Syllabus

Course. Calculus II, MATH 2414, Section 201, Spring 2011, MTWR 1:30–2:20, KWRC 129.

Instructor. Dr. David Milovich, Assistant Professor, Dept. of Engineering, Mathematics, and Physics, david.milovich@tamiu.edu.

Office. Canseco Hall, 313C. Phone: (956) 326-2570. Office Hours: MW 10:30–11:30, MTWR 2:30–3:30, and by appointment.

You're welcome come to my office at times other than those listed above. However, if you want to make sure I'm there before you come, then call ahead and/or email me.

Course description. Techniques and applications of integration: area between curves, volumes of solids of revolution, work, areas of surfaces of revolution, arc-length, introduction to differential equations, parametric equations and polar coordinates, sequences and series. Prerequisite: MATH 2413.

Student learning outcomes. Upon successful completion of this course, the student will be able to:

- interpret the definite integral of a function geometrically as the area of a region, and use the Fundamental Theorem of Calculus to compute antiderivatives and definite integrals;
- apply different methods of integration, such as substitution, integration by parts, trigonometric integrals and partial fraction decomposition to compute antiderivatives as well as definite integrals;
- set up and compute integrals to solve problems in the computation of areas, volumes, work, arc-length, surface area of a surface of revolution, as well as be able to solve first order differential equations of linear and separable type, and be able to determine if a given improper integral converges;
- use a method of numerical integration to approximate a definite integral using several methods of approximation, including the left point, right point, trapezoid and Simpson's rule. Students will also be able to estimate the error in the computation of such approximations;
- identify curves given in terms of parametric equations, as well as write a curve in terms of a parameter. Students will also be able to apply integration to compute areas enclosed by a parametric curve, as well as to find its arc-length or area of revolution around an axis;
- approximate a given real analytic function using Taylor or Maclaurin series, be able to estimate the error, including determining if such series

converges to the function, and use these techniques to compute limits of functions, estimate definite integrals or approximate the value of a function at a point.

Textbook. *Elementary Calculus: An Infinitesimal Approach*, H. Jerome Keisler, On-line Edition, revised August 2010:

`http://www.math.wisc.edu/~keisler/calc.html`

Homework. For every hour you spend in class, you should expect to spend two to three additional hours on this course. Some of those hours will be spent on homework; some on studying. Each class day (except test days), I will assign a few exercises. My intent is for each assignment to be short enough that the average student can complete it in less than two hours.

Homework will be graded for completeness (not for correctness). The same day I assign exercises, I will email my solutions to the class. However, you should try to produce your own solutions before looking at mine! Remember, you're on your own at test time. Practice solving problems on your own.

You must personally turn in your solutions (on paper) at the beginning of the next class day.

Attendance. When you turn in your homework at the beginning of class, there will be an attendance sheet you must sign. You won't receive credit for that homework if you don't sign the attendance sheet.

Tests. There will be a test approximately every two weeks; see the schedule below. There will also be a final exam. All tests, including the final, will be comprehensive, but emphasis will on be on material covered since the previous test. Tests will open-note and closed-book.

Grading. Components: 22% for homework and 78% for exams. The lowest test score (out of seven) will be ignored. The remaining tests scores will each be 13% of your grade. The lowest five (out of roughly fifty) homework scores will be ignored. The remaining homework scores will be averaged to produce your homework grade.

Calculators. A graphing calculator is required. I recommend (but do not require) a TI-89. For some tests you will need a calculator. For some tests you will not be allowed to use a calculator. (See the schedule below.)

Make-ups. There are no make-ups for missed work, except by situations covered by university rules.

Approximate Schedule of Topics

Date	Day	Topic
18-Jan	T	introduction; Σ notation
19-Jan	W	numerical integration: endpoint rules
20-Jan	R	trapezoid rule
24-Jan	M	Simpson's rule
25-Jan	T	error estimates
26-Jan	W	error estimates
27-Jan	R	TEST
31-Jan	M	parametric curves
01-Feb	T	area inside a parametric loop
02-Feb	W	area between functions
03-Feb	R	polar curves
07-Feb	M	area inside a polar loop
08-Feb	T	length of a parametric curve
09-Feb	W	length of a function's graph
10-Feb	R	TEST
14-Feb	M	work (physics)
15-Feb	T	work (physics)
16-Feb	W	volume from slices
17-Feb	R	special slices: disks and washers
21-Feb	M	volume from cylindrical shells
22-Feb	T	surface area from rings
23-Feb	W	TEST
24-Feb	R	integration by u-substitution
28-Feb	M	integration by u-substitution
01-Mar	T	sine and cosine: friendly powers
02-Mar	W	tangent and secant: friendly powers
03-Mar	R	sine and cosine: unfriendly powers
07-Mar	M	sine substitution
08-Mar	T	tangent substitution
09-Mar	W	secant substitution
10-Mar	R	TEST—no calculator
21-Mar	M	partial fractions
22-Mar	T	partial fractions
23-Mar	W	separable differential equations
24-Mar	R	separable differential equations
28-Mar	M	integration by parts
29-Mar	T	integration by parts
30-Mar	W	some linear differential equations
31-Mar	R	some linear differential equations

04-Apr	M	TEST—no calculator
05-Apr	T	improper integrals
06-Apr	W	improper integrals
07-Apr	R	improper integrals
11-Apr	M	limits of sequences
12-Apr	T	limits of series
13-Apr	W	geometric series
14-Apr	R	ratio test
18-Apr	M	ratio test
19-Apr	T	alternating series
20-Apr	W	TEST—no calculator
21-Apr	R	error estimates
25-Apr	M	radius of convergence
26-Apr	T	estimating integrals from power series
27-Apr	W	Maclaurin and Taylor series
28-Apr	R	Maclaurin and Taylor series
02-May	M	error estimates
03-May	T	estimating integrals from Taylor series
04-May	W	limits from series
05-May	R	the binomial series
TBA		FINAL EXAM

Policies of the College of Arts and Sciences

(Required on all COAS Syllabi)

Classroom Behavior

The College of Arts and Sciences encourages classroom discussion and academic debate as an essential intellectual activity. It is essential that students learn to express and defend their beliefs, but it is also essential that they learn to listen and respond respectfully to others whose beliefs they may not share. The College will always tolerate diverse, unorthodox, and unpopular points of view, but it will not tolerate condescending or insulting remarks. When students verbally abuse or ridicule and intimidate others whose views they do not agree with, they subvert the free exchange of ideas that should characterize a university classroom. If their actions are deemed by the professor to be disruptive, they will be subject to appropriate disciplinary action, which may include being involuntarily withdrawn from the class.

Plagiarism and Cheating

Plagiarism is the presentation of someone else's work as your own. **1)** When you borrow someone else's facts, ideas, or opinions and put them entirely in your own words, you must acknowledge that these thoughts are not your own by immediately citing the source in your paper. Failure to do this is plagiarism. **2)** When you also borrow someone else's words (short phrases, clauses, or sentences), you must enclose the copied words in quotation marks as well as citing the source. Failure to do this is plagiarism. **3)** When you present someone else's paper or exam (stolen, borrowed, or bought) as your own, you have committed a clearly intentional form of intellectual theft and have put your academic future in jeopardy. This is the worst form of plagiarism.

Here is another explanation from the 2010, sixth edition of the *Manual of The American Psychological Association* (APA):

Plagiarism: Researchers do not claim the words and ideas of another as their own; they give credit where credit is due. Quotations marks should be used to indicate the exact words of another. *Each* time you paraphrase another author (i.e., summarize a passage or rearrange the order of a sentence and change some of the words), you need to credit the source in the text.

The key element of this principle is that authors do not present the work of another as if it were their own words. This can extend to ideas as well as written words. If authors model a study after one done by someone else, the originating author should be given credit. If the rationale for a study was suggested in the Discussion section of someone else's article, the person should be given credit. Given the free exchange of ideas, which is very important for the health of intellectual discourse, authors may not know where an idea for a study originated. If authors do know, however, they should acknowledge the source; this includes personal communications. (pp. 15-16)

Consult the Writing Center or a recommended guide to documentation and research such as the *Manual of the APA* or the *MLA Handbook for Writers of Research Papers* for guidance on proper documentation. If you still have doubts concerning proper documentation, seek advice from your instructor prior to submitting a final draft.

Penalties for Plagiarism: Should a faculty member discover that a student has committed plagiarism, the student will receive a grade of 'F' in that course and the matter will be referred to the Honor Council for possible disciplinary action. The faculty member, however, has the right to give freshmen and sophomore students a "zero" for the assignment and to allow them to revise the assignment up to a grade of "F" (50%) if they believe that the student plagiarized out of ignorance or carelessness and not out of an attempt to deceive in order to earn an unmerited grade. This option is not available to juniors, seniors, or graduate students, who cannot reasonably claim ignorance of documentation rules as an excuse.

Penalties for Cheating: Should a faculty member discover a student cheating on an exam or quiz or other class project, the student will receive a "zero" for the assignment and not be allowed to make the assignment up. The incident must be reported to the chair of the department and to the Honor Council. If the cheating is extensive, however, or if the assignment constitutes a major grade for the course (e.g., a final exam), or if the student has cheated in the past, the student should receive an "F" in the course, and the matter should be referred to the Honor Council. Under no circumstances should a student who deserves an "F" in the course be allowed to withdraw from the course with a "W."

A new grade to denote academic dishonesty is now available, a "M" for "Academic Misconduct." It has the same effect as an "F" but will indicate on the transcript that the failure was due to academic misconduct.

Student Right of Appeal: Faculty will notify students immediately via the student's TAMIU e-mail account that they have submitted plagiarized work. Students have the right to appeal a faculty member's charge of academic dishonesty by notifying the TAMIU Honor Council of their intent to appeal as long as the notification of appeal comes within 3 business days of the faculty member's e-mail message to the student.

The *Student Handbook* provides details.

UConnect, TAMIU E-Mail, and Dusty Alert

Personal Announcements sent to students through TAMIU's UConnect Portal and TAMIU E-mail are the official means of communicating course and university business with students and faculty – not the U.S. Mail and not other e-mail addresses. Students and faculty must check UConnect and their TAMIU e-mail accounts regularly, if not daily. Not having seen an important TAMIU e-mail or UConnect message from a faculty member, chair, or dean is not accepted as an excuse for failure to take important action. Students, faculty, and staff are encouraged to sign-up for *Dusty Alert* (see). *Dusty Alert* is an instant cell phone text-messaging system allowing the university to communicate immediately with you if there is an on-campus emergency, something of immediate danger to you, or a campus closing.

Copyright Restrictions

The Copyright Act of 1976 grants to copyright owners the exclusive right to reproduce their works and distribute copies of their work. Works that receive copyright protection include published works such as a textbook. Copying a textbook without permission from the owner of the copyright may constitute copyright infringement. Civil and criminal penalties may be assessed for copyright infringement. Civil penalties include damages up to $100,000; criminal penalties include a fine up to $250,000 and imprisonment.

Students with Disabilities

Texas A&M International University seeks to provide reasonable accommodations for all qualified persons with disabilities. This University will adhere to all applicable federal, state, and local laws, regulations and guidelines with respect to providing reasonable accommodations as required to afford equal education opportunity. It is the student's responsibility to register with the Director of Student Counseling and to contact the faculty member in a timely fashion to arrange for suitable accommodations.

Incompletes

The College policy for "Incompletes" discourages them. They are appropriate, however, when the following requirements are met:

The student cannot complete the class because of a severe illness to self or immediate family member at the very end of the semester (after the date for withdrawal from class) or because of a traumatic event in the student's life (e.g., death of or serious injury or illness to an immediate family member) at the end of the semester, AND

The student is passing the class at the time he or she cannot complete the semester, AND

The student has completed either 85-90% of the course requirements or is missing only major assignments due after the final date for withdrawal from class and after the onset of the illness or traumatic event (e.g., assignments such as the final exam for the course or a research paper), AND, finally,

The faculty member must have the approval of the department chair before giving an Incomplete.

Student Responsibility for Dropping a Course

It is the responsibility of the STUDENT to drop the course before the final date for withdrawal from a course. Faculty members, in fact, may not drop a student from a course.

Independent Study Course

Independent Study (IS) courses are offered only under exceptional circumstances. Required courses intended to build academic skills may not be taken as IS (e.g., clinical supervision and internships). No student will take more than one IS course per semester. Moreover, IS courses are limited to seniors and graduate students. Summer IS course must continue through both summer sessions.

Grade Changes & Appeals

Faculty are authorized to change final grades only when they have committed a computational error, and they must receive the approval of their department chairs and the dean to change the grade. As part of that approval, they must attach a detailed explanation of the reason for the mistake. Only in rare cases would another reason be entertained as legitimate for a grade change. A student who is unhappy with his or her grade on an assignment must discuss the situation with the faculty member teaching the course. If students believe that they have been graded unfairly, they have the right to appeal the grade using a grade appeal process in the *Student Handbook* and the *Faculty Handbook*.

Final Examination

Final Examination must be comprehensive and must contain a written component. The written component should comprise 20% of the final exam grade. Exceptions to this policy must receive the approval of the department chair and the dean at the beginning of the semester.