

CiSTEM: Forming Citizens from STEM

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About Authors:

Abstract—Even though, for centuries, engineering education has successfully focused on technical skills and disciplinary knowledge; in the last decades, Society of Knowledge demands engineering graduates with citizen and ethical competences (CEC) as well. To cover this requirement from STEM courses, this research proposes a didactic sequence structure contextualized in social issues called CiSTEM (Citizenship from STEM) to develop citizenship.

CiSTEM contains four stages, including fostering the sense of belonging and a reflection on the social implications. Its implementation takes one session, in collaborative work and guided by an instructor with basic training in Ethics and Citizenship. CiSTEM was validated by experts demonstrating that it develops science competences as well as citizenship in undergraduates. CiSTEM is easily transferable between STEM courses offering faculty a useful tool to develop their own teaching materials and contribute to the formation of the required citizens to face the challenges of the current century.

Keywords— citizenship, citizen and ethical competences, higher education, educational innovation, STEM education



Claudia Camacho-Zuñiga is a research-oriented teacher focusing on the development of citizenship competences and science teaching innovation. She has also contributed to the knowledge about gas-separation polymer membranes.



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ACKNOWLEDGMENT

The authors recognize the technical and financial support of Writing Lab, Institute for the Future of Education, Tecnológico de Monterrey, Mexico, in the production of this work.

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