A&AE 190 Air Force Museum Trip and Assignment 2

Logistics: We will depart from the back of Grissom Hall (on Nuclear Engineering side) at 7:00 A.M EST. Sunday, September 17, so please be there at **6:45 A.M EST.** We will return approximately 9:00 P.M.EST. You will need to provide yourself with lunch and dinner. Lunch can be purchased at the Air Force Museum and we will stop for dinner at a fast food restaurant at about 5:30 P.M EDT.

The bus will arrive at the Museum main building at around 11:00 AM EDT. Most people will probably spend the whole day at the main building. If you have never been to the A.F. Museum there is more than enough to see in the main building. We will take a special museum tour from 11:30-1:30 arranged by Purdue Alumni Ann and Ken Miller. I suggest you eat lunch in the cafeteria after this tour.

I recommend that you see the IMAX movie "On the Wing" at 2:00pm or 4:00pm for $4.00. The other IMAX movie "Storm Chasers" shows at 1:00pm, and 3:00pm. There is also a simulator-like ride called Morphis. The museum closes at 5:00pm, and **the bus will depart at 5:15pm**. We sill stop to eat at a fast food place on the way back.

While at the Museum, don't forget to check out the bookstore. There are four major exhibits at the Air Force Museum. The first is historical, going back to the beginnings of flight. The second is a large collection of modern aircraft. The third, the outdoor exhibit, is excellent as well. The fourth is at the Annex. (Since the Annex is some distance away we will not be going there.)

Objectives:

- To see aircraft (A/C) and spacecraft (S/C) designed for different requirements.
- To study in detail the configuration layout of successful aircraft and spacecraft.
- To trigger your interest to know why certain A/C or S/C look the way they do.
- To gain some experience with the size and geometry of successful A/C or S/C.
- To develop your intuition about A/C or S/C design, e.g., what looks right.

Assignment 2:

For this assignment you will need to pick one aircraft that is of interest to you. For at least one aircraft do the following:

1. Make a simple sketch. Hand drawn is fine. Indicate the location of landing gear and where they retract. Include in your sketch the engine location and inlet geometry. If anything interesting is located in the engine inlet make a separate sketch of it. Include in your sketch the location of the wing spars. To find them you may have to look carefully at the rivet pattern and perhaps in the inside of the landing gear well and weapons bays. On your sketch indicate the location of the control surfaces and their function, e.g., pitch control.
2. Make a separate sketch of the landing gear showing all the different struts and attachments. If possible sketch the gear extended and retracted. Show how and where the gear mounts the aircraft, usually at a wing spar or other hard point. Try to stick your head in the wheel well to get a good look around.
3. Describe the texture of the skin paying particular attention to the rivets and whether they protrude above the skin. Look over the entire aircraft to see if the rivets are the same everywhere. Why might they be different in different places?
4. What is unique about the aircraft and why was this unique feature (s) incorporated?
5. What do you think were the design drivers that most influenced this aircraft?
6. Describe any de-icing or anti-icing equipment on the airplane.