrals	Homework 13, Quiz 9
4/29	Sections 5.5, 5.6: The substitution method in definite and indefinite integrals; area between curves (time permitting)	Homework 14, Exam IV (4/29)
Final Exam: TBD. (Final Exams Week 5/2-5/9)		

Suggested Practice Problems from University Calculus, 4th edition, by Hass, Weir, and Thomas - Not Graded (MTH 111 Calculus I)

Section	Practice Problems	Section	Practice Problems
1.1	1, 3, 5, 7, 13, 21, 23, 25, 27, 31, 37, 41, 49, 55, 73, 75	3.9	1, 5, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 31, 33, 39, 41, 43, 45, 47, 53, 59
1.2	1, 3, 5, 11, 15, 17, 23, 27, 35, 59, 67, 71, 79	3.10	1, 3, 5, 7, 9, 15, 21, 23, 25, 31, 43
1.3	1, 7, 9, 11, 15, 21, 23, 27, 39, 43, 51, 53	3.11	linearization: 1, 3, 5, 11, 13, 17
1.4	(playing with calculator/software) 3, 15, 17, 31, 33, 35	4.1	5, 7, 11-14, 21, 25, 29, 33-41 odd, 45-69 odd, 73, 77, 79, 83
1.5	1, 7, 15, 23, 29, 31	4.2	3, 7, 9, 11, 13, 15, 21, 23, 29, 31, 39, 43, 47, 51, 55, 63, 67
1.6	1, 3, 5, 7, 9, 11, 17, 19, 31, 45, 47, 51, 55, 63, 67, 69, 71, 73, 81	4.3	7, 13, 15, 17, 21, 27, 31, 33, 35, 39, 41, 43, 45, 53, 55, 57, 59, 61, 63, 67, 69, 73, 75, 77, 79
2.1	1, 7, 19, 25	4.4	1, 3, 5, 7, 9, 15, 19, 23, 27, 31, 33, 39, 43, 49, 51, 53, 55, 57, 81-105 odd, 115, 121
2.2	1, 3, 5, 9, 11, 21, 23, 27, 33, 37, 47, 51, 57, 59, 63	4.5	1, 3, 5, 9, 15, 19, 25, 27, 29, 33, 35, 37, 41, 49, 51, 55, 61, 63, 69, 71, 75, 77, 87
2.3	7, 11	4.6	1, 3, 5, 7, 9, 11, 25, 29, 33, 37, 39, 47, 51, 55, 57, 63
2.4	1, 3, 5, 9, 15, 23, 27, 29, 33, 39, 43	4.7	optional: 1, 5, 7, 9, 10, 11, 13, 19, 25
2.5	1, 3, 5, 7, 9, 11, 13, 19, 23, 25, 29, 31, 33, 39, 43, 45, 55, 65	4.8	1, 5, 9-69 odd, 73, 77, 81-89 odd, 93, 95, 99, 101, 105, 109, 113, 115, 119, 125
2.6	1, 3, 9, 13, 15, 17, 23, 27, 33, 37, 41, 45, 47, 49, 51, 53, 57, 59, 61, 63, 67, 69, 71, 81, 83, 99, 101	5.1	1, 5, 9, 19
3.1	1, 3, 5, 7, 11, 15, 21, 23, 25, 27, 31, 35, 37	5.2	1, 5, 7, 9, 13, 15, 19, 23, 25, 29, 31, 33, 39, 43, 45
3.2	1, 3, 5, 17, 23, 27-30, 31, 33, 37, 45, 47	5.3	1-19 odd, 27, 61, 73, 75
3.3	3, 5, 9, 13, 19, 25, 29, 35, 39, 41, 51, 53, 55, 57, 63, 67, 69, 75	5.4	1, 5, 9, 13, 15, 19, 23-33 odd, 39, 43, 45, 53, 57, 59, 65, 71, 75, 81, 83
3.4	1, 5, 7, 11, 17, 21, 25, 31	5.5	3, 5, 7, 11, 13, 15, 17, 21, 25, 29, 31, 35, 39, 43, 45, 47, 51, 55, 57, 61, 65, 67, 73, 79
3.5	3, 7, 11,15, 19, 23, 29, 33, 35, 37, 39, 43, 45, 49, 55, 57, 59, 61, 67	5.6	(substitution) 1, 3, 7, 11, 15, 17, 23, 25, 27, 29, 35, 39, 45; (area between curves) 49-69 odd, 75, 77, 79, 83, 87, 89, 91, 95-107 odd, 111
3.6	1, 5, 9, 13, 17, 23, 27, 31, 35, 41, 45, 51, 57, 63, 67, 69, 71, 75, 85, 87, 89, 91, 93, 95, 99		
3.7	1, 5, 11, 15, 17, 21, 25, 27, 29, 31, 35, 39, 41, 43, 51a		
3.8	1, 5, 11, 15, 19, 23, 27, 31, 35, 39, 55, 59, 63, 65, 67, 71, 75, 81, 85, 89, 91, 93, 95, 99		