Course Syllabi

1. TICS-00044 EMPIRICAL SOFTWARE ENGINEERING
2. 192 credits hours.
3. Bibliography
   - Métodos de investigación en ingeniería del software, Marcela Genero Bocco, José A. Cruz Lemus y Mario G. Piattini Velthuis, 2014
   - Metodología de la investigación, Roberto Hernández Sampieri, Carlos Fernández Collado y María del Pilar Baptista Lucio, 2014
4. Specific Course Information
   a. This course addresses different areas of research related to the application and experimentation of software solutions, with a measurement-based approach. As a first step, the way in which a study of the state of art prior to the construction of a solution is carried out will be explained. In addition, it will be analyzed when experimentation in software engineering is required, and what types of problems can be solved by experimentation. carry out experiments in software engineering, with a focus on the definition of experimental hypotheses, the choice of appropriate dependent and independent variables, and the design of an experiment that will answer research questions.
   b. Prerequisites:
      - TICS-00045 SOFTWARE ENGINEERING
5. Learning Objectives of the Course
   a. Know and understand the application of various research methods in Software Engineering.
      - Use the scientific method applied to Software Engineering
      - Identify and select the best solutions for empirical tests at different stages of the research process and its basic elements
      - Integrate various research methods applied to software engineering
   b. Learning Outcomes
      - Use existing empirical software engineering methodologies
      - It evokes the different methods of research within software engineering
      - Identify threats to validity and how to reduce such threats in empirical studies
      - Select the appropriate methods of analysis to analyze descriptive statistics.
      - Implements the methodologies studied in order to test the software solutions
      - Identify the principles of empiricism in software engineering
6. Course Topics
   - Introduction
   - Empirical software engineering methods. an overview and conceptual view
   - Systematic reviews in software engineering
   - Surveys in software engineering
   - The case study / case study in software engineering
   - The experimental process in software engineering
   - Overview of results reporting in empirical software engineering processes
   - Presentation of the syllable