

ME553: Project guidelines for spring 2013

This document describes the guidelines for the team projects in the ME553 course (spring 2013).

Inspiration, Ideation and *Implementation* form the basis for the ME553 course project. Based on these ideals, the course project is divided into five phases. Each of these project phases consist of

- a) Goals : Analyses/learning outcomes for each project phase
- b) Methods/Frameworks: Tools and ideologies that are suggested for goals in each phase
- c) Deliverables: Specific reports/documents/analyses that are submitted for allocating grade points.
A deliverable can be an *Individual Based* or a *Group Based* submission

The prescribed duration and grade percentage for each project phase are also listed.

Please note that this document is only a generalized overview of the course project. This document should only be used as an indicator of the overall intent of the project phases. The complete details will be elaborated at appropriate times during the course. The instructor reserves the right to modify deliverables, grade allocation and the duration of the project phases.

Inspiration

Project Phase #1: Opportunity & Scenario Identification

Due: February 1st, 2013

Goals:

- Develop five significant product-opportunity gaps (POG)
- Formulate the POG's as opportunity statements
- Visualize a scenario associated with the POG's

Suggested Methods/ Frameworks:

- Social-Economic-Technological (SET) Factors
- Desirability-Viability-Feasibility (DVF) Analysis
- Design Thinker's Personality Profile (empathetic design)

[Individual] Deliverables:

- Five Opportunity statements and corresponding scenarios

Duration / Grade Percentage: 1.5 weeks / 5% [Individual Grade]

Ideation

Project Phase #2: Value Opportunity Analysis

Due: February 15th, 2013

Goals:

[Individual]

- List and characterize the needs related to the five opportunities
- Analyze the value of the opportunities created
- Express the analysis into an objective categorical framework
- Choose one out of the five opportunities for the team to consider

[Team]

- Apply value analysis on the selected opportunities from every team member
- Choose one opportunity out of the four team opportunities

Suggested Methods/ Frameworks:

- Preliminary Research (Observation for Needs identification)
- Kano Model (Needs Characterization)
- Weighted Matrix (Value Analysis)

Deliverables:

- **[Individual]** : Needs and their Kano Analysis, Value Analysis Chart, Selected Team Opportunity
- **[Team]**: Value Analysis Chart for team opportunities, Selected Final Opportunity

Duration/Grade Percentage: 1.5 weeks/ 5%

[Team Grade]

OFF CAMPUS Team Conference Call #1

Project Phase #3: Understanding the Opportunity

Due: March 1st, 2013

Goals:

- Understand the Value Opportunity through in-depth research
- In-depth understanding of the user (intended market)
- Guideline development for future opportunity conceptualization

Suggested Methods/ Frameworks:

Primary Research

- Interviews
- Visual Stories
- Task Analysis

Secondary Research

- Human Factors and ergonomics analysis
- Lifestyle references
- Research databases (literature review)
- Value map
- Functional decomposition
- Lean Quality Functional Deployment (Lean QFD)

[Team] Deliverables:

Extensive team report describing:

- Understanding of user and value opportunity
- Methods used in research
- Value map, functional decomposition and lean QFD for the opportunity
- Guidelines for forthcoming opportunity conceptualization

Duration/Grade Percentage: 2 weeks/ 8%

[Team Grade]

OFF CAMPUS Team Conference Call #2

Project Phase #4: Opportunity Conceptualization

Due: March 29th, 2013

Goals:

- Turn Value opportunities into perceivably usable and desirable product concepts
- Generate many concepts with the team keeping needs in mind
- Analyze and evaluate concepts in the team and choose one

Suggested Methods/ Frameworks:

- KJ Method
- Pugh Charts
- Morphology Chart
- Quality Function Deployment (QFD)

[Team] Deliverables:

- Concepts generated based on prior guidelines and needs
- Description of the analysis and evaluation of the concepts using the methods mentioned above
- The result of the analysis and the choice of concept
- Visual Prototype of the concept

Duration/Grade Percentage: 3 weeks/ 10%

[Team Grade]

OFF CAMPUS Team Conference Call #3

Implementation

Project Phase #5: Product Modeling and Rapid Prototyping

Due: April 19th, 2013

Goals:

- Elaborate the product concept into a full-fledged model of the product
- Demonstrate the proof of the concept with a prototype

Suggested Methods/ Frameworks:

- TRIZ

[Team] Deliverables:

- CAD Models of the Product
- A rapid (possibly low-fidelity) prototype of the product

Duration/Grade Percentage: 3 weeks/ 12%

[Team Grade]

NOTE: Phases 3, 4 and 5 are subject to change. Any modifications will be notified at the appropriate time