Semester: 2019 Spring

Japan and Nuclear Weapons

Section 1

Instructor/Title	Booseung Chang / Professor

【Course Outline / Description】

The nuclear weapon is the single most lethal instrument of war that the human race ever invented. Currently, nine countries in the world have thousands of nuclear weapons. More countries depend on nuclear reactors to meet their energy needs, and these reactors might be diverted for a military purpose. The nuclear weapons also have had great impact on international politics and how states interact with one another since the end of World War II. Like it or not, nuclear weapons and nuclear energy have already become part of our modern lives whether we are aware of it or not. The purpose of this course is to highlight this forgotten fact and direct our attention to a new question, "Why nuclear weapons do not disappear." For this purpose, we will look at the various aspects of nuclear weapons: the current status of the global nuclear arsenal, the physical and technical aspects of nuclear weapons, and the strategic use of nuclear weapons including the proliferation and non-proliferation thereof. Finally, we will also try to cover the ethical aspect of nuclear weapons by raising a question like "Should we use this weapon if necessary?" This course will be an intellectual journey to find many different faces of nuclear weapons.

Section 2

【Course Objectives/Goals/Learning Outcomes】

At the end of the course, students are expected to:
(1) learn basic facts about the current status of the global nuclear arsenal; the physical and technical essentials of nuclear weapons; the evolution of nuclear strategy; and the history of nuclear proliferation and non-proliferation;
(2) Be able to speak and write about the political implications of nuclear weapons in modern international politics; and
(3) Present his or her independent opinions about the domestic and international constraints that the nuclear weapons states and non-nuclear weapons states face in their nuclear weapons policy.

Section 3

【Class Schedule/Class Environment, Literature and Materials】

Week 1: Introduction, and Nuclear Arsenal of the Nuclear Weapons States – Terminology; Read in-class presentation material (PPT) uploaded on Blackboard.

Week 2: Nuclear Arsenal of the Nuclear Weapons States – North Korea, Israel, India, and Pakistan (Nuclear Weapon States Outside the NPT); Read assigned readings.

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

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.

Week 3: Nuclear Arsenal of the Nuclear Weapons States – France, the United Kingdom, China, and Russia (Major Power Nuclear Weapons States); Read assigned readings and in-class presentation material (PPT) uploaded on Blackboard.

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.

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

Week 4: Nuclear Arsenal of the Nuclear Weapons – The United States (Super Power Nuclear Weapon State); Read assigned readings and in-class presentation material (PPT) uploaded on Blackboard.

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

Week 5: Study Guides and Tutorials for Quiz 1 and the administration of Quiz 1; Read all readings regarding the status of the global nuclear arsenal.

Week 6: Atomic Bomb – How it works; Read assigned readings and in-class presentation material (PPT) uploaded on Blackboard.

Atomic Physics on www.atomicarchive.com:
http://www.atomicarchive.com/Physics/Physics1.shtml

Nuclear Fission on www.atomicarchive.com:
http://www.atomicarchive.com/Fission/Fission1.shtml

Nuclear Fusion on www.atomicarchive.com:
http://www.atomicarchive.com/Fusion/Fusion1.shtml

Week 7: Effects of Nuclear Weapons – Science, Terminology, and Thermal Radiation; Read assigned readings and in-class presentation material (PPT) uploaded on Blackboard.

Introduction, *Effects of Nuclear Weapons*
on www.atomicarchive.com: http://www.atomicarchive.com/Effects/effects1.shtml

Thermal Radiation, *Effects of Nuclear Weapons* on www.atomicarchive.com:
http://www.atomicarchive.com/Effects/effects7.shtml

Week 8: Effects of Nuclear Weapons – Ionizing Radiation; Read assigned readings and in-class presentation material (PPT) uploaded on Blackboard.

Nuclear Radiation, *Effects of Nuclear Weapons* on www.atomicarchive.com:
http://www.atomicarchive.com/Effects/effects14.shtml

Week 9: Effects of Nuclear Weapons – Blast, Air Wave, and Long-term Radiation; Read assigned readings and in-class presentation material (PPT) uploaded on Blackboard.

Blast Effects, *Effects of Nuclear Weapons* on www.atomicarchive.com:
http://www.atomicarchive.com/Effects/index.shtml

Long-term Radiation, *Effects of Nuclear Weapons* on www.atomicarchive.com:
http://www.atomicarchive.com/Effects/effects17.shtml

Week 10: Effects of Nuclear Weapons – Environmental and Other Effects; Read assigned readings and in-class presentation material (PPT) uploaded on Blackboard.

In this week, we will have a discussion session on the effects of nuclear weapons by watching an animation movie, *Barefoot Gen*, and a TV documentary about nuclear weapons, *The Day After*.

For this week, read the following example scenarios
at http://www.atomicarchive.com/Example/index.shtml.

Week 11: Study guides and tutorials for Quiz 2, and the administration of Quiz 2; Read all readings and PPT files regarding the physical aspects of nuclear weapons.

Week 12: Strategy of Nuclear Weapons; Read assigned readings and in-class presentation material (PPT) uploaded on Blackboard.

"Instruments of Global Influence: Military Might and Interventionism," Chapter Four of American Wittkopf, Jones, and Kegley, *American Foreign Policy: Pattern and Process,* 7th ed., Belmont, CA: Thomson Wadsworth, 2008.: An electronic copy of this chapter will be uploaded on Blackboard.

Week 13: Discussion Session – Strategy of Nuclear Weapons in the Movies

In this week, we will have a discussion session on how the strategy of nuclear weapons is applied in the real battlefield situation and how nuclear deterrence works after watching *Fail Safe* (1964) or *Dr. Strangelove* (1964).

Week 14: Nuclear Proliferation; Read assigned readings and in-class presentation material (PPT) uploaded on Blackboard.

Wolfgang K. H. Panofsky, "Nuclear Proliferation Risks, New and Old." *Issues in Science and Technology* 19, no. 4 (Summer 2003): http://issues.org/19-4/panofsky/

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: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1963312/

"The Global Nuclear Nonproliferation Regime," a report *by* International Institutions and Global Governance Program, May 21,
2012: https://www.cfr.org/report/global-nuclear-nonproliferation-regime

The full text of the Nuclear Non-proliferation
Treaty: http://www.un.org/en/conf/npt/2015/pdf/text%20of%20the%20treaty.pdf

Mark Fitzpatrick, Asia's Latent Nuclear Powers: Japan, South Korea and Taiwan, London, UK: Routledge, 2016: Chapter 1 and 2.

Week 15: Ethics of Nuclear Weapons – If necessary, can we use it again?: Lessons from Hiroshima & Nagasaki, and Quiz 3; Read assigned readings and in-class presentation material (PPT) uploaded on Blackboard.

A.J. Baime, "The Inside Story of Harry Truman and Hiroshima," *history.com* by A+E Networks, 2017, accessed August 24,
2018: https://www.history.com/news/the-inside-story-of-harry-truman-and-hiroshima.

Gar Alperovitz (1985) More on atomic diplomacy, *Bulletin of the Atomic Scientists*, 41:11, 35-39: available on Blackboard.

Henry L. Stimson & Harry S. Truman (1947) The Decision to Use the Atomic Bomb, Bulletin of the Atomic Scientists, 3:2, 37-67: available on Blackboard.

【Textbooks/Reading Materials】

Main Textbook:

Joseph M. Siracusa, *Nuclear Weapons: A Very Short Introduction*, Oxford University Press, 2015, ISBN: 978-0-19-872723-1

Additionally, MSPowerPoint files created and in-class presented by the instructor (uploaded

on Blackboard) will be used.

Reference Books:

Mark Fitzpatrick, *Asia's Latent Nuclear Powers: Japan, South Korea and Taiwan*, London, UK: Routledge, 2016.

T.V. Paul, *Power Versus Prudence: Why Nations Forgo Nuclear Weapons*, McGill-Queen's University Press (July 24, 2000).

Section 4

【Learning Assessments/Grading Rubric】

(20%) Quiz 1 comprises questions regarding the current stockpile of the nuclear arsenal held by each nuclear weapons state and its technical features, and also covers questions about the nuclear weapons policies of the existing nuclear weapons states.
(20%) Quiz 2 comprises questions regarding the technical aspects of the making of the nuclear weapons and the physical aspects of their effects. The main purpose of these mid-term exams is to make sure that students are properly following up on the course materials taught in the classes.
(20%) Quiz 3 comprises questions regarding the strategy and proliferation of nuclear weapons, and their ethical aspects.
(20%) Final exam will cover all concepts, theories, and the cases taught and dealt with during the whole semester
(20%) Attendance: One case of being absent will discount two points out of the final total, which is 100 while one case of being tardy to class one point. Refer to the Student Regulations of Kansai Gaidai University for the definitions of being absent and tardy for this purpose. The ceiling of the total discount is 20. Students who submitted proper documentation approved by the Registrar's office for the absence or the tardiness according to the Student Regulations of Kansai Gaidai University will be exempted from the discount.

Section 5

【Additional Information】

Students are strongly encouraged to participate in in-class discussions, presentations, and debates.
Depending on the demands and needs of the class, the titles and contents of each class and the evaluation requirements may be subject to change at the discretion of the instructor.