

Japan and Nuclear Weapons

Section 1

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【Course Outline / Description】

The nuclear weapon is the single most lethal instrument of war that the human race ever invented. It has a special meaning for Japan and its people because Japan is the only country that ever sustained the effects of nuclear weapons directly. The two atomic bombs dropped in Hiroshima and Nagasaki in August 1945 killed and injured many people. The fear of the nuclear weapons led Japanese as well as the people in other nations to want to abolish the nuclear weapons. However, it is by no means an easy job. It is hard to undo the scientific knowledge that had been acquired and mastered. Nuclear energy, although formidable when used for a military purpose, can light the bulbs you have at home. Five major powers of the world have nuclear weapons to deter the possible use of nuclear weapons by their opponents. Four other states developed and hold nuclear weapons currently because they believe that they are under the existential threats by foes. Since its invention in 1945, the technology and strategy of nuclear weapons have evolved significantly. It will be hard to reverse the 70 years' evolution. Given this Janus-faced nature and history of nuclear weapons, we need a more comprehensive perspective to understand the implications of nuclear weapons correctly. To this end, this course will cover three distinct aspects of nuclear weapons: the physics of nuclear weapons, the status of the global nuclear arsenal, and the political aspect of nuclear weapons. When Japanese discuss nuclear weapons, they tend to focus on the third aspect, giving short shrift to the first two. The three aspects in fact form an inseparable whole. Absent due consideration on the first two aspects of nuclear weapons, we will never be able to do justice to the third. This is the reason why this course is made of three distinct but interrelated modules: the physics, the past and present status, and the politics of nuclear weapons.

Section 2

【Course Objectives/Goals/Learning Outcomes】

At the end of the course, students are expected to understand: first, the physical aspect of nuclear weapons including the theoretical and technical basis of the production of nuclear weapons and the actual effects of nuclear explosion and war; second, the evolution and the status of the nuclear arsenal of the world; and lastly, the political and strategic logic involved in the use of nuclear weapons or its deterrence. Given the three goals, this course is composed of three modules. The first module deals with the physics of nuclear weapons. The second module, the past and present status of the nuclear weapons developed and deployed by nine nuclear powers. Finally, the third module covers such topics as the strategy of nuclear weapons and the decision-making process behind the atomic bombings of Hiroshima and Nagasaki. One main purpose of this course is to give students an opportunity to apply what they learned about the physics and the current status of the nuclear weapons in the world to their understanding on the political and strategic choices of world leaders regarding nuclear weapons. The three modules of this course are separated for an analytical purpose, but by the end of this course, students will learn that they are actually closely interconnected in the larger whole problem of nuclear weapons.

Section 3

【Class Schedule/Class Environment, Literature and Materials】

Module 1 – Physics of Nuclear Weapons

Class 01 [Synchronous]

[1] How the bomb works: Theory, Design, and the Manufacturing

Read the PPT file01-01(Theory and Design) and 01-02(How to make bomb materials).

Readings:

- [Atomic Physics on atomicarchive.com](#)
- [Nuclear Fission on atomicarchive.com](#)
- [Nuclear Fusion on atomicarchive.com](#)

Class 02 [Asynchronous]

[1] How the bomb works: Theory, Design, and the Manufacturing

Audio-Visual Materials:

- [Nuclear Weapons \(The History\)](#)
- [The Moment in Time: The Manhattan Project](#)

Class 03 [Synchronous]

[2] The Effects of Nuclear Weapons: Science, Terminology, and Thermal Radiation

Read the PPT file02-01(Science and Terminology) and 02-02(Thermal Radiation).

- [Introduction, Effects of Nuclear Weapons on atomicarchive.com](#)
- [Thermal Radiation, Effects of Nuclear Weapons on atomicarchive.com](#)

Class 04 [Asynchronous]

[2] The Effects of Nuclear Weapons: Science, Terminology, and Thermal Radiation

Audio-Visual Materials:

- [Barefoot Gen 1983 Full Movie \(English sub\)](#)

Class 05 [Synchronous]

[3] The Effects of Nuclear Weapons: Ionizing Radiation & Blast and Airwave

Read the PPT file03-01, 03-02 (Ionizing Radiation), and 03-03 (Blast and Airwave).

- [Nuclear Radiation, Effects of Nuclear Weapons on atomicarchive.com](#)
- [Blast Effects, Effects of Nuclear Weapons on atomicarchive.com](#)

Class 06 [Asynchronous]

[3] The Effects of Nuclear Weapons: Ionizing Radiation, Blast and Airwave

Audio-Visual Materials:

- [The Day After \(1983 Full, Original - 1:75:1 Aspect Ratio\)](#)

Class 07 [Synchronous]

[4] The Effects of Nuclear Weapons: Long-term Radiation and Environmental Effects

Read the PPT file04-01 (Long-term Radiation), 04-02 (Environmental and Other Effects).

- [Long-term Radiation, Effects of Nuclear Weapons on atomicarchive.com](#)
- [Read example scenarios of nuclear wars on atomicarchive.com](#)

Class 08 [Asynchronous]

[4] The Effects of Nuclear Weapons: Long-term Radiation and Environmental Effects

Audio-Visual Materials:

- [The Effects of the Atomic Bomb on Hiroshima and Nagasaki](#)
- [Surviving a nuclear attack - Irwin Redlener](#)
- [Can you survive nuclear fallout? - Brooke Buddemeier and Jessica S. Wieder](#)
- [What If We Have A Nuclear War?](#)
- [Panorama - If the Bomb Drops \(1980 Nuclear War episode, precursor to 'Threads'\)](#)

Class 09 [Synchronous]

[5] Atomic Bombings of Hiroshima and Nagasaki: Long Quiz for Module01

This quiz will cover the materials dealt with in Module 01: Class 01 through Class 10.¹

Class 10 [Asynchronous]

[5] Atomic Bombings of Hiroshima and Nagasaki

Readings:

- [Bombings of Hiroshima and Nagasaki – 1945](#): This web page includes a video titled, “Tinian, Little Boy, and Fat Man” (23:46).
- [Survivors of Hiroshima and Nagasaki](#): This web page includes a video titled, “NAHP Sumiteru Taniguchi, Former Chairman of Nagasaki Council of A-Bomb Sufferers” (21:33)
- [Controversy over the Enola Gay Exhibition](#): This webpage includes a video titled, “USA: WASHINGTON: ENOLA GAY EXHIBITION CAUSES PROTESTS” (1:47).

Audio-Visual Materials:

- [ATOMIC BOMBING OF HIROSHIMA DOCUMENTARY "TEN SECONDS THAT SHOOK THE WORLD" 75794](#)

Module 2 – Past and Present of the Nuclear Arsenal

Class 11 [Synchronous]

[6] Nuclear Arsenal of the World: Terminology and North Korea

Read the PPT file06-01(Terminology) and 06-02(North Korea).

Readings:

- Hans M. Kristensen & Robert S. Norris (2018), North Korean nuclear capabilities, 2018, *Bulletin of the Atomic Scientists*, 74:1, 41-51.

Class 12 [Asynchronous]

¹ Students are required to participate in all asynchronous sessions in Module01 before they take this quiz.

[6] Nuclear Arsenal of the World: Terminology and North Korea

Audio-Visual Materials:

- [Why Is It So Hard to Build an ICBM?](#)
- [UN report: North Korea is hiding nukes, selling weapons](#)
- [\[Global Insight\] North Korea threatens its nukes could destroy United States](#)
- [North Korea: Credible threat?](#)
- [Korea's New Reality: What next after apparent hydrogen bomb test?](#)
- [What to do about North Korea? | Inside Story](#)
- [What Would Happen If North Korea Launched A Nuclear Weapon?](#)

Class 13 [Synchronous]

[7] Nuclear Arsenal of the World: Israel, India, Pakistan, the UK, France, and China

Read the PPT file07-01(Israel, India, and Pakistan) and 07-02(The UK, France, and China).

Readings:

- Hans M. Kristensen & Robert S. Norris (2014), Israeli nuclear weapons, 2014, *Bulletin of the Atomic Scientists*, Vol. 70: 6, 97–115.
- Hans M. Kristensen & Robert S. Norris (2017), Indian nuclear forces, 2017, *Bulletin of the Atomic Scientists*, 73:4, 205-209.
- Hans M. Kristensen & Robert S. Norris (2016), Pakistani nuclear forces, 2016, *Bulletin of the Atomic Scientists*, 72:6, 368-376.
- Hans M. Kristensen & Robert S. Norris (2016), French nuclear forces, 2008, *Bulletin of the Atomic Scientists*, 64: 4, 52-54.
- Robert S. Norris and Hans M. Kristensen (2013), The British nuclear stockpile, 1953-2013, *Bulletin of the Atomic Scientists*, 69: 4, 69-75.
- Hans M. Kristensen & Robert S. Norris (2016), Chinese nuclear forces, 2016, *Bulletin of the Atomic Scientists*, 72:4, 205-211.

Class 14 [Asynchronous]

[7-1] Nuclear Arsenal of the World: Israel, India, and Pakistan

Audio-Visual Materials:

- [The BBC Film That Exposed Israel's Secret Illegal Nuclear Weapons \(FULL Documentary\)](#)
- [India's Nuclear Riddle | People & Power](#)
- [In Depth - India's Nuclear Doctrine](#)
- [Nuclear Secrets The Terror Trader - Pakistani Rogue Scientist A Q Khan's Nuclear Proliferation](#)

Class 15 [Synchronous]

[8] Nuclear Arsenal of the World: Russia and the United States

Read the PPT file08-01(Russia) and 08-02(The United States).

Readings:

- *Hans M. Kristensen & Robert S. Norris (2018), Russian nuclear forces, 2018, Bulletin of the Atomic Scientists, 74:3, 185-195.*
- *Hans M. Kristensen & Robert S. Norris (2018) United States nuclear forces, 2018, Bulletin of the Atomic Scientists, 74:2, 120-131.*

Class 16 [Asynchronous]

[7-2] Nuclear Arsenal of the World: The UK, France, and China

Audio-Visual Materials:

- [Britain's Nuclear Bomb — The Inside Story](#)
- [France's Adoption and Tolerance of Nuclear Power](#)
- [France Nuclear Weapons - La Force de Frappe](#)
- [China Forum #104: China and the Bomb](#)
- [Chinese Nuclear Testing Film \(1966\)](#)

Class 17 [Synchronous]

[9] Nuclear Arsenal of the World: Proliferation

Read the PPT file09-01(Dangers of Nuclear Proliferation) and 09-02(The

Birth of the NPT Regime).

Readings:

- [Wolfgang K. H. Panofsky, "Nuclear Proliferation Risks, New and Old." *Issues in Science and Technology* 19, no. 4 \(Summer 2003\)](#)
- [Victor W. Sidel, MD and Barry S. Levy, MD, MPH, *Proliferation of Nuclear Weapons: Opportunities for Control and Abolition, American Journal of Public Health*, September 2007, 97: 9, 1589–1594](#)
- ["The Global Nuclear Nonproliferation Regime," a report by International Institutions and Global Governance Program, May 21, 2012.](#)
- [The full text of the Nuclear Non-proliferation Treaty](#)

Class 18 [Asynchronous]

[8] Nuclear Arsenal of the World: Russia and the United States

Audio-Visual Materials:

- [Russia Nuclear Weapons](#)
- [The modern nuclear arsenal | Nuclear Knowledge](#)
- [The Atomic Bomb, Russia, and Spies](#)
- [The Bomb 2015 PBS Documentary HD](#)

Class 19 [Synchronous]

[10] Nuclear Arsenal of the World: Long Quiz for Module02

This quiz will cover the materials dealt with in Module02: Class 11 through Class 20.²

Class 20 [Asynchronous]

[9] Nuclear Arsenal of the World: Proliferation

Audio-Visual Materials:

- [What Countries Have Nuclear Weapons?](#)
- [Countries with Most Nuclear Warheads \(2020\) | Biggest Nuclear Weapon](#)

² Students are required to participate in all asynchronous sessions in Module02 before they take this quiz.

[Stockpiles By Country](#)

- [Is nuclear non-proliferation still a realistic goal?](#)
- [Nuclear Tipping Point - 2010 NTI Nuclear Proliferation Documentary](#)

Module 3 – Politics of Nuclear Weapons

Class 21 [Synchronous]

[11] Strategy of Nuclear Weapons

Read the PPT file11-01(Military Doctrine) and 11-02(Nuclear Doctrine).

Readings:

- “Instruments of Global Influence: Military Might and Interventionism,” Chapter 4 of Eugene R. Wittkopf, Christopher M. Jones, and Charles W. Kegley, Jr., *American Foreign Policy: Pattern and Process*, 7th ed., Belmont, CA: Thomson Wadsworth, 2008.
- [Laurence D. Freedman, Nuclear strategy, *Encyclopædia Britannica*, October 05, 2015, accessed on December 23, 2020.](#)

Class 22 [Asynchronous]

[11] Strategy of Nuclear Weapons

Audio-Visual Materials:

- [The Evolution of Nuclear Strategy](#)
- [On Deterrence](#)
- [Will Missile Defense Keep America Safe?](#)
- [How reliable is the US missile defense system?](#)
- [Could the U.S. defense system stand an attack from Russia?](#)
- [How Does A Missile Defense System Work?](#)

Class 23 [Synchronous]

[12] Decision to Use Atomic Bombs (1)

Read the PPT file12: Pros and Cons over Hiroshima (1)

Readings:

- [National Park Service. "Harry S Truman's Decision to Use the Atomic Bomb."](#)
- [Baime, A. J. "Harry Truman and Hiroshima: Inside His Tense A-Bomb Vigil." HISTORY.com.](#)
- [Truman, Harry S. "A Letter from Harry S. Truman to Professor James L. Cate Dated 12 January 1953." Truman's Reflections on the Atomic Bombings, Atomicarchive.com.](#)
- Hamby, Alonzo. "Truman and the Bomb." *History Today*, August 1995, 18.
- Stimson, Henry L. "The Decision to Use the Atomic Bomb." *SAIS Review* 5, no. 2 (Summer-Fall 1985): 1-15.
- Hersey, John. "Hiroshima." *The New Yorker*, 24 August 1946.
- Rice, Richard. "Thank God for the Atom Bomb?". *Education About Asia* 11, no. 1 (Spring 2006).
- Fussell, Paul. "Hiroshima: A Soldier's View, 'Thank God for the Atom Bomb.'" *The New Republic*, August 22/29 1981, 26.
- Marty, Martin E., Pervez Hoodbhoy, Thomas Donnelly, Robert L. Gallucci, Gar Alperovitz, Richard B. Frank, Mary Palevsky, and Tadatoshi Akiba. "Would You Have Dropped the Bomb?". *Bulletin of the Atomic Scientists* 61, no. 4 (July 2005): 50-63.
- Alperovitz, Gar, Robert L. Messer, and Barton J. Bernstein. "Marshall, Truman, and the Decision to Drop the Bomb." *International Security* 16, no. 3 (1991): 204-21.
- Messer, Robert L. "New Evidence on Truman's Decision." *Bulletin of the Atomic Scientists* 41, no. 7 (August 1985): 50-56.
- Alperovitz, Gar. "More on Atomic Diplomacy." *Bulletin of the Atomic Scientists* 41, no. 11 (1985): 35-39.

Class 24 [Asynchronous]

[12] Decision to Use Atomic Bombs (1)

Audio-Visual Materials:

- [The Decision To Drop The Bomb \(1965\)](#)
- [Peter Jennings - Hiroshima: Why the Bomb was Dropped \(1995\)](#)

Class 25 [Synchronous]

[13] Decision to Use Atomic Bombs (2)

Read the PPT file13: Pros and Cons over Hiroshima (2)

Readings:

- Walker, J Samuel. "The Decision to Use the Bomb: A Historiographical Update." *Diplomatic History* 14, no. 1 (1990): 97-114.
- Bernstein, Barton J. "The Atomic Bombings Reconsidered." *Foreign Affairs* 74, no. 1 (January/February 1995): 135-52.
- Hogan, Michael J. "The Enola Gay Controversy: History, Memory, and the Politics of Presentation." *Hiroshima in History and Memory* (1996): 200-32.
- Asada, Sadao. "The Shock of the Atomic Bomb and Japan's Decision to Surrender: A Reconsideration." *Pacific Historical Review* 67, no. 4 (1998): 477-512.
- Giangreco, D. M. "'A Score of Bloody Okinawas and Iwo Jimas': President Truman and Casualty Estimates for the Invasion of Japan." *Pacific Historical Review* 72, no. 1 (February 2003): 93-132.
- Kort, Michael. "The Historiography of Hiroshima: The Rise and Fall of Revisionism (Digital Copy)." *The New England Journal of History* 64, no. 1 (2007): 31-48.
- Gordin, Michael D. "The Embrace of Atomic Bomb Orthodoxy and Revisionism." Review of *The Most Controversial Decision: Truman, the Atomic Bombs, and the Defeat of Japan*, Wilson D. Miscamble. *Reviews in American History* 40, no. 3 (September 2012): 500-05.
- Walker, J. Samuel. "An Interview with J. Samuel Walker." By Cinthia C. Kelly Atomic Heritage Foundation. *Voices of the Manhattan Project* (14 March 2016).

Class 26 [Asynchronous]

[13] Decision to Use Atomic Bombs (2)

Audio-Visual Materials:

- [The Manhattan Project: Race for the Atomic Bomb | Secrets of War | Timeline](#)
- [The War in the Pacific; The Surrender of Japan](#)

Class 27 [Synchronous]

[14] Decision to Use Atomic Bombs (3): Long Quiz for Module03

This quiz will cover the materials dealt with in Module03: Class 21 through Class 30.³

Class 28 [Asynchronous]

[14] Decision to Use Atomic Bombs (3)

Audio-Visual Materials:

- [Ward Wilson: The Myth of Hiroshima](#)
- [Playing the Victims and Historical Revisionism in Japan](#)
- [\[Documentary\] A Bomb - History Rewritten](#)

Class 29 [Synchronous]

[15] Decision to Use Atomic Bombs (4)

Presentation Day

Each student will give a presentation on the assigned research questions. This presentation should be a summary of the paper each student writes based on their reading and watching of the materials assigned throughout the course and their independent research.

Class 30 [Asynchronous]

[15] Decision to Use Atomic Bombs (4)

- [J. Samuel Walker's Interview](#)

【Textbooks/Reading Materials】

All reading and audio-visual materials for this course will be posted on the Course Documents section on Blackboard or the links to which will be provided on this syllabus.

³ Students are required to participate in all asynchronous sessions in Module03 before they take this quiz.

Section 4

【Learning Assessments/Grading Rubric】

<< Assessment Breakdown >>

300 points: 15 short quizzes
300 points: 3 long quizzes
50 points: in-class presentation
50 points: one research paper
700: Total Full Score

The total points will be turned into a score on the 100-points scale to determine the letter grade.

Each asynchronous session comes with a short quiz which comprises three to five small questions. The purpose of this short quiz is to make sure that you are properly following up on the materials in the asynchronous sessions. The full score for each short quiz is 20 points. You will have 15 short quizzes. Therefore, the full score that you can expect out of the 15 short quizzes is 300 points.

Each module comes with a long quiz, which comprises dozens of multiple-choice questions as well as short-answer and medium-length questions. The purpose of this long quiz is to test whether you correctly understood materials and contents discussed in the synchronous and asynchronous sessions of each module. The full score of each long quiz is 100 points.

In the final class, each student is required to give a presentation of a research paper that he or she wrote on the assigned research questions. The research should be primarily based on the reading and audio-visual materials assigned in this course. The deadline for this paper is by the beginning of the final class. Students are required to submit with the paper an MSPowerpoint presentation file to be used in the final class. The full score for the presentation is 50 points while as many points will be assigned for the paper.

When submitting the presentation file and the paper, you are required to proofread your own writings. Typos and grammatical errors will be a reason for discounting your score for the presentation and the paper.

<< Sliding Principle >>

A sliding principle will be applied at the end of the course in order to approximate the distribution of the final grades among students to a normal curve. If, as a result of the above-mentioned assessment criteria, no student received an A grade, then a certain number of bonus points will be given to all students by the same number to shift the grade of the top-score student to the A grade section (90-100). Under the sliding principle, for example, if you received a D (60-69) at the end of the semester, it means that there was a score gap of at least 20-30 points between your final total score and the final total score of the top-score student.

<< No Default Score >>

There is no fault score for each assignment. If you do not submit a paper, do not come to the presentation, or do not take a quiz, then you will get a zero score for that assignment.

Section 5

【Additional Information】

Depending on the demands and needs of the course and other circumstances surrounding the course including the factors related to the coronavirus situation, the titles and the contents of each class, and the way each class is given including the evaluation criteria may be subject to change at the discretion of the instructor.

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/End/