

Student's outcomes and its indicators for the Civil Engineer Program. FIUAQ 2021

STUDENT OUTCOMES	INDICATORS
1. The ability to identify, formulate and solve complex engineering problems by applying engineering, science, and mathematics principles.	1.1. Identifies the elements of the problem and applies specialized engineering concepts to pose the solution sequence
	1.2. It uses ICT'S and specialized software for the analysis, evaluation and interpretation of data and results of engineering problems optimizing some solutions
	1.3. Uses scientific foundations to solve essential engineering problems
	1.4. Develops capacity in innovation and/or in solving complex problems.
2. Ability to apply engineering design to produce solutions that meet specific needs with consideration of public health, safety, and well-being, as well as global, cultural, social, environmental, and economic factors.	2.1. Know and apply engineering procedures to define scenarios that minimize impacts (public health, safety, well-being, as well as global, cultural, social, environmental, and economic factors)
	2.2. Know and apply national and international regulations, laws, and regulations.
	2.3. It is aware and committed to its cultural, social, environmental, and economic environment, so it plans, and estimates based on local and global development.
3. Ability to effectively communicate with a variety of audiences.	3.1 Communicates in its own language and in English in technical language, using the appropriate means (graphic, verbal, written and/or digital)
	3.2. Performs writings appropriately in Spanish
	3.3. Communicates with technical audiences orally in technical-academic language in Spanish language.
	3.4. Perform appropriately written in English
	3.5. Know and use the terminology and symbology of the discipline.
4. Ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which should consider the impact of engineering solutions in global, economic, environmental, and social contexts.	4.1. Know the principles of professional ethics, considering international standards, criteria, and standards for socially responsible decision-making
	4.2. Develops comprehensive solutions projects to engineering problems, complying in a timely and in form
	4.3. Know and apply environmental impact regulation, in engineering solutions and projects with a humanistic approach.
	4.4. Consider cost-benefit analysis in the proposed solutions
5. The ability to function effectively in a team whose members together provide leadership, create a collaborative and inclusive environment, set goals, plan tasks, and meet goals.	5.1. Actively communicates between peers and in the professional environment in a respectful and responsible manner
	5.2. Assumes its active role within a disciplinary and/or multidisciplinary team.
	5.3. Decision-making is done collectively and inclusively, enabling the group's goals to be met
	5.4. Collectively the student/graduate can interpret and establish the significant facts of the problem and suggest investigative procedures or processes.
	5.5 Promotes the leadership of the team, with autonomy and on behalf of the Institution.

6. The ability to develop and conduct appropriate experimentation, analyze, and interpret data, and use engineering judgment to draw conclusions.	6.1. Relate theory to practice and analyze and interpret.
	6.2 Establishes sampling and identifies the dependent and independent variables of an experiment and applies appropriate procedures.
	6.3. It uses specialized software, analyzing the initial information and interprets the results of the models so that they are reliable
	6.4. Analyzes and uses engineering judgment to draw conclusions.
7. The ability to acquire and apply new knowledge as needed, using appropriate learning strategies.	7.1. Can learn autonomously
	7.2. Uses various sources of information
	7.3 Proposes new models and innovative methodologies related to the solution of basic, intermediate, or advanced level problems in engineering.
	7.4. Participates in national and international academic and research activities.
	7.5 Develops research, technological development and innovation capabilities in new products, processes, or services.

Source: Pérez-Lara (Compiler, 2021).