

Weekly Design Evaluation - Week 9 – Wednesday 2/28/18 Name _____

Class Design Section - 100 points total

Out of Class Projects, 40 points total

SolidWorks Toolbar selection for your FDP presentation (10pts): _____

The Spur Gear Design Project (20pts) This is to be completed and sent in at the beginning of class at 1pm. Hand in this markup at 2:45pm at the instructor's desk.

- | | Pinion | Wheel |
|--|--------|-------|
| • Standard ANSI Inch, 4 units after decimal (1pt), material of your choice (1pt), rename your features (1pt) | | |
| • Properly derived Do, Dp, Dr, (1pt each gear) | | |
| • Dpp, Db (1pt each gear) | | |
| • Ta (1pt each gear) | | |
| • Tooth Root Perpendicular (1pt each gear) | | |
| • Xc (2pts) | | |
| • Movement with Physical Dynamics (4pts) | | |
| • Gear Mate, works correctly (3pts) | | |
| • Extras and Errors, dress up the gear bodies (not the teeth) with consistent revolved cuts and other features for extra credit (~ 1pt each) | | |

Drawing Template Title Block Items (from your printed Sarrus Wheel – Wheel Part” drawing below (10pts) - This is to be completed and handed in at 2:45pm along with the markup at the instructor's desk.

- Looks complete (1pt)
- Company name filled in and within in border (modify text size)(1pt)
- File name fits (modify text size)(1pt)
- Unless Otherwise Specified section filled in properly (1pt)
- Interpret Geometric Tolerancing section filled in properly (1pt)
- Proprietary section filled in (1pt)
- Logo, effort, unique, (1pt) fills the box, company name, address, phone number, web email address (1pt)
- Drawn By section filled in (initials) and Draw Date, today's date (1pt)
- Material and Weight filled in (1pt)
- Errors and Extras

In Class Design Projects – New Sarrus Wheel Parts, “Sarrus Wheel Assembly” as a sub-assembly, Sarrus Mechanism Assembly updates, “Sarrus Wheel – Wheel Part” drawing – 60 points total - These are to be completed in the time left after the TCS section and emailed and handed in along with the markup by 2:45pm at the instructor's desk.

“Sarrus Wheel Sub-Assembly” with new parts, modified parts and Toolbox items (30pts)

- “Convert and rename the existing “Sarrus Wheel” part into the “Sarrus Wheel – Wheel Part” with 2 Configurations – named “Whole Cast Part” (as existing) (1pt) and new configuration named “Outside Wheel” (1pt) Front Wheel Handle hole (1pt), Front Wheel Handle Hole Wizard Mounting hole (1pt) and Wheel Spoke holes (1pt). Use the using existing geometry and information provided, new final Mass properties (4pts)
- Create “Sarrus Wheel – Wheel Spoke” part using existing geometry and information provided (1pt)
- Create “Sarrus Wheel – Wheel Handle” part using existing geometry and information provided (1pt),
 - Hole Wizard Hole in back (1pt)
 - Create a threaded end on front using the information provided (1pt)
- Create “Sarrus Wheel – Wheel Hub” part using existing geometry and information provided (1pt), Mass Properties (4pts) (Front and Back Configuration with knobs in the back to fit the front for extra credit)
- Create “Sarrus Wheel Assembly” as a sub-assembly (2pts) 5 parts insert as described above appropriately defined (4pts)

- Insert a Toolbox Acorn Low Crown Nut of the size given on the threaded end of the “Sarrus Wheel – Wheel Handle” (1pt), mated 0.10” over the threads (1pt), so that it does not rotate (1pt).
- Insert a Toolbox Flat Head Screw (100) on the Wheel Hole Wizard Hole of the appropriate size fully defined and so it does not rotate (1pts).
- Appropriate part Names, descriptive feature names (3pts)
- Errors and Extras

Sarrus Mechanism Assembly updated (10pts)

- “Replace Part” - “Sarrus Wheel – Assembly” in lieu of the “Sarrus Wheel” part - into the Sarrus Mechanism Assembly (2pts), appropriately defined with all the other parts in the assembly (1pt)
- Suppress the Sarrus Wheel Guard (1pt)
- Insert 2 Toolbox washers (Narrow Flat Washer Type B) of the size given on the pin in where the “Sarrus Push Rod” is inserted on the appropriate “Sarrus Hinge Plate” (2pts), Width Mate between surfaces (1pt) fully define these so they do not rotate (1pt)
- Make certain that all parts in the assembly are apparent and appropriately defined (2pts)
- Send “Pack and Go” of this assembly, one zip file only for the whole CDS (or points off).
- Errors and Extras

“Sarrus Wheel – Wheel Part” Drawing, “Outside Wheel” configuration (20pts)

- Scale 1:1 (1pt), 3 standard views (HLR), Front View (HLV) (1pt), Front Top Right isometric view (Shaded With Edges) (1pt), Back, Top Left isometric view (Shaded With Edges) (1pt), section view of the Front View, looking left – in the center of the part - positioned to the right of the Right View (1pt), Detail View “B” of the Top View of the Wheel Handle hole and Hole Wizard Hole (1pt), add the appropriate dimensions
- View Titles, centered, proper layer (3pts)
- Views centered with consistent offsets, (1pt)
- Dimensions as shown (3pts), proper layer, complete, neat, dimension leader offsets (4pts)
- Hole Wizard callout on the Front View (1pt)
- Note section with fabrication details and Mass Properties (2pts)
- Errors and Extras
- Save a B sized PDF in color, print the PDF on an ANSI B Sheet in grey scale – 1:1 so choose “not scaled” – on the HP 99251
- Send the PDF, hand in the printed drawing

Weekly Design Evaluation - Week 9 - Final Design Section - 60 points total - This is to be completed and handed in at the beginning of class at 1pm.

FDP Project – FDP Score as described in class, 60 points total