

Air Command and Staff College

Title: The Role of Nuclear Weapons in National Security

Description: “Continue to strengthen the Air Force Nuclear Enterprise” was the number one priority in the CSAF Vector published in July 2010. What is the Air Force Nuclear Enterprise and why is it so important to our country? Nuclear weapons have played a significant role in our national security for over 60 years and will continue to be critical in our defense strategy for the foreseeable future. However, recent incidents within the Air Force have exposed what the BRR (Blue Ribbon Review of Nuclear Weapons Policies and Procedures) referred to as “an erosion of the culture of ‘nuclear excellence’”. In this course, students will study the history of the U.S. nuclear weapons enterprise, analyze how the DoD has arrived at the current state of affairs, examine the Report on the 2010 Nuclear Posture Review, and postulate the role of nuclear weapons in the future. The result will be a more complete understanding of the issues surrounding nuclear deterrence, the role of the nuclear umbrella, nuclear weapon reduction pros/cons, nuclear testing, the nuclear weapon life cycle, the nuclear enterprise, and the unique relationship between DoD and the Department of Energy’s National Nuclear Security Administration (NNSA).

Thesis and scope: This elective will prepare future decision makers and stewards of strategic nuclear assets to make educated judgments and offer informed recommendations to shape the future nuclear weapon enterprise, within challenging constraints such as funding and the politics of nuclear weapons.

Desired Learning Outcomes:

1. Understand the historical and topical roles of nuclear deterrence in war theory; describe applications of nuclear deterrence in national strategy; summarize the relevance of nuclear deterrence.
2. Understand the US nuclear enterprise and org structure (past or present); describe assets that were or can be employed to deliver nuclear ordnance ISO national objectives.
3. Analyze military requirements for nuclear weapon design, including modern safety, surety, reliability, and use control features. Evaluate the current nuclear weapon design/manufacturing enterprise in order to assess its current state of health and provide recommendations for its future.
4. Describe the history of nuclear weapons, theory and strategy and apply the lessons to present or future challenges.
5. Describe the role USSTRATCOM plays in maintaining the security and reliability of the U.S. nuclear arsenal.
6. Comprehend the body of thought on the character of nuclear warfare and how it applies to the 21st Century.

Required Texts:

1. *Nuclear Matters – A Practical Guide*, DATSD/NM.
2. *The Bomb: A New History* by Stephen M. Younger (Harper-Collins, 2009)

Determination of grade:

1. Book Review (*The Bomb: A New History* by Stephen M. Younger) — 10%
2. Persuasive Paper — 15%

3. Short Research Paper — 75%

Book Review: In the course of 5-6 pages, the student should, first, make a judgment about to what degree does the book add to your knowledge of nuclear enterprise related issues and the author's logical consistency and clarity. Second, describe the book's greatest strengths and greatest weaknesses. What are the most insightful aspects of the author's analyses and which parts could be made better? Third, make an overall assessment. *This review is to be typed and double-spaced, 12-point Times New Roman with one-inch margin. Composition and style will be consistent with the Air University Style and Author Guide.*

Persuasive Paper: This will be a 6-7 page paper along the lines of an opinion-editorial article in a major newspaper or magazine. Students will select a nuclear enterprise related topic, choose a position regarding that topic and then advocate that position with a logical and supported argument. Supporting documentation is not required, but citations of sources are required, if appropriate, in accordance with the *Air University Style Guide for Writers and Editors (AU-1)*.

Research Paper: This will be a 9-12 page paper requiring some research. Student's will select a topic that (1) raises and advocates for a new idea for consideration or (2) advocates a particular position on a current situation or proposal regarding a nuclear enterprise issue, state or non-state nuclear threat, or arms control and treaty concern. The opening statement or introductory paragraph must contain a clear question and a position on that question, i.e. a thesis. The remainder of the paper should consist of integrated paragraphs that support the position and examine the merits of alternate positions relative to the thesis. The student must have adequate, accurate and relevant support material. The concluding paragraph should contain a specific recommendation as well as a summary of the argument(s). All documentation for this paper is to conform to the *Air University Style Guide for Writers and Editors (AU-1)*.

Course Overview:

IP 1: Nuclear Weapons History

- Manhattan Project and Trinity; Nuclear Security Enterprise; Nuclear Weapon Accidents

IP 2 : Nuclear Weapons Employment Theory and Policy -- Part 1

- Book review due
- Deterrence and Assurance; Nuclear Treaties; Discussion of book review

IP 3: Nuclear Weapons Employment Theory and Policy -- Part 2

- Nuclear Policy; 2009 Strategic Posture Review; DoD/DOE relationship

IP 4 : Nuclear Theory and Science

- Nuclear Physics 101; Nuclear Fuel Cycle; Weapon Effects ; Physical and Computational Simulation

IP 5: Nuclear Weapon Requirements and Development

- Weapon life-cycle; Military Requirements; Weapon Design Requirements; Physical Security/Transportation

IP 6: Evolution of the Nuclear Stockpile

- Persuasive paper due
- Delivery platforms; Current weapon stockpile; Surveillance

IP 7: Evolution of the Nuclear Force Structure

- Cold War; Post Cold War; Post 9/11

IP 8: Current Issues

- Political picture; Recent incidents; EMP commission; Stockpile Transformation

IP 9: National Nuclear Security Administration (NNSA) and relationships to DoD

IP 10: Evolution of U.S. Nuclear Policy, 1994-2010

- Comparison of the 1994, 2001, and 2010 Nuclear Posture Reviews

IP 11: The Way Ahead

- Research paper due
- New deterrents; Strategic environment; Complex Transformation; Emerging Threats