

Course Syllabi

1. INDU-00028 PRODUCT DESIGN AND DEVELOPMENT

2. Instructor:

- Silvia Alexandra Peña Gonzalez

3. Bibliography

- Chemical Product Design, E. L. Cussler, G. D. Moggridge, 2012
- Desarrollo de nuevos productos. Creatividad, innovacion y marketing, Alejandro Snarch., 2014
- Innovation Management And New Product, Paul Trott. , 2017
- Diseño de producto Métodos y técnicas., Alcaide Marzal, Jorge Diego., 2005
- Product design and development, Ulrich, K., & Eppinger, S., 2016

4. Specific Course Information

- a. The design and development of new products represents a subject that allows students to identify innovation opportunities based on the development of technological projects based on the creation of new products and/or services that are efficient, safe and economically viable, that meet the growing needs of consumers and promote sustainability and environmental care. This process involves the identification of a market need or problem, the generation of ideas to solve this problem, the selection of the most viable idea, the simulation and design of the chemical process, the carrying out of tests and the final production of the product. It contributes to the chemical engineer's discharge profile in the following points: 6. Controlling experiments and processes in the field of chemical engineering, considering transport phenomena, operations 7. Applying the basic foundations of training research, at the exploratory and diagnostic levels, in an appropriate way, for the development of experiments, for the search, selection and evaluation of information, preparation of bibliographical essays and academic articles and for the communication of findings. 9. Implementing technologies related to transformation 11. To evaluate and develop industrial projects with technical and economic criteria, in order to estimate their feasibility. 14. To act with professional ethics, considering the social and economic impact of their professional practice, in the regulatory areas related to quality, health and safety and the environment.

b. Prerequisites:

- INDU-00029 Quality management
- EDCA-00234 Entrepreneurship and innovation
- EDCA-00235 Organ. and direct. companies
- INDU-00030 Energy management

5. Learning Objectives of the Course

- a. To provide students with the knowledge necessary to start a process of design and development of new products in the area of Chemical Engineering, from its conception through the identification of a need or problem of the market, the generation of ideas to solve that problem, the selection of the most viable idea, the design of the process, the testing and the final production of the product - Identify opportunities in the market for the design and development of new products - To generate, evaluate and validate ideas for the creation of innovative products that allow to meet efficiently the demand identified in the market. - To design the process, activities and resources necessary for the creation of a new product feasible in the market, technically and financial viability.

b. Learning Outcomes

1. It applies the different methodologies of generating ideas in the design of a wide variety of products, especially from the chemical industry.
2. Properly design the manufacturing processes of new products.
3. It identifies the importance of troubleshooting and generating new products that can meet customers' needs.
4. It applies the acquired knowledge related to patents and intellectual property.
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6. Properly design the manufacturing processes of new products.
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6. Course Topics

1. Introduction
2. Planning for the development of new products/services
3. Process for the development of new products and/or services
4. Management of development process for new products/services