

Assignment for Today's Class

- Each design team should select a past U.S. crewed spacecraft (Mercury, Gemini, Apollo, Skylab, Space Shuttle)
- Prepare a slide presentation on your spacecraft. It should include data on the spacecraft (mass, crew size, duration, etc.), mission profile, and a “baseball card” summary
- Everyone *must* use the NX solid modeling program to draw ALL of the graphics for your presentation



Assignment for Today's Class (2)

- Each person *individually* should create and present their own version of
 - External *dimensioned* three-view
 - “Beauty shot(s)” of vehicle (full render)
- As a team, produce a composite highly detailed model of the spacecraft, including
 - Team exterior three-view and beauty shots
 - Detailed interior views of cabin and all other interior spaces
 - Spacecraft integrated to launch vehicle
 - “Baseball card” with vehicle design parameters
- Everyone on the team must contribute ~equally to the final assembly model - if there are 50 items in the assembly, each person should contribute ~10 *of equal complexity* (no fair specializing in spherical tanks or “mystery boxes”!)



Assignment for Today's Class (3)

- The goal for this assignment is to give you experience in detailed modeling including complex assemblies
- At least one of the assembly images should be color-coded to document who did which components
- Individual grades will be based on the individual models of the vehicle, and the extent that contributions to the group model indicate complex modeling skills and attention to detail
- Group grade will be based on overall quality and detail of group design models and images



Just to Make Sure You Understand

For all the term projects you do in this class, you may not use any image of hardware, of any type, for any reason whatsoever, unless you created the image yourself.



(Group)

Beauty Shot(s) and External 3-view go here

(Group)

section views, cutaways showing color-coded components (with legend) produced by each member, enough to demonstrate clearly how many and what kind of components each member contributed

(Individual) should include team member name, external 3-view, glamour shot, and any other images you feel highlight your contribution to the composite group model

You should include one (individual) section per group member. There is no page limit on the presentation, but remember Quality > Quantity

Space X's Crew Dragon 2

ENAE 483 Sarah Garner



Mission Overview

- Crew variant of Space X's Cargo Dragon capsule
- Developed for transport of passengers to the International Space Station as part of the Commercial Crew Program
- First crewed flight is to the ISS scheduled for June 2019



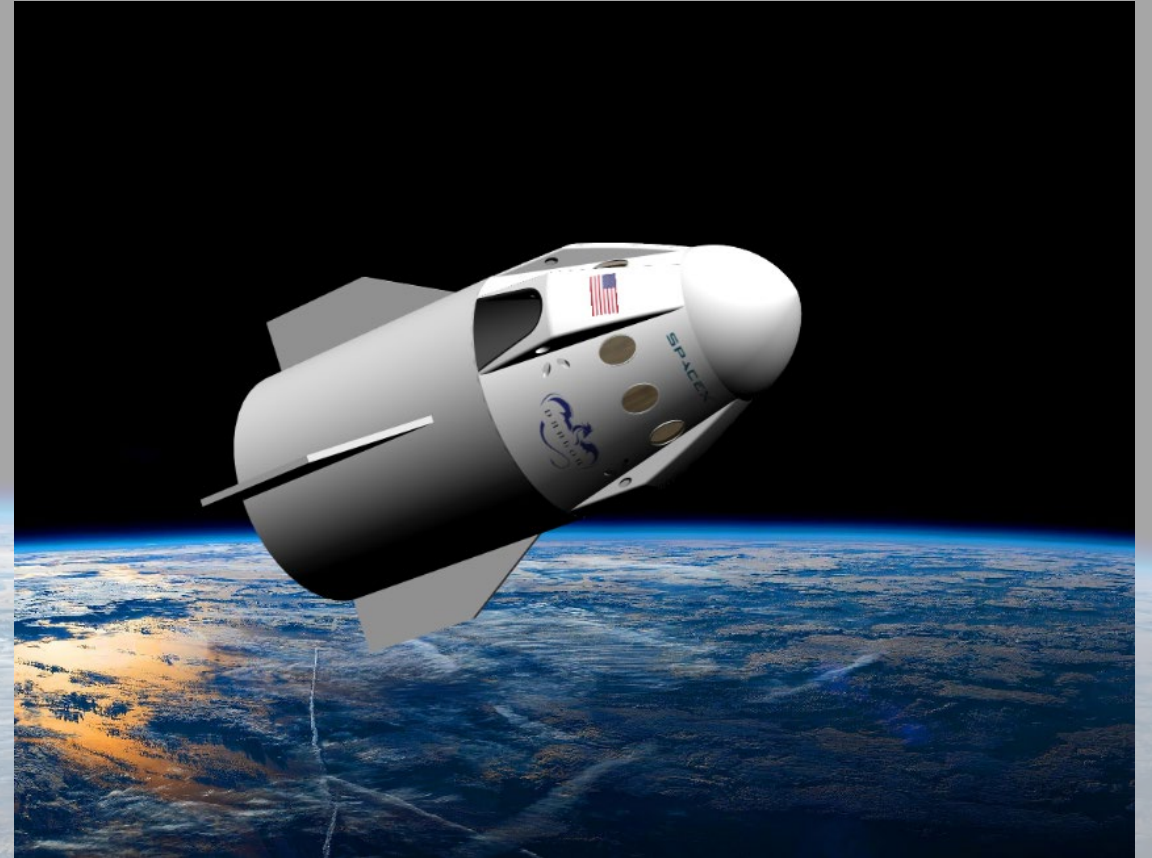
Launch Vehicle

- Crew Dragon 2 will launch on Space X's Falcon 9 Block 5 from Cape Canaveral, Florida

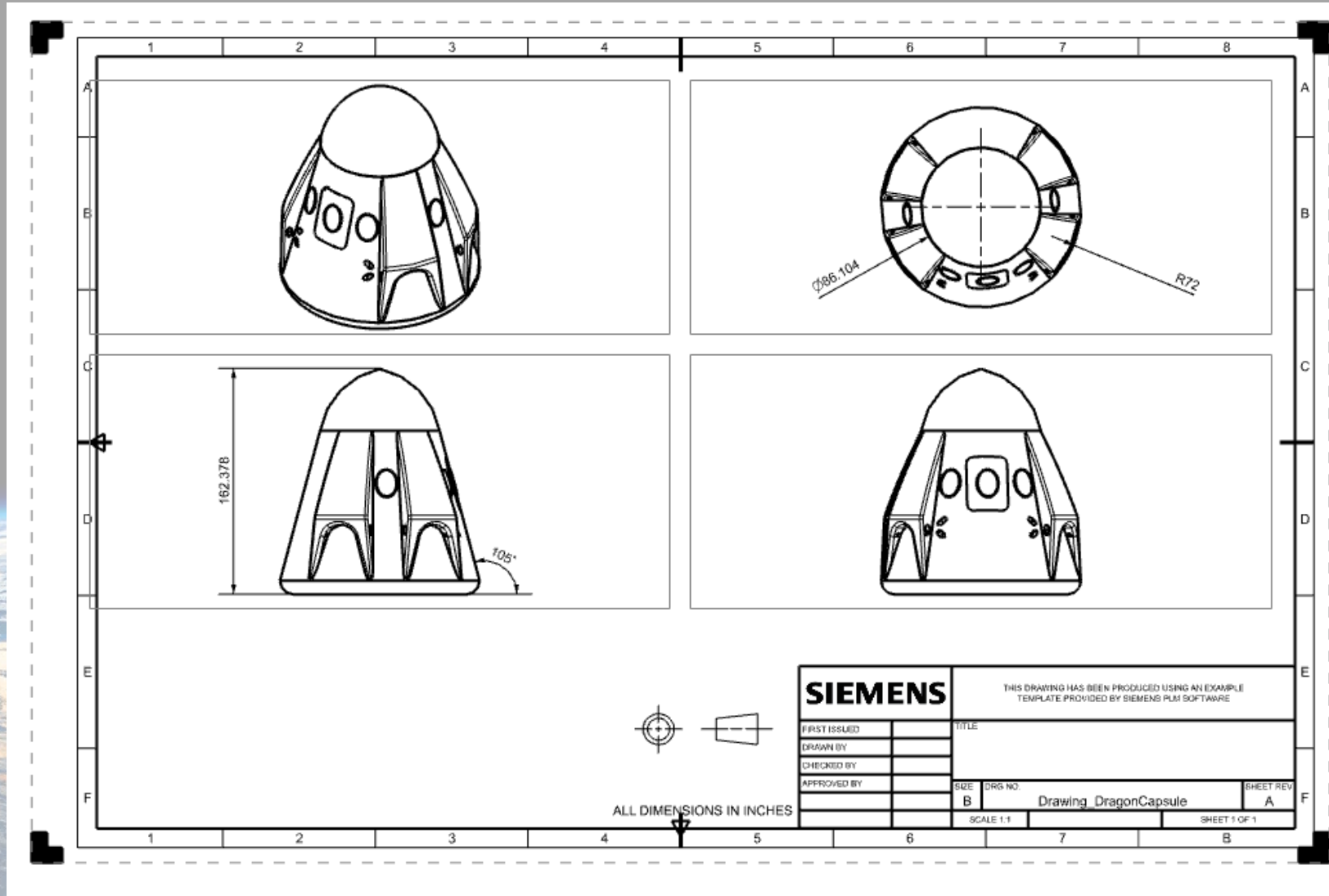


Specifications

- Capacity: 3,307 kg (7,291 lb) Cargo Dragon 2; seven astronauts Crew Dragon 2
- Trunk: carries solar arrays, radiators, and unpressurized cargo
- Engines: 8 side-mounted Super Dracos (16,000 lbf thrust each)
- Re-usability: Designed to be refurbished and re-flown multiple times
- Docking: Capable of autonomous docking to ISS



Three-View



Specification Summary

Structural Dimensions	
Base Diameter	12 ft
Height (without trunk)	13.5 ft
Height (with trunk)	27 ft
Sidewall Angle	15 °
Capacity	
Crew Capacity	7 astronauts
Payload Capacity to ISS	3307 kg
Pressurized Volume	350 ft ³
Unpressurized Volume	490 ft ³
Design Life	
Docked	2 years
Free Flight	1 week
Propulsion	
RCS Thrusters	12
Super Dracos	8
Thrust (Super Dracos)	16,000 lbf
Propellant	NTO/MMH
Propellant Capacity	1338 kg

Description: Space X's Crew Dragon 2 is being developed to transport crew to the International Space Station as part of NASA's commercial crew program. The capsule is a crew-rated variant of Space X's Cargo Dragon 2, which is currently in use. It will be able to carry up to seven astronauts and will launch on the Falcon 9 Block 5 rocket from Cape Canaveral, Florida beginning in 2019.

