

## **ASTR 308 REVIEW FOR SPACE RACE MATERIAL**

### **ROCKET PIONEERS AND SPACE TASK FORCE PEEPS**

- Konstantin Tsiolkovski
- Robert Goddard
- Herman Oberth
- Von Braun
- Sergei Korolev

### **SPACE RACE**

- Sputnik
- Explorer I – what it discovered
- V-2 rocket – original use, role on post war rocket development
- Project Paperclip
- R-7 rocket – original use, role in space race
- Why Russians had heavier lifting capability than US in the beginning
- Founding of NASA, goals
- Significance of Space Race in the Cold War

### **COLD WAR**

- Who was Russian leader when Sputnik launched? US President?
- Formation of NASA from NACA, why from NACA, who formed NASA?
- NATO vs Warsaw Pact
- Cold War Politics and Space Race (what were political goals of Space Race)
- Describe the circumstances that lead Kennedy to challenge the Russians... why was showing technological superiority to the world so important for the US and USSR?

### **MERCURY MISSIONS**

- What were the goals of Project Mercury?
- How many Mercury astronauts were there?
- How many Mercury flights were there?
- Who was the first man in space? The first American?
- Who was the first man to orbit earth? First American?
- What was different about the first two Mercury flights compared to the rest of them?
- Which Mercury astronaut did not fly a Mercury mission? Why?
- At what stage in the Mercury Program did Kennedy direct NASA to the moon?

### **GEMINI MISSIONS**

- What were the original goals of Project Gemini? Which goal was not accomplished?
- What was the goal added later?
- Who was the first man to do an EVA? First American?
- Know which mission first accomplished which of the main goals of Gemini.
- What was the Agena spacecraft used for?
- Which goal of Gemini turned out to be very dangerous and was difficult to attain?

## **APOLLO MISSIONS**

- What were the mission goals of the Apollo Project?
- What was the mode that was chosen and what were the three other possible modes?
- What year did a manned Apollo mission first fly?
- When was the last moon shot?
- Know the basic Mission Profiles (what the main goals and happenings were) of Apollo 1, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, and 17
- Apollo/Soyuz Mission
- How many men flew out to the moon and back?
- How many men flew to the moon twice?
- How many men walked on the moon?

**Anatomy of an Apollo Mission:** There are several milestones in an Apollo mission. I outline them below in order. Be prepared to describe any one of them and be sure to know their order and roughly *where along the flight trajectory* they take place (given below)

1. launch
2. translunar injection burn (TLI)
3. docking with and extraction of the LEM
4. passive thermal control (PTC)
5. lunar orbit insertion (LOI)
6. LEM powered descent
7. Walk on the moon (EVA)
8. lunar liftoff (ascent stage of LEM)
9. lunar orbit rendezvous (LOR) and docking of CM and LEM
10. cast off LEM
11. trans-earth injection burn (TEI)
12. passive thermal control (PTC) again
13. jettison SM from CM
14. reentry

## **SOVIET/RUSSIAN MISSIONS/PROGRAM**

- Identify at least three Soviet “firsts” in the Space Race
- Who was the “Chief Designer”? Who are Glushko and Mishin?
- Know about Urey Gagarin, Vladimir Komarov, Alexy Leonev
- Soviet Space Accidents
- The N1 rocket, the three moon programs, timeline for men to the moon
- What event(s) derailed the Soviets and ended their moon landing program?
- Apollo-Soyuz mission
- Salyut and Mir Space Stations
- Buran
- Russian Space Agency, challenges of forming
- Roscosmos and future plans