

Code	TBD	Prerequisites	Processes Plastic I
Name	Scientific Molding	Co-requisites	None

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

Coordinator's name	Simón Pascual
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Text book
<p>Bryce M, D. (1999). Plastic Injection Moulding. (First Edition). United States of America. Society of Manufacturing Engineers (SME)</p> <p>Goodship, V. (2017). Arburg Practical Guide to Injection Moulding. (2E). United States of America. Smithers Rapra Press.</p> <p>Greener J, Wimberger R (2006). Precision Injection Molding. (1 Edition). United States of America. Hanser Publication.</p> <p>Kulkarni, S. (2016). Robust Process Development and Scientific Molding. (Third Edition). United States of America. Hanser Publication</p> <p>Sánchez Valdés, S., Yáñez, I. Rodríguez Fernández, O. (2001). Injection Molding of Thermoplastics. Mexico: Noriega Publishers.</p> <p>Yang, Y., Chen, X., Lu, N., Gao, F. (2016). Injection Molding Process Control, Monitoring, and Optimization. (1 Edition). United States of America. Hanser Publication.</p>
Other supplemental materials
<p>Lerma Valero, J.R. (2015). Advanced Manual of Transformation of Thermoplastic By Injection. (First edition). Spain. Intercompany Universal Plastic.</p>

Description
<p>Scientific Molding is the injection molding application of standardized work procedures, which involving all the variables involved in the manufacture of parts, generate piece after piece, robust processes with predictable variations within previously defined standards.</p> <p>The development of the course deepens the theoretical knowledge of injection molding, which will serve as a basis to be able to face evaluations of practical situations that involve, among other topics: materials, characteristics, behavior and processing. Cycle of the injection molding process: knowing the usefulness of each part and the effects</p>

between them. Address the mold, balance and distribution of materials: how to deal with these cases, etc.

Type of course	<input type="checkbox"/> Required <input checked="" type="checkbox"/> Elective
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Specific goals for the course	
Outcomes of instruction	1. Proposed optimization formula based on the knowledge of the variables involved in the process in order to impact the increase in the organization's productivity. 2. Develop process improvement options supported by methods and knowledge of mathematics, science and engineering.
Student outcomes	SO6. Develops and conducts appropriate experimentation, in which they analyze and interpret data, as well as use engineering criteria to draw conclusions.

Topics
Unit I. Introduction Unit II. Morphology, Rheology and Drying, their role in injection molding Unit III. Basic Specifications of the Injector Unit IV. Scientifically Molded Unit V. Scientific Optimization of Process Parameters Unit VI. Design of Experiment for Injection Molding Unit VII. Mold Qualification