



**ESCUELA SUPERIOR POLITÉCNICA DEL LITORAL  
GEOSCIENCES COLLEGE (FICT)  
CIVIL ENGINEERING  
SYLLABUS**

**1. COURSE CODE AND CREDITS**                    **STRUCTURAL ANALYSIS I (FICT-02592)**

**2. CREDITS AND CONTACT HOURS**

<b>CREDITS :</b>	<b>Theory: 2</b>	<b>Practice: 2</b>
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**3. RESPONSIBLE FOR SYLLABUS ELABORATION AND ELABORATION DATE**

<b>Instructor</b>	Genaro Huilcarema-Paredes, C.E.
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**4. COURSE TEXTBOOK AND REFERENCES**

<b>COURSE TEXTBOOK</b>	<b>Schodek, D.E., Betchthold, M., (2013), "Structures" (Estructuras), 6ta Edición, Pearson Education, New Jersey, USA, ISBN: 978-013-25591-3-3.</b>
<b>REFERENCES</b>	<b>1. Hibbeler, Russel, (1997), "Análisis Estructural", 1era Edición, Prentice Hall, México, ISBN 970-17-0047-3. 2. Leet, K.M., Uang, C.M., Zabay, E.S., (2006), "Fundamentos de análisis estructural", McGraw-Hill. ISBN: 978-013-04182-5-8.</b>

**5. COURSE DESCRIPTION**

Structural Analysis I is an intermediate course within structural analysis for Civil Engineering students. At first, Determinate Structural Systems are revised using the equilibrium criterion. Following lectures are concerned about calculation of displacements by energy principles: displacements in trusses, and the application of virtual work principle in beams and frames. Furthermore, lines of influence are revised. Finally, the course aims to analyze indeterminate structural systems by the following methods: Superposition of Forces (Maxwell) , Superposition of displacements and Moment distribution (Cross). This course establishes the basis for the courses of Structural Analysis II and Stuctural Design.

**PREREQUISITES Y COREQUISITES.**

<b>PRE-REQUISITES</b>	<b>STRENGTH OF MATERIALS II (FICT-02907)</b>
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## **TYPE OF COURSE: R**

### **6. SPECIFIC GOALS FOR THE COURSE**

At the end of the course, students will be capable to:

- 1) Calculate displacements using geometric methods.
- 2) Calculate displacements in structures (trusses, beams and frames) using energy principles.
- 3) Distinguish influence lines in structures for determining reactions, shear forces and flexural moments.
- 4) Analyze indeterminate structural systems using the following methods: Superposition of Forces, superposition of displacements, Moments distribution.

### **RELATIONSHIP BETWEEN PROGRAM AND COURSE LEARNING OBJECTIVES.**

<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G.1</b>	<b>G.2</b>	<b>H</b>	<b>I</b>	<b>J</b>	<b>K</b>	<b>L</b>
X				X							X	

### **7. COURSE OUTLINE**

<p><b>CHAPTER I: GENERAL INTRODUCTION (8T/8P)</b> <b>CHAPTER II: ENERGY PRINCIPLES. (8T/8P)</b> <b>CHAPTER III: LINES OF INFLUENCE (8T/8P)</b> <b>CHAPTER IV: ANALYSIS OF INDETERMINATE STRUCTURAL SYSTEMS (8T/8P)</b></p>
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