American Technology and Victory in the Cold War

TC-325/LAH-350
Unique Numbers 41995/29385

Fall Semester 2015

Tuesdays and Thursdays 11:00am-12:30pm
CRD 007B

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By Appointment

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Important Dates:

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<th>Date</th>
<th>Event Description</th>
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<tr>
<td>Monday, August 31</td>
<td>Last day of the official add/drop period</td>
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<td>Friday, September 11</td>
<td>Last day to drop a course for possible refund. Last day to add a course</td>
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<td>Tuesday, November 3</td>
<td>Last day to withdraw or drop a course with approval from the dean. Last day to change to/from pass/fail basis</td>
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The Class Outline

The course consists of twenty-four lecture sessions along with some video presentations. Supporting handouts will be given at each session.

Homework Policy

There is no "homework" per se but it is expected that soon after the semester begins students will start on their term paper.

Attendance

It is expected that the students will attend all the lectures. Important ideas or concepts can be missed if not in attendance.

Grading

There will be a term paper required in lieu of a final exam. The due date of the final paper will be determined at a later date. The midterm will be an oral synopsis of the term paper topic. The final grade in this course will depend upon the quality of the oral presentation of the student's topic and the actual term paper. Absenteeism will be noted. Standard grading (A,B,C..etc) will be used.

Textbook

There is no textbook required. A supplemental reading list will be given to the students that they can use to learn more about a particular topic that interests them.

Class Outcome

It is hoped that the students learn about the era of the Cold War from 1945 to 1991 and about the technological developments during that time.

Special Note

Student with disabilities may request appropriate academic accommodations from the Division of Diversity and Community Engagement, Services for Students with Disabilities, 471-6259.
American Technology and the Victory in the Cold War

Course Description

Hans Mark
The University of Texas at Austin

A good case can be made that one of the vital factors in bringing about the collapse of the Soviet Union in 1991 and the communist ideology on which it was based, was the consistent superiority of American technology for the forty-six year duration of the “Cold War”. It is the purpose of this course to examine this proposition. Many of these technologies had their origins during World War II when they were developed on a “crash” basis because of the exigencies of war. The institutions that were built during the war to do these technology developments were converted to new work of a military nature that turned out to be important during the “Cold War”. Thus, the course will start with a discussion of the situation as World War II ended in the summer of 1945.

A number of examples of American technology developments will be presented and the effect that they had on Soviet-American relations will be evaluated. One of the first was the Berlin Airlift which broke the Soviet blockade of the city in 1949. We astonished the Soviets with our technological capability to supply a city of three million people with aircraft alone. It was the first “peaceful victory” in the “Cold War”. Next was the use of U-2 aircraft to gather credible information about the deployment of Soviet missiles in Cuba. The high-resolution U-2 pictures permitted President Kennedy to persuade a skeptical public that the Soviets were indeed doing just that. The development of the technology for defense against ballistic missiles was another important element. President Reagan’s refusal to trade away the work on missile defense at the Reikjavik summit meeting with President Gorbachev in 1986 was one of the critical turning points in U.S. - Soviet relations during the “Cold War”. The meeting persuaded Gorbachev that we were serious and some believe he lost his nerve at that point. Gorbachev, himself, has actually said so. The continuing work on cryptology and other information systems were also a decisive element in winning the “Cold War”. This work was an extension of what was started in World War II and profoundly influenced computer development. Perhaps even more important, the unclassified work on information technology, transistor radios, Xerox machines, FAX machines and VCR technology made it impossible for the Soviets to operate the closed society that the communist philosophy demanded. The lectures will be presented roughly in the chronological order of events during the cold war as they occurred. There will also be some discussions of how the legacy of the “Cold War” affects current events.

I participated personally in many of the events that are described in these lecture notes. Therefore I cannot really pretend to take a “balanced” view of what happened during the past fifty years. We will have to leave that to historians fifty years from now.
My hope is that I will be able to communicate some of the excitement of this period in our history, some of the risks we had to take and finally the satisfaction of living long enough to see us prevail over our adversaries. In the dozen plus years since the collapse of the Soviet Empire, weapons developed during the “Cold War” have been used in a decisive way in various conflicts around the world. This important legacy from the “Cold War” will also be discussed.

The course consists of twenty-four lecture sessions supported by video presentations. There will be a required term paper (the final) and a midterm review of the term paper topics. The student’s grade will be determined by the performance of these assignments. The course is intended for undergraduate students in the Colleges of Liberal Arts, Natural Sciences and first year graduate students in the LBJ School. Qualified students in other university units might also be interested in the subject matter and would be welcome to attend.

Hans Mark August 24, 2015
Table of Contents (Lecture Schedule)


Lecture #2. The Decision to Use Nuclear Weapons Against Japan in 1945. Alternatives to use of the atomic bomb. Demonstration at sea or over unpopulated region. Debate within U.S. leadership as to what should be done. Final decision to use the bomb by President Truman and the surrender of Japan. Video: “The Bomb” from “The World War” Vol. 24.

Lecture #3. The “Cold War” Begins. The failure of “four power” role in Berlin. The Soviet blockade of Berlin and the airlift. The first shot in the cold war. The first Soviet retreat forced by the application of technology. The creation of NATO as a result. Video: “The Berlin Airlift.”

Lecture #4. The Soviet Atomic Bomb (“Joe One”), The U.S. Hydrogen Bomb and the Soviet Hydrogen Bomb. The role of espionage in the development of Soviet nuclear weapons. The development of thermonuclear weapons (Hydrogen bombs) by the U.S. and the USSR. Conflict in the U.S. over the development of thermonuclear weapons and the case of J. Robert Oppenheimer

Lecture #5. The Development of Large Rockets and Intercontinental Ballistic Missiles (ICBMs). The delivery of nuclear weapons by ICBMs. The first Earth orbiting satellites. Technology and political prestige – the Soviet Sputnik I. The initiation of the space program and the creation of NASA as the American response.


Lecture #7. Reconnaissance Aircraft and Spy Satellites. The “Corona” satellite program. The importance of satellite intelligence data for decision making during the “Cold War”. The Lockheed SR-71 and U-2 reconnaissance aircraft and Clarence A. (Kelly) Johnson’s technology.


Effectiveness of arms control. The doctrine of “Mutually Assured Destruction” (MAD) and “stability” during the cold war.


Lecture #18. The Space Race II. The development of the Space Shuttle and the Space Station. President Carter’s support of the space shuttle, President Reagan’s space station, initiative. The space station as an international enterprise in 1984 – the London Economic Summit. The Soviet MIR space station. Recent activities on the International Space Station.

Lecture #19. The War Over the Falkland Islands (1982). Relationship to “Cold War” policies. Conflict between the Monroe Doctrine and the “special relationship” with Great Britain. The first “modern” war with the use of high tech weapons by both Argentina and Great Britain. Video: “The Falklands War.”

Lecture #20. The Development of Laser Weapons. Gas Dynamic and Chemical Lasers provide the capability to produce high intensity continuous laser beams in the megawatt power regime. The Airborne Laser laboratory (ALL) demonstrated the capability of shooting down air-to-air missiles at ranges up to 5 km in 1983. The Tactical High Energy Laser (THEL) tested successfully in September 2000 at WMSR. Video: THEL Tests at the White Sands Missile Range.


Lecture #22. The Middle East and the Cold War. The Middle East was a major theatre of conflict during the Cold War. Israel was created in 1948 as a result of persecution of Jews by the Nazis, which triggered a bitter continuing conflict between Israel and her Arab neighbors. Israel became a client state of the U.S. and several Arab nations (Syria, Iraq and sometimes Egypt) became client states of the Soviet Union. The end of the Cold War has intensified the conflict because one million Russian Jews immigrated to Israel. All of this has put the U.S. in a much more difficult position in the region than during the Cold War. The future is bleak and uncertain.
Lecture #23. Energy and the Cold War. There is a direct correlation between prosperity and the availability of cheap and convenient sources of energy. Nations with the highest standard of living also consume the most energy. For example, the United States – the largest nation with a high standard of living - has about five percent of the world’s population and accounts for about twenty five percent of the world’s energy consumption. About sixty five percent of the world’s energy comes from oil and gas and therein lies the real problem. Two thirds of the world’s oil resource and much of the gas is located in the Persian Gulf area. Thus, the availability of this resource is affected by the political problems that are endemic to the region as explained in Lecture #22. These were important during the Cold War and to a large extent shaped our policies toward the Middle East. They are even more important now. There are technical solutions to the heavy dependence of the industrial world on oil and gas from the Middle East but these would require time to implement and very substantial investments. These include nuclear fission and various renewable concepts that are discussed here in the proper context.