El Paso Community College
Syllabus
Part II
Official Course Description

SUBJECT AREA   **Mathematics**

COURSE RUBRIC AND NUMBER   **MATH 2315**

COURSE TITLE   **Calculus III**

COURSE CREDIT HOURS   **3**   **3**   **0**
                                        Credits   Lec   Lab

I.   Catalog Description

Continues MATH 2314. Addresses solid analytic geometry, vector calculus in 2-space and 3-space, partial differentiation, and multiple integrals. **Prerequisite: MATH 2314 with a "C" or better. (3:0)**.

II.   Course Objectives

Upon satisfactory completion of the course, the student will be able to:

A.   Unit I (Solid analytic geometry)
    1.   Solve problems in three dimensional geometry using vectors.
    2.   Find equations for spheres, lines, and planes and describe quadric surfaces.
    3.   Use cylindrical and spherical coordinates to describe three dimensional geometry.

B.   Unit II (Vector calculus)
    1.   Use the Calculus of vector valued functions to describe the geometric properties of curves in space.
    2.   Solve problems involving motion in space and find the velocity, speed, tangential and normal components of acceleration.

C.   Unit III (Partial differentiation)
    1.   Evaluate limits and partial derivatives of functions of several variables.
    2.   Use the chain rule or total differential to solve various application problems.
    3.   Use the gradient of a function to find directional derivatives, tangent planes and normal lines.
    4.   Solve extremum problems using the Second Partials Test and Lagrange Multipliers.

D.   Unit V (Multiple Integration)
    1.   Set up and evaluate double integrals to find areas, volumes, and surface areas.
    2.   Set up and evaluate triple integrals to find volume, mass, and center of mass.
    3.   Solve problems using integrals in polar, cylindrical, and spherical coordinates.

III.   THECB Learning Outcomes (ACGM)

Upon successful completion of this course, students will:
1.   Perform calculus operations on vector-valued functions, including derivatives, integrals, curvature, displacement, velocity, acceleration, and torsion.
2.   Perform calculus operations on functions of several variables, including partial derivatives, directional derivatives, and multiple integrals.
3.   Find extrema and tangent planes.
4.   Solve problems using the Fundamental Theorem of Line Integrals, Green's Theorem, the Divergence Theorem, and Stokes' Theorem.
5.   Apply the computational and conceptual principles of calculus to the solutions of real-world problems.

IV.   Evaluation

There will be at least three in class exams (100 points each) and one required in class comprehensive final exam to evaluate student learning for the course. Quiz and homework grades may also be used in the evaluation of the final grade, if the instructor so chooses. An average of these will be computed and a grade will be assigned based on the following scale.

Grade Average	Grade
90 - 100%	A
80 - 89%	B
70 - 79%	C
60 - 69%	D
0 - 59%	F

Note I and **W** grades will be assigned whenever the appropriate assignments and deadlines have been met. To receive an I, the students must have completed at least 80% of the course with at least a 75 average. The proper forms must also be signed by both the student, and the instructor before being submitted to the registrar.

V.   Disability Statement (Americans with/Disabilities Act [ADA])

EPCC offers a variety of services to persons with documented sensory, mental, physical, or temporary disabling conditions to promote success in classes. If you have a disability and believe you may need services, you are encouraged to contact the Center for Students with Disabilities to discuss your needs with a counselor. All discussions and documentation are kept confidential. Offices located: VV Rm C-112 (831-2426); TM Rm 1400 (831-5808); RG Rm B-201 (831-4198); NWC Rm M-54 (831-8815); and MDP Rm A-125 (831-7024).

VI.   6 Drop Rule

Students who began attending Texas public institutions of higher education for the first time during the Fall 2007 semester or later are subject to a 6-Drop limit for all undergraduate classes. Developmental, ESL, Dual Credit and Early College High School classes are exempt from this rule. All students should consult with their instructor before dropping a class. Academic assistance is available. Students are encouraged to see Counseling Services if dropping because exemptions may apply. Refer to the EPCC catalog and website for additional information.