2015 - 2016 Research and Development
Final Project Portfolio

Objective

Students will develop a Professional Research Portfolio for their 2015 - 2016 Final Senior Capstone Project. Students will use their researched results regarding the investigative process and development of their final product. Students may use any information and digital photos taken in class or researched information from the Internet, textbooks and/or reference books to find all relevant information to complete this project.

Report / Portfolio (100 pts)

1. Cover Page - sheet to include:
   - Title of Report
   - Student Names
   - School
   - School Address
   - Hours
   - Class
   - Completion Date
   - Instructor
   - Part Name / Product Name / Team Name
   - Picture with all team members in background

2. Index Page – sheet to include:
   - One sheet numbered index with page numbers
   - Include all headings written below

3. Report Format:
   - Academically written in your own words
   - Arial Font
   - 11 or 12 pt Font
   - 1" Margins
   - Double Spaced

4. Reference Page - sheet to include:
   - Two sheets maximum
   - References (10) minimum
   - Websites
   - Textbooks
   - Vendors

5. Reference Documents
   - Include all manuals supplied by vendors and any instructions that were included with some purchased components.

Note: All documentation will be converted to a PDF and submitted on 8 ½" x 11" paper, except drawings which will be submitted on 11" x 17" paper. Final report will be submitted in one PDF document. (Ask instructor for assistance)

Documentation

Note: Use the list of headings on the next few pages to assist in writing your report. Add any additional information to your documented report that will help support all of your research findings.
Also Note: Answering only the questions below will get you partial credit; use your educated opinion and judgment to develop a report that reflects the quality and integrity of your Final Senior Project.

Headings	Student Expectations
The Idea *(25 pts)*	Write a short synopsis of your developmental ideas.
The Purpose "Defining the Problem" *(25 pts)*	Write a detailed clear description where design specifications and constraints are offered. Include all supporting documentation that clearly shows an overwhelming need that the problem should be pursued by development.
The Research *(25 pts)*	Develop many new ideas that generate a purposeful outcome by: • Brainstorming • Research Suggestions • Internet / Textbooks • Networking
The Design Process *(100 pts)*	Develop multiple drawing configurations that include: • All Sketches (rough and professional) • Design Specifications and Annotations • All Drawings (2D and 3D including Presentation Renders) • Complete Set of Working Drawings to include Title Blocks with all Dimensions • PDF Format on "B" Size Paper (11" x 17")
The Material *(50 pts)*	Develop a complete list of materials used for the design and construction of your Final Senior Project. Include all photo documentation to support the material process.
The Build Process *(50 pts)*	Show the development stages of your Final Senior Project in chronological order. Show accurate and proportionally modeled design specifications using industry standards and constraints while using dimensioned drawings and sketches. Include all photo documentation to support the building process.
The Successes *(50 pts)*	Develop documents that support your success throughout the entire Research and Development process. What succeeded with the design and development of the Final Senior Project? Show how this process helped you overcome difficult situations and how that success makes you or your team better. What was learned from your successes? Include all photo documentation to support your successes.

The Failures *(50 pts)*	Develop documents that support your failures throughout the entire Research and Development process. What failed with the design and development of the Final Senior Project? Show how this process failed; what made this failure difficult to foresee or difficult to overcome. What was learned from your failures? Include all photo documentation to support your failures.
The Mistakes *(25 pts)*	Develop documents that support your mistakes throughout the entire Research and Development process. What mistakes were made while developing the Final Senior Project? What had to be fixed or adjusted in this entire design and build process? What were the results of your mistakes? What had you learned because of these mistakes? Did any of your mistakes result in a positive or negative outcome? Include all photo documentation to support the mistakes made.
The Testing / Analysis *(100 pts)*	Test Final Senior Project to determine the product safety and functions that follows proper industry standards. Include the following tests: ***Example Testing*** for Electric Vehicle: • Perform a "Shake-Down" Test • Perform a Braking Test • Perform a Steering Test • Perform an Acceleration Test • Perform a Maneuverability Test • Perform Endurance Test • Any Miscellaneous Performance Test Include all charts and graphs and data to support the testing and analysis performed. Include all photo documentation to support the testing and analysis performed.
The Cost *(100 pts)*	Determine the entire cost of your Final Senior Project. Include the following: • Complete cost breakdown by individual part (all parts must be accounted for) • This should match your assembly drawing • Complete vendor list by individual part • Include all invoices and documentation • Total Cost Sheet

The Journal *(100 pts)*	Develop a daily journal and log of the activities perform. This journal must include all dates with documented proof.
The Sponsors *(100 pts)*	Develop documents that support your Sponsorship / Donations • Include sponsorship packet. • Bi-monthly reports from start of project. • Include all letters sent to sponsors. • Include company name, logos, contact person, addresses, phone numbers, email addresses and website information. • Follow through with different sponsorship levels including plaques, T-shirts, invitation to events and media coverage. • Indicate how this sponsorship has help with the building of your project • Contingency Plan if not completed on time
Photo Documentation *(100 pts)*	Photos detailing the entire research, design, prototyping, building and testing process. • Include as many pictures to fully demonstrate the entire research and development process throughout this report. • Include captions with names. • Include figure numbers and reference those in your written report.
Document Set-Up *(100 pts)*	All Documents must be neatly in a PDF Format to be turned in by the due date of May 31st, 2016. • Each category broken down with cover sheet • One PDF of Entire Document • All original files must be turned in to include: Word, Excel or PowerPoint, DWG, IDW, and JPEG • All files should share the same folder and names • Must be turned in on one Flash Drive – Your team must purchase