Abstract

The term project will be administered according to this document. A detailed time plan is provided below. Project is considered in a number of phases that involve well-defined objectives. Each phase has a number of subsections called work items, deliverables, and events. The work items describe what is expected from the students. Deliverables should be submitted as a result of the work done. An event is a process that may involve a decision-process by the instructor, e.g. a presentation, etc. Students are expected to follow this document in progressing their projects.

Phase 0. Preparation

Work items

1. Grouping among students. Each group will have three students. Groups will be formed automatically by COADSYS.

   The groups will be assigned with a senior student mentor. The mentor will guide and watch their progress and report to the instructor.

2. Read the list of project topics (list.pdf). Choose a project topic from this list or another topic that you find interesting. Submit this topic along with a brief explanation of the motivation behind your choice using the PTR form.

Deliverables

1. PTR (Project Topic Request) Form submission.

Events

Group assignment. Topic assignment (to be announced in COADSYS). The assignment will be on a first come first served basis. The instructor’s subjective opinion will be based on availability and suitability.
Phase I. Background Research

Work items
1. Description of the need for this device and an overview of it’s historical developments.
2. Search for a model that will be used as your design basis at the market. Eventually purchase the product. The product will be dissected and will become dysfunctional during the project, so make sure it is a cheap one.
3. A blog will be created for the project (e.g. http://wordpress.com, http://blogspot.com, etc.). This page will serve as a project progress page.

Deliverables
1. Blog page. At this stage, description of the topic, its history, and a photo showing what has been purchased will be posted.

Phase II. Configuration Design

Work items
The product will be dissected, parts will be identified with names, they will be grouped into subassemblies. Hand sketches of parts will be prepared to be used in the measurement and part construction process. Product’s functional decomposition and component decomposition diagrams will be prepared. Also all the above material will be posted in the project website. Samples are provided in the figures below.

Deliverables
1. Hand sketches.
2. Bill of materials.
3. Product component decomposition diagram.

Phase III. Detail Design

Work items
1. formulate the design intent: Part symmetry, and relations with other parts should be embedded into the part design starting from the sketching phase.
2. **develop a modeling strategy:** A feature-based step-by-step approach to modeling should be exercised and documented.

3. **implement the part model:** based on the above steps part modeling should be executed.

4. **study manufacturing aspects:** a way of (cheaply) manufacturing the part should be proposed.

**Deliverables**

All the parts and their materials shall be listed in a tabulated format as shown in Figure 3. In an appendix, the hand sketches (see Figure 4) produced during the dimensioning and measurement of parts shall be presented in the project blog page.
Phase IV. Assembly & Simulation

Work items

1. Identify part mating relations.
2. Build the assembly.
3. Simulate motion of the device.

Phase V. Additive Manufacturing

Work items

1. One of the product components shall be selected for additive manufacturing.
2. The part will be manufactured in the lab.
3. Assembly of the manufactured part with the others.
Phase VI. Documentation

Work items

1. Produce technical drawings of all parts.
2. Compile the blog page into a final report.
3. Prepare a presentation of the project.

Deliverables

The final report. This is expected to include all the work done including part details performed throughout the term.

Event

Project presentation. Five (5) minutes will be available for each team to present their term project. The presentations will jointly be graded by the instructor and student peers.