IC 201P Design Practicum

Credits:0-0-6-4 Approval: Approved in 2nd Senate

Description:

In this course, the teams are asked to design a prototype based on commercially-off- the- shelf (COTS) hardware or software (Preferably open source). Prototypes are used to gather requirements, and are especially useful in visualizing the look and feel of an application and the process workflow. The prototype can be used as the basis for developing the final solution. The goal when developing such prototypes is to capture the functions and appearance of the finished product. These prototypes are used for testing and evaluation, and provide useful information for the user to rank the products or the features.

Objectives

After the completion of this course' students should be able to:

-- Design a system, component, or process to meet desired needs within realistic constraints such as economics, environmental, social, political, ethical, health and safety, manufacturability and sustainability.

-- Function on multi-disciplinary teams

-- Identify, formulate, and solve engineering problems

-- Understanding of professional and ethical responsibility

-- Demonstrate leadership role

Key Learning Topics

Team formation for designing, manufacturing and operating a selected product, formulating project management procedures. Need identification, assessment of alternative designs, selection of design for development, defining design and performance specifications, and testing procedure. Virtual model. Detailed mechanical, thermal and manufacturing-related design of systems, assemblies, sub-assemblies and components culminating in engineering drawings and material specifications; preparing bill of materials and identification of standard components and bought out parts. Design for assembly, Design for manufacturing. Manufacture of a product - planning and manufacturing as per detailed design given using some bought out items; assembly and operation. Open House. Activities will be done in teams of 6 students as per professional practices.

References:

1. Rapid Prototyping: Principles and Applications by Chee Kai Chua, Kah Fai Leong, Chu Sing Lim. World Scientific Publishing Company Pvt. Ltd.

2. User's Guide to Rapid Prototyping by Todd Grim. Society of Manufacturing Engineers

3.Engineering Drawing Practice for Schools & College. SP46:2003

4. Illustrating source book of mechanical components by Robert O. Parmely, P.E McGraw-Hill