



University of Puerto Rico
Mayagüez Campus
College of Engineering
Department of Mechanical Engineering
M.S./Ph.D. in Mechanical Engineering



Course Syllabus

1. General Information: Alpha-numeric codification: INME 6046 Course Title: Design for Manufacture Number of credits: 3 Contact Period: Three hours of lecture per week
2. Course Description: English: Methods to assist in the design of products for manufacture. Guidelines and design rules for quality control and to ease the fabrication of assemblies and products with casting and molding processes, material removal, and deforming. Spanish: Métodos para ayudar en el diseño de productos para manufactura, guías y reglas de diseño para el control de calidad y para facilitar la fabricación de ensamblajes y de productos mediante procesos de fundición y moldeo, remoción de material y deformación.
3. Pre/Co-requisites and other requirements: Pre-requisite: Authorization of the Director of the Department
4. Course Objectives: <ul style="list-style-type: none">• Explaining and applying design for manufacturing methods to facilitate the manufacture of the product.• Developing models from data to determine the purpose of the product design.• Utilizing computer tools to improve product design for ease of manufacture.• Identifying characteristics that aid or impede the fabrication of a product.• Selecting the appropriate strategy to develop rapid prototypes based on the design requirements.• Improving the design of products and integrate interaction between design and manufacture to reduce product development time
5. Instructional Strategies: <input checked="" type="checkbox"/> conference <input checked="" type="checkbox"/> discussion <input checked="" type="checkbox"/> computation <input checked="" type="checkbox"/> laboratory <input type="checkbox"/> seminar with formal presentation <input type="checkbox"/> seminar without formal presentation <input type="checkbox"/> workshop <input type="checkbox"/> art workshop <input type="checkbox"/> practice <input type="checkbox"/> trip <input type="checkbox"/> thesis <input type="checkbox"/> special problems <input type="checkbox"/> tutoring <input checked="" type="checkbox"/> research <input type="checkbox"/> other, please specify:
6. Minimum or Required Resources Available: Classroom with computer data display. Manufacturing processes laboratory facilities. Computing facilities.

7. Course time frame and thematic outline

General Topics	Contact Hours
Introduction	1
Evaluation methods for product design to facilitate their manufacture	12
Data models to determine the purpose of product design	6
Use of tools to improve product design: CAD/CAM and Internet applications	6
Strategies to develop rapid prototyping, their advantages and limits	3
Case studies	12
Exams	5
Total hours: (equivalent to contact period)	45

8. Grading System

Quantifiable (S/NS) Not Quantifiable

9. Evaluation Strategies

	Quantity	Percent
<input checked="" type="checkbox"/> Exams	3	50
<input checked="" type="checkbox"/> Final Exam	1	25
<input type="checkbox"/> Short Quizzes		
<input type="checkbox"/> Oral Reports		
<input type="checkbox"/> Monographies		
<input type="checkbox"/> Portfolio		
<input type="checkbox"/> Projects		
<input type="checkbox"/> Journals		
<input checked="" type="checkbox"/> Other, specify: Quizzes, Homework, Laboratory activities	2-8	25
TOTAL:		100%

10. Bibliography:**Textbook:**

Boothroyd, Geoffrey, Peter Dewhurst, and Winston A. Knight. 2010. *Product Design for Manufacture and Assembly*. Florida: CRC Press. [Available at the Circulation Collection (TS171.4. B66 2011), UPRM General Library]

Other resources:

- Boothroyd, Geoffrey, and Peter Dewhurst. 2005. *Assembly Automation and Product Design*. Florida: CRC Press. <http://dx.doi.org/10.1201/9781420027358>. [Available via MechanicalENGINEERING netBASE, UPRM General Library Databases] (*)
- Groover, Mikell P. 2008. *Automation, Production Systems, and Computer-Integrated Manufacturing*. New Jersey: Prentice-Hall. [Available at the Circulation Collection (TS183. G76 2008), UPRM General Library] (*)
- Groover, Mikell P. 2007. *Fundamentals of Modern Manufacturing: Materials, Processes, and Systems*. New Jersey: Wiley. [Available at the Circulation Collection (TS183. G78 2007), UPRM General Library] (*)
- Electronic resources available through the Library's website:
<http://www.uprm.edu/library/cre/listdbsp.php?l=1&st=0&topic=77>

* These are classical handbooks

11. Law 51: The Comprehensive Educational Services Act for People with Disabilities:

States that after identifying with the instructor and the institution, the student with disabilities will receive reasonable accommodation in their courses and evaluations. For more information, contact the Department of Counseling and Psychological services at the Office of the Dean of Students (Office DE 21) or call 787-265-3864 or 787-832-4040 x 3772, 2040 and 3864.

12. Academic Integrity

The University of Puerto Rico promotes the highest standards of academic and scientific integrity. Article 6.2 of the UPR Students General Bylaws (Board of Trustees Certification 13, 2009-2010) states that academic dishonesty includes, but is not limited to: fraudulent actions; obtaining grades or academic degrees by false or fraudulent simulations; copying the whole or part of the academic work of another person; plagiarizing totally or partially the work of another person; copying all or part of another person answers to the questions of an oral or written exam by taking or getting someone else to take the exam on his/her behalf; as well as enabling and facilitating another person to perform the aforementioned behavior. Any of these behaviors will be subject to disciplinary action in accordance with the disciplinary procedure laid down in the UPR Students General Bylaws. —

13. Certification 06-43 of the Academic Senate

"The academic guidelines for offering online courses," defines: Traditional face-to-face courses are those that have less than 25% of the course's regular contact hours via the Internet. Therefore, a three-credit course will be considered "face to face" if, of the 45 hours of regular contact, 11 or less are taught via the Internet. According to certification 06-43 of the Academic Senate, a course may include up to 25% of its total contact hours via the Internet. The objective of this is so that all professors have this alternative in the case of any unscheduled eventuality.

14. Sexual Harassment: Certification 130-2014-2015 states:

Sexual harassment in the workplace and in the study environment is an illegal and discriminatory act and is against the best interests of the University of Puerto Rico. All persons who understand they have been subject to acts of sexual harassment at the University of Puerto Rico may file a complaint and request that the institution investigate, where necessary, and assume the corresponding action by the university authorities. If the complainant is a student, he or she must refer his or her complaint to the Office of the Student Ombudsperson or that of the Dean of Students.

Revised: February, 2019