1. EM211 Statics

2. 3 Credit Hours / 3 Contact Hours

3. Course Director: Prof. John Burkhardt

4. Text book: *Engineering Mechanics: Statics*, 14th Ed. (Prentice Hall)

5. Specific course information
    a. An initial course in applied vector mechanics with emphasis on static equilibrium. Topics include forces, moments, couples, equivalent force-couple systems, centroids, distributed forces, and Coulomb friction. The application of the free body diagram in the analysis of static equilibrium of frames, machines and trusses is stressed.
    b. Prerequisites: None
    Co-requisites: Calc III (SM221), Physics I (SP211)
    c. This course is required for the Mechanical and General Engineering programs.

6. Educational objectives for the course
    a. Construct free-body diagrams.
    b. Solve rigid body equilibrium problems.
    c. Solve for member forces in plane trusses.
    d. Solve for member forces in frames and machines.
    e. Calculate internal forces and moments in beams.
    f. Construct shear and moment diagrams for beams.
    g. Analyze the behavior of rigid bodies subjected to Coulomb dry friction.
    h. Calculate the centroid and moment of inertia of simple and composite plane areas.
    i. Communicate solutions to engineering problems clearly and effectively.

7. Specific program outcomes address by this course

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Introduced	X						X
Reinforced							
Mastered							

8. Brief list of topics to be covered
    a. 2D and 3D cartesian vectors.
    b. Moments of forces and couples.
    c. Distributed loading.
    d. 2D and 3D rigid body equilibrium.
    e. Truss analysis.
    f. Frame and machine analysis.
    g. Internal forces and moments in beams.
    h. Shear and moment diagrams.

i. Dry and belt friction.
j. Properties of Areas