

MATH 2414 - Calculus II

Catalog Description: Applications of integration, integration techniques, sequences and infinite series, power series, parametric and polar curves. Use of computer technology and laboratory assignments will be required in this course. Prerequisite: MATH 2413.

Expanded Course Description: A second semester course that continues the study of the calculus of single variable, real-valued functions. Topics to be addressed in the course include:

- a) Techniques of Integration: integration by parts; trigonometric integrals; trigonometric substitution; integration of rational
- b) functions using partial fraction decomposition; approximate integration; and improper integrals
- c) Applications of Integration: Areas between curves; volumes of solids; volumes of solids of revolution using the methods of disks, washers, and shells; work; and average value of a function; arc length; area of a surface of revolution; applications to physics, engineering, economics, and biology
- d) Infinite Sequences and Series: sequences; series; tests for convergence and/or divergence; power series; Taylor and Maclaurin series; and Binomial Series.
- e) Parametric Equations and Polar Coordinates: curves defined by parametric equations; calculus with parametric curves; polar coordinates; areas and lengths in polar coordinates; conic sections; and conic sections in polar coordinates

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Objectives: Upon completing MATH 2414, a student should be able to do the following:

Knowledge Outcomes:

- Investigate the concepts of single variable calculus descriptively, numerically, graphically and symbolically.

Skill Outcomes:

- Evaluate an integral using appropriate techniques
- Apply the integral in solving problems including volumes, areas, arc lengths, work, surface area of a solid of revolution
- Determine the convergence of sequences and series
- Construct the power series representation of a function
- Apply the derivative and integrals to polar and parametric equations
- Communicate mathematical ideas, solutions, proofs, and counterexamples using proper notation, appropriate technical and non-technical language, and helpful diagrams and graphs.

General Syllabus Language – Fall 2022

Notes on grades for a failed class:

Tarleton differentiates between a failed grade in a class because a student never attended (F0 grade), stopped attending at some point in the semester (FX grade), or because the student did not pass the course (F) but attended the entire semester. These grades will be noted on the official transcript. Stopping or never attending class is considered an unofficial withdrawal and can result in the student having to return aid monies received. For more information, see the Tarleton Financial Aid website.

University Policy:

Students are responsible for knowing and abiding by the policies and information contained in the Tarleton Student Handbook. [See the Student Handbook].

Academic Conduct:

Any student guilty of academic dishonesty, cheating, or plagiarism in academic work shall be subject to disciplinary action. [See the Student Handbook] The instructor may initiate disciplinary action in a case of academic misconduct.

Student Success Statement – Americans with Disabilities Act:

Tarleton State University is committed to complying with the Americans with Disabilities Act (www.ada.gov) and other applicable laws. If you are a student with a disability seeking an accommodation for this course, please contact Disability Resources and Testing at 254.968.9400 or visit <https://www.tarleton.edu/drt/>

COVID-related Information:

Anyone feeling ill or exhibiting any symptoms commonly associated with COVID-19 is encouraged to stay home and monitor said symptoms and/or consult a physician. Commonly associated symptoms may be found here: <https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html>

The university reserves the right to both reduce classroom capacity and utilize remote instructional modes should either become necessary during the semester. The university will provide relevant guidance concerning both classroom capacity reductions and any changes to instructional modes directly to faculty. Faculty will communicate relevant changes to students.

Standards of Conduct & Academic Honesty:

Cheating, plagiarism, or doing work for another person who will receive academic credit is impermissible. This includes the use of unauthorized books, notebooks, or other sources in order to secure or give help during an examination, the unauthorized copying of examinations, assignments, reports, or term papers, or the presentation of unacknowledged material as if it were the student's own work. Disciplinary action may be taken beyond the academic discipline administered by the faculty member who teaches the course in which the cheating took place.

Tarleton State University expects its students to maintain high standards in personal and scholarly conduct. Students guilty of academic dishonesty are subject to disciplinary action. Academic dishonesty includes, but is not limited to, cheating on examination or other academic work, plagiarism, collusion, and the abuse of resource materials. The faculty member is responsible for initiating action for each case of academic dishonesty that occurs in his/her class. Academic honesty is expected. The University's Academic Integrity Policy will be maintained.

Tarleton State University Mission, Vision, and Values:

Mission: Tarleton State University, a founding member of The Texas A&M University System, transforms generations by inspiring discovery, leadership, and inclusion through educational excellence.

Vision: Tarleton will be the premier comprehensive regional university in the nation, with a keen focus on student success, teaching, and research.

Values:

- **Excellence** – Tarleton Texans pursue greatness in all efforts, promoting a spirit of leadership, adaptability, and innovation for exceptional outcomes and a better world.
- **Integrity** – Tarleton Texans hold to the highest ethical standards and commit to serving others through transparency and accountability in everything we do.
- **Respect** – Tarleton Texans create an inclusive community by embracing diverse perspectives with civility, honoring tradition, and promoting teamwork so everyone thrives.

Tarleton State University Value Statements:

Academic Integrity Statement:

Tarleton State University's core values are integrity, leadership, tradition, civility, excellence, and service. Central to these values is integrity, which is maintaining a high standard of personal and scholarly conduct. Academic integrity represents the choice to uphold ethical responsibility for one's learning within the academic community, regardless of audience or situation.

Academic Civility Statement:

Students are expected to interact with professors and peers in a respectful manner that enhances the learning environment. Professors may require a student who deviates from this expectation to leave the face-to-face (or virtual) classroom learning environment for that particular class session (and potentially subsequent class sessions) for a specific amount of time. In addition, the professor might consider the university disciplinary process (for Academic Affairs/Student Life) for egregious or continued disruptive behavior.

Academic Excellence Statement:

Tarleton holds high expectations for students to assume responsibility for their own individual learning. Students are also expected to achieve academic excellence by:

- honoring Tarleton's core values.
- upholding high standards of habit and behavior.
- maintaining excellence through class attendance and punctuality.
- preparing for active participation in all learning experiences.
- putting forth their best individual effort.
- continually improving as independent learners.
- engaging in extracurricular opportunities that encourage personal and academic growth.
- reflecting critically upon feedback and applying these lessons to meet future challenges.
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Academic Service Statement

Tarleton faculty, staff, and students are expected to model responsible citizenship through service activities that promote personal and academic growth while enhancing the university, local, regional, national, and global communities. These activities will foster a culture of academic/public engagement that contributes to the achievement of the university's mission and core values.

Study Aids:

- The Mathematics Clinic offers to all students enrolled in mathematics courses an opportunity to obtain free tutoring. The Math Clinic is located in room 203 and is open from 9 am to 4 pm Monday through Thursday, and 9 am to 2 pm on Friday (hours may change based on availability of tutors).
- Remote tutoring is also available from Math Clinic tutors. See the Math Clinic website for details.
- Tutoring: The Tutoring and Learning Center (TLC) offers free tutoring for Tarleton State University students. Tutors help clarify concepts introduced in class and will help you become an independent learner. Our tutors are selected based on their academic performance and interpersonal skills and receive training each semester to become certified tutors. Tutoring sessions are appointment based, include one to three students per one-hour session, and are held both in the Dick Smith Library and online. If you have further questions, please email our office at tutoring@tarleton.edu or visit the Tutoring and Learning Center online at tarleton.edu/tlc.

Student Safety and Title IX:

You are in college to achieve academic success, but you must feel safe and take care of yourself to reach your full potential. You have the right to pursue your education in a safe environment. Title IX makes it clear that violence, harassment, and discrimination based on sex and gender are civil rights offenses subject to accountability. *If you or someone you know has been harassed or assaulted, there is help and support on campus.* You may seek assistance confidentially through the Student Counseling Center or the Student Health Center. You may also make a report to the campus Title IX coordinator, which may trigger a university investigation (not a criminal investigation). Additionally, you may pursue criminal charges through the university police department. If the assault occurred away from campus, UPD can assist you in connecting with the appropriate law enforcement agency.

Student Counseling Center: 254-968-9044 (phone is answered 24 hours a day, 7 days a week), Traditions North (First Floor)

Student Health Services: 254-968-9271, Traditions North (First Floor)

Title IX Coordinator: 254-968-9754, Admin Annex 1, Room 106

University Police Department: 254-968-9002, located on the corner of Harbin and Frey

Student Resources and Basic Needs:

Any student who has difficulty affording groceries or accessing sufficient food to eat each day, or who lacks a safe and stable place to live, is urged to contact the professor. In Stephenville, the Tarleton Purple Pantry is located in the lower level of the Thompson Student Center with an external door facing the Dining Hall. In Fort Worth, the Tarleton Purple Pantry is located in room 360. Request swipe entry access at www.tarleton.edu/purplepantry. Learn about additional related resources at www.tarleton.edu/TexConnect.

Student Responsibilities: The student is *solely* responsible for:

- Completing each assignment by the specified due date.
- Obtaining assignments and other materials for classes from which they are absent.
- Utilizing, as needed, all available study-aid options (including meeting with the instructor, attending the Supplemental Instruction (SI) sessions, going to the Mathematics Clinic, using tutorial software, purchasing a student solutions manual, hiring a personal tutor, etc.) to resolve any questions that they might have regarding homework, course material, and/or technology projects.
- Giving as much of an effort as it takes to pass this course.

Makeup Policy: Each course instructor has the responsibility and authority to determine if work can be made-up because of absences. Students may request make-up considerations for valid and verifiable reasons such as the following:

- Illness
- Death in the immediate family
- Legal proceedings
- Participation in sponsored University activities (It is the responsibility of students who participate in University-sponsored activities to obtain a written explanation for their absence from the faculty/staff member who is responsible for the activity.)

Drop Policy: A student who withdraws from a course before the thirteenth-class day of a regular semester or before the fifth-class day in a summer term receives no grade, and the course will not be listed on that student's permanent record. A student who withdraws from a course before the end of the tenth week of a regular semester or the fourteenth-class day of a summer term receives a grade of W.

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Fall 2022

Instructor: Dr. Peter W. White
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Math Office #: (254) 968-9168

Office: Math 331
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Office Hours: MWF 10-10:50 am, TR 3-3:50 pm.

Text: Calculus, Early Transcendentals by Stewart, 7th edition. Student copy ISBN: 978-0-538-49867-8.

Homework Policy: A list of required problems can be found on Dr. White's web site (<http://faculty.tarleton.edu/white/>). Completion of these problems should prepare the student for the exams. These problems will be collected via submission of a PDF copy in Canvas. Questions over the problems may be answered during the scheduled class sessions. Each section of homework will be graded on a 20-point scale: up to 10 points for completion of each problem and up to 10 points for correctness on a subset of the problems (spot grading of 2 to 4 problems). Up to five of the low homework section grades may be dropped by the end of the semester. The remainder of the grades will be averaged and count as 20% of the overall course grade.

Quizzes: In class or take-home quizzes may be given as a supplement to, or replacement of, one or more of the homework assignments.

Technology Projects: Computer labs will be given throughout the semester. The labs are posted on the class website and the dates for the labs are listed in the course calendar. The instructor will discuss the labs on the dates listed. The labs will be completed using the software "Mathematica". To get a free student version of the software go to the following link and follow the instructions: <https://www.tarleton.edu/cls/mathematica.html>. Each lab will be graded on a 10-point scale: 2 points will be given for attempting the lab and up to 8 points will be given for correctness. No low lab scores will be dropped. The scores will be converted to a percentage and will count as 10% of the total grade.

Exams: There will be five exams as scheduled in the course calendar. Each exam will be graded out of 100 points. No exam scores will be dropped and exams will account for 50% of the total grade. There will be a comprehensive final exam worth 20% of the grade. More information will be given about each individual exam by the instructor in a timely fashion.

Calculator/Technology Policy: An approved graphing calculator is required for this course. It is **highly recommended** that the students use a TI-83, 83+, 84, 86, 89, TI-Enspire, or similar calculator. Use of Mathematica will be required for the lab and useful in other aspects of the course. To install the software on your personal computer, see the link under **Technology Projects**.

Attendance Policy: This is scheduled to be a face-to-face course (with the potential remote synchronous-Zoom if necessary due to COVID). Students **must** attend class. Repeated absences may impact the student's ability to be successful in the class and may lead to failure to earn credit for the course. Attendance may be taken of the face-to-face students in case it is needed

for contact tracing. The student is responsible for all material covered in class. The student may not be allowed to turn in late work or make up exams or quizzes unless they have a verifiable university recognized absence.

Grading Policy: What follows is a worst-case grading scale. The instructor reserves the right to adjust the scale to the benefit of the students but is not obligated to do so.

Homework	200 pts	900-1000 pts	A
Five exams	500 pts	800-899 pts	B
Lab projects	100 pts	680-799 pts	C
Final exam	200 pts	550-679 pts	D
		0-549 pts	F
Total	1000 pts		

Extra Credit: No extra credit or bonus points will be given in the course, and test scores will not be curved. Students are expected to complete regular assignments and tests to the best of their ability and on time. Grades will be assigned as a result of the work submitted by the student and not changed by exterior factors.

Notes:

- In the event that the university is closed for a scheduled class time, whatever was scheduled for that day and/or whatever was due that day will be scheduled and/or due on the next scheduled class time. That is, the course calendar will be modified to reflect the closure.
- You are expected to present a valid TSU ID upon request.
- **All items contained in this syllabus are subject to change as the semester progresses. Students will be notified in advance of any changes.**