

## Teaching a Senior Design Course in Industrial Engineering

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**Abstract :** Industrial Engineering is one of the engineering disciplines that deal with analysis, design, and improvement of systems, which include manufacturing, supply chain, healthcare, communication, and general service systems. Industrial engineers involve with comprehensive study of a given system, analysis of its interacting units, determination of problem areas, application of various optimization and operations research tools, and recommendation of solutions resulting in significant improvements. The Senior Design course in Industrial Engineering is the culmination of the Industrial Engineering Curriculum in a Capstone Design course, which fundamentally deals with systems analysis and design. The course at Kuwait University has been carefully designed with various course objectives and course outcomes in mind to achieve several program outcomes by practices and learning experiences, which are explicitly gained by systems analysis and design. The Senior Design Course is carried out in a selected industrial or service organization, with support from its engineering personnel, during a full semester by a team of students, who are usually in the last semester of their academic programs. A senior faculty member constantly administers the course to ensure that the students accomplish the prescribed objectives. Students work in groups to formulate issues and propose solutions and communicate, results in formal written and oral presentations. When the course is completed, they emerge as engineers that can be clearly identified as more mature, able to communicate better, able to participate in team work, able to see systems perspective in analysis and design, and more importantly, able to assume responsibility at entry level as engineers. The accomplishments are mainly due to real life experiences gained during the course of their design study. This paper presents methods, procedures, and experiences in teaching a Senior Design Course in Industrial Engineering Curriculum. A detailed description of the course, its role, its objectives, outcomes, learning practices, and assessments are explained in relation to other courses in Industrial Engineering Curriculum. The administration of the course, selected organizations where the course project is carried out, problems and solution tools utilized, student accomplishments and obstacles faced are presented. Issues discussed in this paper could help instructors in teaching the course as well as in clarifying the contribution of a design course to the industrial engineering education in general. In addition, the methods and teaching procedures presented could facilitate future improvements in industrial engineering curriculum.

**Keywords :** senior design course, industrial engineering, capstone design, education

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