Code	INI384	Prerequisites	INI326
Name	Methods engineering	Co- requisites	None

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

Coordinator's name	Jorge Miranda

Text book
Garcia Criollo, R. (2005). Estudio del Trabajo. (2nd ed.) Mexico: McGraw Hill. Krick, E. (1975). Methods engineering. Mexico: Lima. Nahmias, S. (2007). Analysis of production and operations. (5th edition). McGraw Hill. Niebel, B., Freivald, A. (2014). Niebel Industrial Engineering: Methods, Standards, and Work Design. (13th edition). Mexico: McGraw-Hill.
Other supplementary materials
Barnes, R. (1980). Time and Motion Study. (7th edition) Buffa , ES (1982). Administración y dirección técnica de la producción. (4th edn). Mexico: Lima. Chase, R.B., Aquilano, NJ (1992). Production and operations management: a life cycle approach. (6th edn). Irwin. Maynard, H.B., Zandin , K.B. (2001). Maynard's Industrial Engineering Handbook. (5th ed.). New York: McGraw Hill. International Labor Office. (1986). Introduction to work study. (3rd revised ed.). Geneva. Wheat B, Carnell M, Mills C (2007). Six Sigma: A parable about the path to excellence and a lean company. Bogota: Editorial Norma.

Description	
Methods Engineering is a theoretical-practical subject where the student will learn to analyze, improve and redesign production processes, both for manufacturing and service companies. For both cases, the student must use work study tools to solve problems that include phases from the identification of the needs of the client (person or company that requires the solution of a problem) to the creation, selection and argumentation of the solution. Proposed solution(s). It includes the study of Methods and times. Use of diagrams to analyze the movement of material, flow and support activities.	
Type of course	☒ required

	☐Elective _

Specific goals for the course	
Outcomes of instruction	1. Identify the client's needs to transform them into objectives, criteria and restrictions with a high level of compatibility and using tools, methods and/or engineering systems. 2. Generate and select the best alternatives with a high level of correlation with the established criteria and restrictions, in accordance with engineering sciences and considering health, welfare and safety. 3. Define the problem and its causes in a systemic way, including all internal and external aspects of the problem, such as the impact on other areas, the parties interested in solving the problem, supporting roles that are needed, etc. 4. Select and justifies the best solution by using complex methods (as necessary), according to the problem definition and within the previously identified alternatives. 5. Prepare reports expressing most of the key ideas of the subject matter, organizing and classifying them coherently and with criteria. 6. Assume corresponding roles within the team based on their skills, meeting commitments within the established deadlines.
Student outcomes	SO1. Identify, formulate and solve complex engineering problems by applying the principles of Engineering, Science and Mathematics. SO2. Apply the engineering design process to produce solutions that meet specific needs, taking into consideration public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors. SO3. Communicate effectively with a variety of audiences. SO5. Function effectively in a team whose members together provide leadership, create a collaborative and inclusive environment, set goals, plan tasks and meet objectives.

Topics
Unit I. Study of movements Unit II. Work measurement Unit III. Ergonomic principles