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| Code | INI392L | Prerequisites | INI307 |
| Name | Production Systems Design Laboratory II | Co-requisites | INI392 |

| Credits | Contact Hours |
|---|---|
| 02 | 22 |
| Categorization of credits | |
| Math and basic science | |
| Engineering topic | X |
| Other | |

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| Coordinator's name | Ing. Cristian Rodriguez |

| Text book |
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| Tompkins, J., While, J., Bozer, Y., & Tanchoco, JM (2011). Facilities Planning (4th. Edition). Cengage Learning.<br>Meyers, FE, Stephens, MP, & Brito, JE (2006). Design of manufacturing facilities and material handling. Pearson Education.<br>Heizer, J. & Render, B. (2014). Principles of Operations Management – Fifth Edition. Pearson Education. |
| Other supplemental materials |
| Orozco, E.E., & Cervera, J.E. (2013). Design and Distribution of Industrial Facilities supported by the use of Process Simulation. Research and Innovation in Engineering, 1(1).<br>Hernandez, JC and Vizan, A. (2013). Lean Manufacturing Concepts, Techniques and Implementation. EOI Foundation<br>Lunau, S. (2009). Design for Six Sigma + Lean Toolset. Springer |

| Description | |
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| The Production Systems Design Laboratory II is a practical subject where students acquire the basic knowledge to develop simulation models of real and proposed situations, using Flexsim, which allow them to evaluate the performance of production processes and/or services. In it, students will acquire competencies in the identification of components of a model, knowledge of basic structures of a discrete event simulator.<br><br>Similarly, students will be able to recognize steps to follow in a discrete event simulation study, understand the importance of simulation in the study of complex systems, apply basic knowledge of modeling and simulation using Flexsim, use library of objects to represent service, material handling, process flow, and manufacturing systems and perform simulation experiments using Flexsim software. | |
| Type of course | ☒ Required<br>☐Elective _ |

| Specific goals for the course |
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| Outcomes of instruction | 1. Define the problem by identifying all its key internal aspects: objectives, metrics, process flow that contains the problem, inputs and outputs of each stage of the process, among others.<br>2. Select the best solution by using complex methods (as needed), according to the problem definition and within multiple previously identified alternatives.<br>3. Prepare sufficient arguments to justify the selected solution where a strong correlation between the arguments and the criteria established in the definition of the problem is evidenced.<br>4. Generate sufficient alternatives with a high level of correlation with the established criteria and restrictions, in accordance with engineering sciences and taking into account health, welfare and safety.<br>5. Select the best alternative by effectively applying decision-making methodologies and based on the established design constraints.<br>6. Create the plans, procedures, specifications, as well as other means of communication of the design, following norms or standards of engineering in general. |
| Student outcomes | SO1. Identify, formulate, and solve complex engineering problems by applying the principles of engineering, science, and mathematics.<br>SO2. Apply and use the engineering design process to produce solutions that meet specific needs, taking into consideration public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.<br>SO6. Develops and conducts appropriate experimentation, in which they analyze and interpret data, as well as use engineering criteria to draw conclusions. |

| topics |
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| Unit I. Knowing Flexsim<br>Unit II. Duplicate objects, Effects of adding more services, use of “Send to port” Unit III. Use of labels<br>Unit IV. Use of the “Pull” System and definition of routes<br>Unit V. Use of “Global Tables”<br>Unit VI. Use of Operators<br>Unit VII. Use of “Break to” |