

MA 219: Calculus for Technology I

TR 8:00 p.m. – 9:50 p.m., GYTE 007G

Fall 2009, Purdue University Calumet

Instructor: Nicolae Tarfulea

Office: CLO 370.

Office Hours: MTWR 1:30 - 3:00 pm (or by appointment).

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Overview: MA 219 is a one semester course in the techniques of calculus for students enrolled in certain technical curricula. MA 219 develops topics from analytic geometry and introduces differentiation and integration. Not open to students with credit in MA 163, MA 223, or MA 225.

Prerequisites: MA 148 or equivalent preparation with a grade of C or higher.

Textbook: *Basic Technical Mathematics with Calculus*, by Allyn J. Washington, Pearson Education, Inc., 2009, 9th edition.

Course Goals:

1. Students will compute derivatives of polynomial, power, and rational functions and their compositions.
2. Students will apply derivatives to solve technology-related problems.
3. Students will compute integrals of polynomial, power, and rational functions and their compositions.
4. Students will apply integrals to solve technology-related problems.

Homework: Homework problems will be taken from the Exercise Set following each section of the textbook. Doing daily assignments is essential to being successful in this course. Class time will be devoted to questions concerning difficulties with homework problems. Keep in mind that sufficient time spent on these assignments (1-2 hours daily) is excellent preparation for quizzes and exams.

Quizzes: The quizzes will be based on the homework assignments. There will be a 25 minute quiz when indicated on the lecture schedule below. The quiz questions will cover the same material as the homework that is due the very same day.

Exams: There will be three midterm exams plus a comprehensive final exam. All exams are to be taken in pencil. If the campus closes due to whatever reason on the day of a scheduled exam, the exam will be given during the next class meeting.

Grades: Your course grade is based on your performance on:

- **Exams:** we will have three **midterm exams** of which the two highest grades together will equally count (20% each) for **40%** of your course grade. **Final Exam:** the final exam will count for **30%** of your course grade.
- **Class work:** the remaining **30%** of the grade will be based on **quizzes** and **homework**.

The course grade will be assigned on a scale of:

- 94% -- 100% **A**
- 89% -- 93% **A-**
- 85% -- 88% **B+**
- 80% -- 84% **B**
- 75% -- 79% **B-**
- 70% -- 74% **C+**
- 65% -- 69% **C**
- 60% -- 64% **C-**
- 57% -- 59% **D+**
- 53% -- 56% **D**
- 50% -- 52% **D-**
- below 49% **F**

Absence from Exams: You must take (at least) two midterm exams. Except in extremely exceptional situations, a student who misses the final exam fails the course. **No make-up exams (or quizzes) will be given.**

Attendance: Daily attendance in MA 219 is expected. If you must be absent for an extended period of time for reasons such as extended illness, please call me to obtain assignments. Excessive absences by any student will result in an administrative withdrawal of that student from the course.

Materials: Textbook, notebook for notes and assignments, pencils, and graphing calculator. A TI brand of graphing calculator (e.g., TI 89) is highly recommended. Any student on financial aid may seek reimbursement for the cost of the calculator. If necessary, I will provide a letter stating this purchase is a course requirement.

Students with Disabilities: If you are a student with a documented disability who will require academic/classroom accommodations in this course, please register with the Coordinator of Services for Students with Disabilities in the Student Support Services Office located in the Student Union and Library Building (SUL),

Room 341, phone numbers: 219-989-2455, 219-989-2454(voice/TTY) or 219-989-2920.

Extra Help: Attend the SI sessions, see me in my office, and/or work with other students.

Academic Honesty: The following is an **Honor Code** and an **Honor Pledge** to which all Purdue University Calumet Students must adhere: "I understand that academic dishonesty will not be tolerated at Purdue University Calumet. I am here to learn. Through learning, I will strive to become a better person and a more valuable contributor to society. I understand that dishonesty in the classroom, through cheating, plagiarism or other dishonest acts defeats this purpose and disgraces the mission and quality of a Purdue University Calumet education. Therefore, I make the following pledge: 'In accordance with the honor code, I will not engage in dishonesty in my academic activities, and I will not tolerate such dishonesty by other students.'"

Civility: Purdue University Calumet places a priority on student learning. We value the inherent worth and dignity of every person, thereby fostering a community of mutual respect. We believe that in order to achieve these ideals, all Purdue University Calumet students are expected, while in the role as student or representative of the university, to exhibit and practice civil behaviors, defined as behaviors that:

1. **Respect** faculty, staff, fellow students, guests, and all university property, policies, rules and regulations
2. **Take responsibility** for one's choices and actions
3. **Accept consequences** of one's inappropriate choices and actions
4. **Communicate** in a professional and courteous manner in all forms, and at all times, whether verbal, non-verbal or written

Lecture Schedule

(subject to small changes without prior notice)

Date	Section	Homework
Tue 09/01	21.1: Basic Definitions	<i>Section 21.1: 6, 10, 26, 30, 34, 39, 41.</i>
Thu 09/03	21.2: The Straight Line	<i>Section 21.2: 6, 9, 13, 17, 19, 23, 31.</i>
Tue 09/08	21.3: The Circle	<i>Section 21.3: 7, 9, 16, 19, 21, 27, 41.</i>
Thu 09/10	Homework 1 due & Quiz 23.1: Limits	<i>Section 23.1: 7, 9, 21, 23, 25, 35, 53.</i>

Tue 09/15	23.2: The Slope of the Tangent to a Curve	<i>Section 23.2: 3, 5, 7, 11, 13, 23, 27.</i>
Thu 09/17	23.3: The Derivative 23.4: The Derivative as an Instantaneous Rate of Change	<i>Section 23.3: 5, 11, 13, 21, 27, 31, 35. Section 23.4: 5, 7, 11, 15, 21, 25, 27.</i>
Tue 09/22	Review & Homework 2 due	
Thu 09/24	Exam I	
Tue 09/29	23.5: Derivatives of Polynomials 23.6: Derivatives of Products and Quotients of Functions	<i>Section 23.5: 5, 11, 14, 19, 21, 29, 37. Section 23.6: 3, 12, 17, 23, 35, 41, 45.</i>
Thu 10/01	23.7: The Derivative of a Power of a Function 23.8: Differentiation of Implicit Functions	<i>Section 23.7: 5, 9, 17, 23, 33, 37, 47. Section 23.8: 3, 7, 11, 19, 27, 33, 45.</i>
Tue 10/06	Homework 3 due & Quiz 23.9: Higher Derivatives	<i>Section 23.9: 3, 8, 13, 15, 31, 37, 47.</i>
Thu 10/08	24.1: Tangents and Normals 24.3: Curvilinear Motion	<i>Section 24.1: 3, 5, 7, 11, 15, 21, 26. Section 24.3: 3, 6, 11, 15, 16, 17, 22.</i>
Tue 10/13	Homework 4 due & Quiz 24.4: Related Rates 24.7: Applied Maximum and Minimum Problems	<i>Section 24.4: 3, 5, 7, 9, 11, 13, 15. Section 24.7: 3, 4, 5, 6, 9, 10, 17.</i>
Thu 10/15	Review	
Tue 10/20	Exam II	
Thu 10/22	25.1: Antiderivatives 25.2: The Indefinite Integral	<i>Section 25.1: 5, 7, 10, 13, 16, 19, 25. Section 25.2: 7, 9, 12, 19, 25, 37, 44.</i>
Tue 10/27	Homework 5 due & Quiz 25.3: The Area Under a Curve	<i>Section 25.3: 5, 7, 10, 13, 15, 19, 22.</i>
Thu 10/29	25.4: The Definite Integral	<i>Section 25.4: 3, 7, 14, 19, 23, 40, 44.</i>
Tue 11/03	Homework 6 due & Quiz 26.1: Applications of the Indefinite Integral	<i>Section 26.1: 3, 5, 7, 10, 13, 15, 19.</i>
Thu 11/05	26.2: Areas by Integration	<i>Section 26.2: 4, 7, 9, 13, 19, 23, 29.</i>

Tue 11/10	Homework 7 due & Quiz 26.3: Volumes by Integration	<i>Section 26.3: 7, 9, 11, 15, 17, 21, 30.</i>
Thu 11/12	26.4: Centroids	<i>Section 26.4: 3, 6, 7, 9, 11, 14, 23.</i>
Tue 11/17	26.5: Moments of Inertia	<i>Section 26.5: 3, 5, 7, 9, 15, 18, 21.</i>
Thu 11/19	Homework 8 due & Quiz 26.6: Other Applications	<i>Section 26.6: 5, 6, 8, 11, 12, 15, 17.</i>
Tue 11/24	26.6: Other Applications	<i>Section 26.6: 5, 6, 8, 11, 12, 15, 17.</i>
Thu 11/26	No Class (Thanksgiving Day)	
Tue 12/01	Review	
Thu 12/03	Exam III	
Tue 12/08	Review	
Thu 12/10	Review	

EMERGENCY PROCEDURE GUIDES: In the event of...

Fire...

- Know the location of the fire alarms, fire extinguishers and evacuation routes and exits.
- Evacuate when the alarm sounds.
- Help ensure everyone evacuates.
- Assist others during the evacuation.
- Call University Police (2911 if you are using a campus phone or 899.2911) if you or others need assistance or if someone is trapped in an elevator.

Severe Weather...

- Know the location of your Storm Safe Area.
- Listen for announcements via the campus public address system.
- Follow instructions.
- Help ensure everyone is aware and follows instructions.

Medical Emergency...

- Immediately call University Police (989.2911)
- Immediately call 9-911 (if you are using a campus phone or 911 if you are using a cell phone) if an ambulance is needed.

Power Failure...

- If it lasts more than a few seconds...secure your space and go to the first floor.
- Listen for announcements via the campus public address system.
- Follow instructions.
- Help ensure everyone follows instructions.
- REMEMBER...emergency lighting is limited in duration...it is intended to help you evacuate safely...it is not intended to help you keep working.

Elevator Failure...

- If you are trapped, activate the elevator alarm and use the emergency telephone to contact University Police.

- If you hear someone who is trapped in an elevator, reassure them that you will call University Police (989.2911).

Criminal Activity...

- Call University Police (989.2911) immediately if you observe a crime, note a suspicious person or have knowledge of a crime previously committed. The confidential hotline number for reporting suspicion of criminal behavior is 989-2912.

Dangerous Individuals...

- Call University Police (989.2911) immediately if you observe someone demonstrating apparently irrational or harmful behavior.
- Also please take note of the campus resources that are available should you believe that a student may benefit from intervention that could prevent a potential emergency situation:

Dean of Students office: 989-4141

Counseling Center: 989-2366

Hazardous Condition...

- If you see, smell, touch or hear something that is a hazard or has the potential to become a hazard call University Police (989.2911).

Sounds like gunshot...

- Turn off lights to the room.
- Lock or barricade the door.
- Hide where you can't be seen.
- Call the University Police (989.2911)
- Wait for Police to arrive.

WHEN IN DOUBT...CALL UNIVERSITY POLICE AT 989.2911