ME 1770 - Introduction to Engineering Graphics and Visualization

Take-home Exam 3: Submit at the beginning of Lecture on Wed. April 15, 2015

This exam is to be performed by you without the help, in any fashion, of any other person. The use of your textbook, course notes or notebook during the exam is **permitted**. By signing on the line beneath this paragraph, you acknowledge: 1) that you have not used anyone else to help with this exam; 2) that you have not looked at any other student's exam when taking the exam; 3) that if you see others not abiding by the items above that you will notify the instructor; and, 4) that you will abide by and will help enforce the Georgia Tech Academic Honor Code. You can consult the instructor if you have questions.

_____ _____

Signature Date

_____ __B_____

Print Name (Use Engineering Lettering) Section

Grading Rubric

Rubric	Maximum Score	Score	Remarks
All (improved or additional) Part Models (.ipt) used in the final assembly – uploaded	5		2D profiles fully constrained?
Explanation on refined part models. .doc , upload and (printed)	5		Tells about modifications make to parts during assembly modeling.
Assembly Model (.iam) uploaded	25		Interference?
Assembly Model multiviews (.idw) uploaded and Printed	10		Multiviews and dimensions(show H,W,D only)
Exploded view with parts list and balloons, uploaded (.ipn)and (.idw) and Printed	20		Exploded view with part's list and part balloons
Assembly Instructions Manual (.doc) uploaded and Printed	25		Use all black lines views from .idw files and saved as .jpg files
Summary of Entire design (all 3 exams in a PPT file) uploaded and Printed	10		See Template and example on t-square
TOTAL	100		

Problem Statement:

Your company has been given the go-ahead to manufacture your soap bottle concept, and you are now charged with producing quality 3D CAD solid part models to enable manufacturing and production design to begin and create the assembly model and all assembly documentation.

Refer to Exam 1 and 2 for all requirements and specifications that were part of your initial part design.

Deliverables:

Under the given constraints, further the concept you presented in your solution to Case Study 2 (Exam2) by creating a final assembly file, and several working drawing files, word document files and powerpoint slides that can be used to document, manufacture and assemble the product. For this case study problem, you will turn in the following deliverables:

- All Part models files of the bottle, tube, spray pump unit, cap and any other additional parts as per your final assembly model design. (Upload .ipt files to t-square)
- A Word document file (.doc) upload to Tsquare and print out and hand in containing: Explanation as to how each part was modified as a result of refinement or as a result of it not fitting correctly during the assembly modeling process. Be specific as to what features were changed or modified in the part model by identifying them from the browser.
- A complete, fully positioned and constrained **final assembly Model file** containing all the parts models. Be sure to check for interference between parts, and if interference is found fix it. (upload the .iam file to t-square)
- A drawing file (idw) upload to Tsquare and print out and hand in, containing:
    - Sheet 1**: 3rd angle multiviews** of final assembly model with only the overall dimensions. All views should be at as large a standard scale as possible.
    - Sheet 2**: The following views of the assembly model: A shaded Pictorial view, one full section view**, and one **detail view of the spray pump unit and the cap where it fits against the bottle from the section view.**. No dimensions or labels needed. All views should be at as large a standard scale as possible.
    - Sheet 3: a **black lined pictorial exploded view** of the final assembly model, with a parts list and part balloons. The view should be at as large a scale as possible.
    - Sheet 4: The parts list must show in order, the item number, filename, author, material and quantity. (The Generic material is not accepted) No dimensions or other labels are needed. All
    - Completely fill out each sheets titleblock with the correct name of the drawing, scale and correct date.
- A professional quality assembly instruction manual done as a Word document file with step-by-step instructions with black lined assembled and exploded pictures. All pictures must be exported

from the .idw file and should be saved as .jpg files. Upload the .doc file and the .jpg files and print out the .doc file and hand in.

- A Powerpoint slide file. Upload to Tsquare and print out and hand in. Document your entire design (exams 1, 2, and 3) in a power point (.ppt) with (i) scanned conceptual and isometric and multi-view sketches from exam 1 (ii) exported images (with white background) of parts, from exam 2 and (iii) final assembly and exploded views from 3D CAD with white background from exam 3 **(see One_Pager_Take_Home_exam3_example_2015.ppt on t-square**)

Submit: In addition to what is specified under each Deliverable above, also attach the following deliverable.
(i)Grading rubric (first page of Exam 3 document)

Learning Outcomes:

This case study problem is designed to consolidate your mastery of Phase 3 of the ME 1770 course by allowing you to complete the final steps of an open-ended design problem as you actually will in the real world of engineering. Specific learning outcomes include:

- Use of 3D CAD techniques to communicate the technical details of a previously envisioned product.
- Use of a subset of general extrusion, cutout, lofting, revolve, thinwall (shell) techniques to produce complete, fully-constrained 3D part files.
- Use of assembly relationships to produce a final 3D assembly containing several complicated parts.
- Use of the working drawings environment to produce high-quality engineering drawings of a final assembly, including multiviews, detail views, shaded isometric views, and exploded views with parts list.
- Use of general engineering and aesthetic knowledge to create and defend a worthy proposal for a needed product.