

ENGR 4510: Practice of Professional Engineering I

Textbook Required

National Council of Examiners for Engineering and Surveying, *Fundamentals of Engineering Supplied-Reference Handbook (8th Edition)*, 2008, ISBN 978-1-932613-30-8.

Course Objectives:

Upon completion of this course, students will be able to complete professional engineering computations and FE style questions in the following topical areas:

- Statics
- Dynamics
- Mechanics of Materials
- Materials Science / Structure of Matter
- Thermodynamics & Heat Transfer
- Fluid Mechanics

Topics Covered:

- Static force analysis and resolution of forces
- Moment about an axis
- Centroids and moment of inertia
- Friction
- Dynamics of linear motion
- Angular motion
- Mass moments of inertia
- Impulse and momentum applied to particles and rigid bodies
- Work and energy applied to particles and rigid bodies
- Shear and moment diagrams
- Stress: normal, shear, bending, moment
- Deformation and combined stresses
- Columns
- Indeterminant analysis
- Plastic versus elastic deformation
- Material properties: chemical, electrical, mechanical, and physical
- Corrosion
- Engineered materials, ferrous and non ferrous metals
- Flow measurement and fluid properties
- Fluid statics
- Energy, impulse and momentum applied to fluids
- Pipe and internal flows
- Thermodynamic laws
- Energy, heat and work
- Cycles, availability, and reversibility
- Ideal gases and mixtures
- Phase changes
- Heat transfer
- Enthalpy and entropy

Grading Policy and Assignments

Students will be evaluated based on the combination of class activities. The final grade will be assessed with the following criteria:

Grading		Assessment	
A	90% or better	Homework/Assignments	75%
B	80% or better	Participation	25%
C	70% or better		
D	60% or better		
F	Less than 60%		
		Total	100%