

## Course Syllabus for MATH 3404 – Multivariate Calculus

Spring 2009

Section: 002

Meeting Time and Location: 11:00 – 12:15 MWF in RBN 4027

### Instructor Contact Information:

Name: Dr. Casey Mann

Office: RBN 4005

Phone: (903) 566-7449

email: cmann@uttyler.edu (this is the easiest way to contact me outside of office hours)

#### Office Hours:

MWF 8:00 a.m. – 8:50 a.m. and 10:00 a.m. – 10:50 a.m.,

If these times conflict with your schedule, your professor is happy to schedule appointments.

**Required Text:** *Essential Calculus, Early Transcendentals* by James Stewart, ISBN: 0-495-01428-1

**Prerequisites:** To enroll or to remain enrolled in this course, you must have taken MATH 2414 – Calculus II or equivalent and passed with C or better.

**BlackBoard:** A BlackBoard site has been set up for this course. Homework assignments, announcements, course documents, and other important items will be posted on BlackBoard, so it is important that you get enrolled on the BlackBoard site as soon as possible. You should bookmark this site and visit it often.

**Description of Course:** Vector calculus in Euclidean  $n$ -space, functions of several variables, partial differentiation and multiple integration. This will correspond to chapters 10 through 13 of the text.

### Dropping the Course

- The last day to drop this course without penalty is **January 26, 2009**. If you drop before this date, it is as if you never enrolled in the course and it does not show up on your transcript as a W.
- The absolute last day to drop this course is **March 24**. You cannot get a W after this date.

**Final Exam:** A comprehensive final examination will be given on **Wednesday, May 6, 12:30 p.m. – 2:30 p.m.**

**Attendance:** For students to do well in this course, regular attendance and participation in the class are vital. To encourage this in the strongest possible way, a strict attendance policy is in effect. You are allowed three unexcused absences. Upon a fourth unexcused absence, your overall letter grade for the semester is reduced by one letter (e.g. an overall grade of B would be reduced to a C). Upon a sixth unexcused absence, your overall letter grade is reduced by two letters. An eighth unexcused absence results in an F. **It is the sole discretion of your professor to decide which absences are excused and which are unexcused.** Absences due to *required* participation in university events (e.g. athletics events, academic events, etc.) are usually excused. **Your professor needs to be informed about all absences:** Students should always inform their professor *ahead of time* when they need to be absent for some scheduled event (e.g. a doctor appointment) and at their *earliest possible convenience* otherwise.

**Make-Up Policy:** Late homework is not accepted. For excused absences, exceptions may be made. Make-ups for exams may be given for excused absences, but it is the responsibility of the student to inform the professor in a timely manner about the absence so that arrangements can be made. All work missed for unexcused absences may not be made up.

**Getting Help:** You are most welcome to come visit your professor. Even if you can't make it during regularly scheduled office hours, your professor has an open door policy and is happy to schedule an appointment. Students who take advantage of this tend to be students who do well!

**Homework:** You will be assigned homework regularly and it will be collected for grading.

**Cell Phone, Laptops, and other Electronic Devices:** Cell phones, laptops, pda's, ipods, and all other electronic devices are not allowed during class. Before class starts, you need to turn off and put away your cell phone so that it does not ring during class and disturb everyone. Failure to comply with this policy results in an unexcused absence for each violation.

**Calculators:** You are not required to buy a calculator for this course. Calculators are not allowed on exams.

**Grades:** Grades will be assigned by overall percentage. Homework will constitute 20% of the overall grade, In-class exams will constitute 45% of the overall grade, and a comprehensive final exam will constitute 35% of the overall grade. The grade scale will be as follows:

90% to 100%	A
80% to less than 90%	B
70% to less than 80%	C
60% to less than 70%	D
Less than 60%	F

**Student Rights and Responsibilities:** To know and understand the policies that affect your rights and responsibilities as a student at UT Tyler, please follow this link: <http://www.uttyler.edu/wellness/StudentRightsandResponsibilities.html>

**Grade Replacement/Forgiveness :** If you are repeating this course for a grade replacement, you must file an intent to receive grade forgiveness with the registrar by the census date (January 26, 2009). Failure to do so will result in both the original and repeated grade being used to calculate your overall grade point average. Undergraduates will receive grade forgiveness (grade replacement) for only three course repeats; graduates, for two course repeats during his/her career at UT Tyler.

**State-Mandated Course Drop Policy:** Texas law prohibits a student who began college for the first time in Fall 2007 or thereafter from dropping more than six courses during their entire undergraduate career. This includes courses dropped at another 2-year or 4-year Texas public college or university. For purposes of this rule, a dropped course is any course that is dropped after the census date (January 26, 2009). Exceptions to the 6-drop rule include, but are not limited to, the following: totally withdrawing from the university; being administratively dropped from a course; dropping a course for a personal emergency; dropping a course for documented change of work schedule; or dropping a course for active duty service with the U.S. armed forces or Texas National Guard. Petitions for exemptions must be submitted to the Registrar's Office and must be accompanied by documentation of the extenuating circumstance. Please contact the Registrar's Office if you have any questions.

**Disability Services:** In accordance with federal law, a student requesting accommodation must provide documentation of his/her disability to the Disability Support Services counselor. If you have a disability, including a learning disability, for which you request an accommodation, please contact Ida MacDonald in the Disability Support Services office in UC 282, or call (903) 566-7079.

**Student Absence due to Religious Observance:** Students who anticipate being absent from class due to a religious observance are requested to inform the instructor of such absences by the second class meeting of the semester.

**Student Absence for University-Sponsored Events and Activities:** If you intend to be absent for a university-sponsored event or activity, you (or the event sponsor) must notify the instructor at least two weeks prior to the date of the planned absence. At that time the instructor will set a date and time when make-up assignments will be completed.

**Social Security and FERPA Statement:** It is the policy of The University of Texas at Tyler to protect the confidential nature of social security numbers. The University has changed its computer programming so that all students have an identification number. The electronic transmission of grades (e.g., via e-mail) risks violation of the Family Educational Rights and Privacy Act; grades will not be transmitted electronically.

**Student Learning Outcomes:** By the end of this course, the successful student will have the following skills:

- Be able to compute calculus operations on vector-valued functions, including derivatives, integrals, the TNB frame, curvature, velocity, acceleration, and torsion.
- Be able to compute calculus operations on functions of several variables, including partial derivatives, directional derivatives, find extrema, find tangent planes, and multiple integrals.
- Be able to demonstrate knowledge of the important theorem of vector calculus by solving problems using the Fundamental Theorem of Line Integrals, Green's Theorem, Stokes' Theorem, and the Divergence Theorem.
- Be able to apply the computational and conceptual skills obtained from this course to solve applied problems.

## Tentative Class Outline and Schedule

Date:	Topic:	Date:	Topic:
Jan 12	10.1 – 3-D Coordinate Systems	Mar 13	12.5 – Triple Integrals
Jan 14	10.2 – Vectors	Mar 16	
Jan 16	10.3 – The Dot Product	Mar 18	12.6 – $\iiint$ in Cylindrical Coordinates
Jan 19	Martin Luther King Jr. Holiday	Mar 20	12.7 – $\iiint$ in Spherical Coordinates
Jan 21	10.4 – The Cross Product	Mar 23	*12.8 – Change of Variables
Jan 23	10.5 – Equations of Lines and Planes	Mar 25	
Jan 26	10.6 – Cylinders and Quadric Surfaces	Mar 27	<b>Exam 3: Ch. 12</b>
Jan 28	10.7 – Vector Functions and Space Curves	Apr 1	13.1 – Vector Fields
Jan 30	10.8 – Arc Length and Curvature	Apr 3	13.2 – Line Integrals
Feb 2	*10.9 – Motion in Space	Apr 6	13.3 – The Fund Thm for Line Integrals
Feb 4		Apr 8	
Feb 6	<b>Exam 1: Ch. 10</b>	Apr 10	13.4 – Green’s Theorem
Feb 9	11.1 – Functions of Several Variables	Apr 13	13.5 – Curl and Divergence
Feb 11	11.2 – Limits and Continuity	Apr 15	Thanksgiving
Feb 13	11.3 – Partial Derivatives	Apr 17	Thanksgiving
Feb 16	11.4 – Tangent Planes	Apr 20	13.6 – Parametric Surfaces
Feb 18	11.5 – The Chain Rule	Apr 22	13.7 – Surface Integrals
Feb 20	11.6 – Directional Derivatives	Apr 24	13.8 – Stokes’ Theorem
Feb 23	11.7 – Maximum and Minimum Values	Apr 27	13.9 – Divergence Theorem
Feb 25	*11.8 – Lagrange Multipliers	Apr 29	
Feb 27		May 1	<b>Exam 4: Ch. 13</b>
Mar 2	<b>Exam 2: Ch. 11</b>	May 4	
Mar 4	12.1 – $\iint$ over Rectangles	May 6	<b>Final Exam, 12:30 p.m. – 2:30 p.m.</b>
Mar 6	12.2 – $\iint$ Integrals over General Regions		
Mar 9	12.3 – $\iint$ Integrals in Polar Coordinates		
Mar 11	12.4 – Applications		

This is a *tentative* schedule. Test dates, topics covered, etc., are likely to change. Definite test dates will be given in class at least one week prior to each test.

\* indicates sections which may be dropped in the interest of time.