HTS 3080

History of Rocketry

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Introduction: This course offers a global history of rocketry that situates the technological achievements of the space age in a social and political context. It first explores the birth of guided missiles as weapons of war in Nazi Germany and traces the movement of German engineers into the United States and the Soviet Union after the war. The moral and political ambiguities surrounding the recruitment of Wernher Von Braun by the US Army are dispelled by his genius as a project manager and promoter of space flight during the Cold War. He comes into his own in the space race triggered by the 'Sputnik shock' of October 1957, the birth of NASA, US-Soviet rivalry over human space flight and the triumphant landing of men on the moon in 1969. The very different technological trajectory followed in Europe s described as well as the emergence of Europe's highly successful rocket Ariane. The commercial rivalry between Ariane and the Space Shuttle in the 1980s is seen as an example of US – European technological competition, that was fuelled by the tragic accidents of the Challenger and Columbia orbiters. These are studied as examples of engineering practice when it involves decision-making under conditions of uncertainty with life-threatening consequences. Students interested in the social and political dimensions of technological change involving disruptive technologies that are key instruments of national prestige and military power will derive considerable benefit from this course.

Course Learning Outcomes:

At the end of this course:

a) Students will be aware of the key role played by Wernher Von Braun and his team in Nazi Germany in the development of rocketry world-wide.
b) Students will be able to identify the drivers of super-power rivalry in space in the Cold War and the differences with the European space program.
c) Students will understand the dynamics of European integration as seen through the lens of European rocketry.
d) Students will have an insight into the trade-offs facing project managers and engineers who develop human-rated large technological systems.

Readings. There is no required book for this course.

There are prescribed readings for this course*, *however. You will be able to access these readings via the T-Square site for the class. Many of the readings are excerpts from recent books and academic articles in this area.

Pedagogy. The course is taught using power-point slides that present the core material for the subject. Video clips and documentary films are included to enhance the learning experience. Weekly readings are the basis for in-class discussion.

Course Requirements

1. Students will do 8 multiple-choice-question quizzes during the semester covering material dealt with in the previous three or four classes. These will count 40% of the final grade
2. Students will do a written exam at the end of the semester covering the entire course. It will involve multiple-choice-questions (20%) and four short essays (40%)

Grading scheme: A: 90-100; B: 80 – 89; C: 70 – 79; D: 60 – 69; Less than 60: fail

Attendance: Attendance in class is obligatory. The register will be taken regularly. Two absences without good reason are permitted. After that, each absence from class without good reason is punished by the loss of up to 5%.

Accommodating disabilities: If you have or acquire any sort of condition that may require special arrangements please let me know as soon as possible so that I can make the necessary arrangements. Proper documentation from the Office of Disability Services is required.

Academic Conduct: All students are expected to conduct themselves in accordance with the policies of the Georgia Tech Honor Code with respect to conduct and academic honesty. Anyone engaging in acts that violate these policies, such as plagiarism or cheating, will be penalized.

Appendix

Selection of Books Used

1. Michael Neufeld, *The Rocket and the Reich. Peenemünde and the Coming of the Ballistic Missile Era* (New York: Free Press, 1995).
2. Walter McDougall, *...The Heavens and the Earth. The Political Economy of the Space Age* (Baltimore: JHU Press, 1985).
3. Roger Launius, *A History of NASA* (Krieger: Malibu FL, 2000).
4. Asif Siddiqi, *Sputnik and the Soviet Space Challenge* (NASA, 2003).
5. John Krige, *Fifty Years of European Cooperation in Space* (Paris: Beauchesne, 2014).
6. Roger Launius, John Krige, and Jim Craig, eds. *Space Shuttle Legacy: How We Did it and What We Learned* (Reston VA: AIAA, 2013).