MATH 3110 Course Syllabus

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COURSE TITLE: Calculus III  

PREREQUISITE: This course requires Math 1920.  

TEXTBOOK: Calculus (Early transcendental), by Briggs and Cochran.  

OBJECTIVES: This course is part of the mathematics core. It is designed to expand students’ perspectives of mathematics; Adjusts calculus techniques developed in the plane to make them applicable in three dimensional. Teach the basic concepts of three dimensional space and algebraic calculations in three space, differential and integral calculus definitions and techniques, multivariate functions, partial differentiation, partial integration, multiple integration and multidisciplinary applications; give the student experience in applying multivariate Calculus and using computer technology to solve tedious problems.  

LEARNING OUTCOMES:  

- Learn to utilize the concepts of multivariate functions to formulate and solve problems;  
- Learn to employ the partial differentiation and integration to synthesize and analyze problems;
• Learn to make use of multiple integration;
• Learn to apply the concepts and techniques of multivariate calculus to analyze and solve problems in variety of disciplines;
• Learn to implement computer technology to solve both theoretical and multidisciplinary problems;
• Learn the importance of mathematics in modeling and solving problems.

REQUIREMENTS: In general, you are expected to
1. attend class lectures;
2. read and study class assignments and solve assigned problems;
3. ask questions in class when you are unsure of any concept or unclear on any assigned problem;
4. come to my office for additional assistance as necessary;
5. take all exams (including the final) on the day they are scheduled
6. come to class prepared (this includes completing homework in a timely manner, and bringing your textbook).

1 How you earn a grade

1.1 Grading policy

Four tests will be given which will count 60 percent towards the Final grade. Homework problems will count 10 percent, Project will count 10 percent and the final exam will count 20 percent. Course grades will be determined according to the following scale:
90-100 A, 80-89 B, 70-79 C, 60-69 D Below 60 F.

The Grade I indicates that the student has not completed all course requirements because of illness or other uncontrollable circumstances especially which may occur toward the close of the term. Mere failure to makeup work or turn in required work on time does not provide a basis for the grade I.
1.2 Examinations

_Tentative_ dates for the four tests are:

- Tuesday, February 4
- Tuesday, March 3
- Tuesday, March 1
- Tuesday, April 21
- Final Examination, Tuesday, May 3, 2016.

Make-up test will be given only for documented reasons of illness, family emergency or participation in a University sponsored event. Excuses such as oversleeping and lack of studying are explicitly noted as unacceptable grounds for a make-up test.

1.3 Final Examination

_May 3 Tuesday_ Final comprehensive examination 6.00pm-8.00pm.

1.4 Homework

Problems will be assigned for each section. All problems assigned on or before Tuesday’s class will be due on the Next Tuesday.

1.5 Attendance

Attendance at every class meeting is important and expected. Students missing more than 10% of the class meetings (4 days) can have their grade lowered.
1.6 Academic Honesty

Cheating and plagiarism will not be tolerated. You may discuss homework problems with others, but do not copy work from another student or from a book. Violations of this policy will be dealt with according to University guidelines.

2 TOPICAL OUTLINE:

1. Vectors and vector-valued Functions
   
   (a) Vectors in the plane
   (b) vectors in Three dimensions
   (c) Dot products
   (d) Lines and curves in space
   (e) Calculus of Vector-valued functions
   (f) Motion in space
   (g) Curvature and normal vectors

2. Functions of several variables
   
   (a) Planes and surfaces
   (b) Graphs and level curves
   (c) Limits and continuity
   (d) Partial derivatives
   (e) Directional derivatives and gradient
   (f) Tangent planes and linear approximation
   (g) Maximum, Minimum Problems
   (i) Lagrange Multipliers

3. Multiple integration
   
   (a) Double integrals over rectangular regions
   (b) Double integrals over general regions
(c) Double integrals in polar coordinates
(d) Triple integrals
(e) Triple integrals in Cylindrical and Spherical coordinates
(f) Integrals for mass calculations
   (g) Change of variable in multiple integrals

4. Vector Calculus
   (a) Vector fields
   (b) Line integrals
   (c) Conservative vector fields
   (d) Green’s Theorem
   (e) Divergence and Curl
   (f) Surface integrals
   (d) Stokes’ Theorem
   (e) Divergence Theorem

Please note the following dates and information: Last day to drop the course without a grade, February 1st, 2016. Last day to drop with a W or F, March 27, 2016.

ADA Statement: If you have a disability that may require assistance of accommodations, or if you have any questions related to any accommodation for testing, note taking, reading, etc., please speak with me as soon as possible. You may also contact the Office of Disabled Student Services (898-2783) with any questions about such services.

Financial Aid Statement: Do you have a lottery scholarship? To retain Tennessee Education Lottery Scholarship eligibility, you must earn a cumulative TELS GPA of 2.75 after 24 and 48 attempted hours and a cumulative TELS GPA of 3.0 thereafter. You may qualify with a 2.75 cumulative GPA after 72 attempted hours (and subsequent semesters), if you are enrolled full-time and maintain a semester GPA of at least 3.0. A grade of C, D, F, FA, or I in this class may negatively impact TELS eligibility. Dropping or stopping attendance in a class after 14 days may also
impact eligibility; if you withdraw from or stop attending this class and it results in an enrollment status of less than full time, you may lose eligibility for your lottery scholarship. Lottery recipients are eligible to receive the scholarship for a maximum of five years from the date of initial enrollment, or until reaching 120 TELS attempted hours or earning a bachelor degree. For additional Lottery rules, please refer to your Lottery Statement of Understanding form http://mtsu.edu/financialaid/forms/Lottery\%20Statement\%20of\%20Understanding\%202013-14.pdf or contact the Financial Aid Office at 898-2830.

Math Tutoring Lab (MTL): For this course, tutoring in rooms KOM 252 is available as a free service to MTSU students. Tutoring is conducted by Graduate Teaching Assistants (GTA’s), work study aids, and a faculty coordinator. Days and times for tutoring specific topics are posted on the bulletin board outside room KOM 252.