Code	ING217	Prerequisites	ING216
Name	Strength of Material	Co-requisites	ING207L

Credits	Contact Hours
04	44
Categorization of credits	
Math and basic science	
Engineering topic	X
Other	

Coordinator's name	José Daniel Benjamín Hernández, Ms.E Eng. Aris Raquel Ricart.

Text book
Other supplemental materials
Beer, F. P., Johnston Jr., E. R., DeWolf, J. T., Mazurek, D. F. (2012), Materials Mechanics, (6th. Edition), Mexico: McGraw-Hill. Gere, J. M., Goodno, B. J., (2012). Materials mechanics (8th. Edition), Mexico: Cengage Hibbeler, R.C. (2012). Materials mechanics (8th. Edition), Mexico: Pearson Pretince Hall Mott, R. L. (2009), Materials mechanics (5th. Edition), Mexico: Pearson Pytel, A., Singer, F. L. (2012). Material resistance,(4th. Edition), Oxford: Alphabet

Description	
This course trains students to solve problems, teaching them to select the right materials for the design purposes in engineering, analyzing the behavior of the materials subjected to the different states of loads: axial, shear, bending and torsion; and the stresses and deformations produced by these, the state of combined loads. The transformation of stress in the flat state and its application in the design of thin wall elements, cylindrical and spherical containers under pressure, and the transformation of flat deformation, the deformation rosette. The teaching process is based on the demonstration of the theoretical concepts to be used, and illustrate with examples how they can be implemented in problem solving. Then each student will apply what they have learned in the realization of the practices that will strengthen the development of the competencies.	
Type of course	Required ☒ Elective ☐

Specific goals for the course	
Outcomes of instruction	EG1.1. Identifies the forces acting on a structural element to make free body diagrams. EG1.2. Identifies the charge states generated by the acting forces to analyze stresses and strains in design processes EG1.3. Evaluates material properties to select the most appropriate material in the context of specific situations.
Student outcomes	CG1. Identifies, formulates, and solves complex engineering problems by applying the principles of engineering, science, and mathematics.

Topics
Unit I. Introduction
Unit II. Axial force
Unit III. Moment and Cutting Diagram
Unit IV. Pure Flexion
V. Composite Bending Unit
Unit VI. Torsion
Unit VII. Cutting force
Unit VIII. Flat Effort Statuses
Unit IX. Applying Flat Effort Statuses