

Air War College

Title: Nuclear Threats, Countermeasures and Enterprise

Description: Nuclear weapons have played a critical role in our national security and will continue to do so for the foreseeable future. However, recent incidents within the Air Force have exposed “an erosion of the culture of ‘nuclear excellence.’” Students will examine the evolution of the nuclear enterprise; state/non-state nuclear challenges to the U.S.; and appropriate countermeasures to such threats. Also, we will examine the evolution of the U.S.’s nuclear policy as described in national level documents. During field study trips students will interact with various agencies to better understand nuclear issues. Individual student course deliverables will be summarized in a comprehensive report for nuclear enterprise senior leadership.

Course Objective: Evaluate problems/recommended solutions in the U.S. Air Force Nuclear Enterprise; the current and future nuclear threats to the US and allied security; and the ongoing / recommended countermeasures to such threats such as nuclear arms control initiatives and their implications for U.S. national security.

Desired Learning Outcomes:

1. Assess nuclear enterprise problems and propose alternative courses of action to rebuild the Air Force nuclear enterprise capability.
2. Describe military requirements for nuclear weapon design and the current state of the U.S. nuclear enterprise, and issues associated with the aging nuclear stockpile.
3. Describe the unique challenges presented by nuclear weapons, and the state and non-state adversaries or potential adversaries who have or seek to acquire these weapons.
4. Appraise U.S. non-proliferation and counterproliferation strategies/policies and suggest new courses of action to counter existing and emerging nuclear threats.

Required Texts:

1. Office of the Deputy Secretary of Defense for Nuclear Matters, *Nuclear Matters: A Practical Guide*, Washington, 2009.
2. Younger, Stephen M. *The Bomb: A New History*, New York: Ecco, an Imprint of HarperCollins Publisher. 2009
3. Loeber, Charles R. *Building the Bombs: A History of the Nuclear Weapons Complex*. Albuquerque, New Mexico: Sandia National Laboratories. 2nd Edition, 2005
4. David Albright, *Peddling Peril: How the Secret Nuclear Trade Arms America’s Enemies*, New York: Free Press, 2010.
5. Johnson, Jeannine L.; Kartchner, Kerry M.; and Larsen, Jeffrey A. *Strategic Culture and Weapons of Mass Destruction: Culturally Based Insights into Comparative National Security Policymaking*. New York: Palgrave Macmillan. 2009

Determination of grade:

1. Contribution — 20%
2. Book/Literature Review – 30%
3. Persuasive Paper - 30%
4. Presentation – 20%

Contribution: Students must be active in providing solid inputs in all discussions, field study trips, and group activities. The contribution grade will be based on each student's demonstrated understanding of the readings, research, and analysis that adds to the overall success of individual and group efforts.

Book/Literature Review: Students must select one of two options for this review. Option 1, read one book related to your research topic (subject to instructor approval) and write a 4-6 page paper. Open with (1) an introductory comment or two on the overall value of the book; then (2) summarize each chapter in order, including chapter numbers but not titles, and citing authors if the book is an edited collection; then (3) describe the book's greatest strengths; then (4) describe its greatest weaknesses; then (5) provide an overall assessment. Option 2, select two articles (from academic journals) related to your research topic and write a 4-6 page paper. One of these articles must be from a "pro" perspective and one from the "con" perspective. Examine both articles and provide a constructive analysis of the debate. *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 must be a well reasoned and written 5-6 page paper. Student's will select a topic that (1) raises a new idea for consideration or (2) advocates 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 statement of purpose in presenting the issue and a position on that issue. The remainder of the paper should consist of integrated paragraphs or statements that logically support or defend that position. The student must have adequate, accurate and relevant support material. The concluding paragraph must contain a specific recommendation or a clear restatement of the supported position. All documentation for this paper is to conform to the *Air University Style Guide for Writers and Editors (AU-1)*.

Presentation: These presentations are the course's capstone. Each student will present their persuasive paper topic that raises (1) a new idea for consideration or (2) advocates a current situation or proposal regarding a nuclear enterprise issue, state or non-state threat, or arms control and treaty concern. Each student will have 15 minutes to brief their presentation followed by 10 minutes for discussion.

Course Overview:

IP 1: Introduction to Course, and Rebuilding the Nuclear Enterprise

IP 2: Contemporary Nuclear Landscape Overview: Nuclear Countries, Strategies and Policies, Deterrence, Arms Control Treaties, and Nuclear Terrorism

IP 3: Leadership and Culture in High Reliability Organizations; and Student Discussion

IP 4: Nuclear Weapons I: Basic Nuclear Physics, Nuclear Weapons Effects, Nuclear Testing, and Nuclear Fuel Cycle

IP 5: Nuclear Weapons II: Nuclear Weapons Life Cycle, Surety, & Accident Response

IP 6: National Nuclear Security Administration (NNSA); and Nuclear Forces Structure

IP 7: Evolution and Maintenance of the Nuclear Stockpile

IP 8/9: Field Study Trip #1 to Kirtland AFB, NM and Nevada Test Site, NV

IP 10: Role of Nuclear Weapons in U.S. National Security, and the Air Force's Nuclear Mission

- Book/Literature Review Due

IP 11: Understanding Strategic Cultures, Nuclear Threats, and Tailored Deterrence

IP 12: Nuclear Proliferators & Threats from Failing States, Terrorists, & Black Marketeers

IP 13 & 14: Field Study Trip #2 to Washington, D.C.

IP 15: Strategic Thought and Nuclear Weapons in Russia

IP 16: Strategic Thought & Nuclear Weapons in the Middle East/Iran

- Persuasive Paper Due

IP 17: Strategic Thought and Nuclear Weapons in Asia

IP 18: Nuclear Terrorism

IP 19 & 20: Student presentations