

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 Nuclear, Mechanical and General Engineering programs.
6. Specific goals for the course (course outcomes)
 - a. Construct free-body diagrams.
 - b. Solve particle equilibrium problems.
 - c. Solve rigid body equilibrium problems.
 - d. Solve for member forces in plane trusses.
 - e. Solve for member forces in frames and machines.
 - f. Calculate internal forces and moments in beams.
 - g. Construct shear and moment diagrams for beams.
 - h. Analyze the behavior of rigid bodies subjected to Coulomb dry friction.
 - i. Calculate the centroid and moment of inertia of simple and composite plane areas.
 - j. Communicate solutions to engineering problems clearly and effectively.
7. Specific program outcomes address by this course

	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
Introduced	X				X		X		X		X
Reinforced											
Mastered											

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