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 nuclear weapons in huge numbers. More countries depend on nuclear reactors to meet their energy needs, and these reactors could be diverted for the military purpose. The nuclear weapons also had great impact on international politics and how states interact with one another since the end of World War II. In other words, 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 "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 answer such a question as "Should we use this weapon if necessary?" This course will be an intellectual journey to find many faces of nuclear weapons.

Section 2

【Course Objectives/Goals/Learning Outcomes】

At the end of the course, students are expected to:
(1) Have basic knowledge 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】

Lesson 1: Introduction

Lesson 2: Nuclear Arsenal of the Nuclear Weapons States (1) – Terminology; Read in-class presentation material (PPT) uploaded on Blackboard

Lesson 3: Nuclear Arsenal of the Nuclear Weapons States (2) – North Korea

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

Lesson 4: Nuclear Arsenal of the Nuclear Weapons States (3) – Israel, India, and Pakistan

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.

Lesson 5: Nuclear Arsenal of the Nuclear Weapons States (4) – France, the United Kingdom, and China

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.

Lesson 6: Nuclear Arsenal of the Nuclear Weapons States (5) – Russia

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

Lesson 7: Nuclear Arsenal of the Nuclear Weapons (6) – The United States (1)

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

Lesson 8: Nuclear Arsenal of the Nuclear Weapons (7) – The United States (2); Read in-class presentation material (PPT) uploaded on Blackboard

Lesson 9: Study Guides and Tutorials for Mid-term Exam 1

Lesson 10: Mid-term Exam 1

Lesson 11: Atomic Bomb – How it works (1): Theory and Design; Read in-class presentation material (PPT) uploaded on Blackboard, and also read:

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

Lesson 12: Atomic Bomb – How it works (2): How to make bomb materials; Read in-class presentation material (PPT) uploaded on Blackboard.

Lesson 13: Effects of Nuclear Weapons (1) – Science and Terminology; Read in-class presentation material (PPT) uploaded on Blackboard, and also:

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

Lesson 14: Effects of Nuclear Weapons (2) – Thermal Radiation
Thermal Radiation, *Effects of Nuclear Weapons* on www.atomicarchive.com:
http://www.atomicarchive.com/Effects/effects7.shtml

Lesson 15: Effects of Nuclear Weapons (3) – Ionizing Radiation 1

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

Lesson 16: Effects of Nuclear Weapons (4) – Ionizing Radiation 2; Read in-class presentation material (PPT) uploaded on Blackboard

Lesson 17: Effects of Nuclear Weapons (5) – Blast and Air Wave

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

Lesson 18: Effects of Nuclear Weapons (6) – Long-term Radiation

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

Lesson 19: Effects of Nuclear Weapons (7) – Environmental and Other Effects; Read in-class presentation material (PPT) uploaded on Blackboard, and also read

Lesson 20: Discussion Session – Effects of Nuclear Weapons in the Movies: *Barefoot Gen* or *The Day After*; Effects of Nuclear Weapons on Actual Cities; Read the following websites:

Example Scenarios on www.atomicarchive.com:
http://www.atomicarchive.com/Example/index.shtml

Lesson 21: Study guides and tutorials for Mid-term Exam 2

Lesson 22: Mid-term exam 2

Lesson 23: Strategy of Nuclear Weapons (1) – Military Doctrine

"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.

Lesson 24: Strategy of Nuclear Weapons (2) – Nuclear Doctrine

"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.

Lessons 25: Discussion Session – Strategy of Nuclear Weapons Effects in the Movies: *Fail Safe* or *Dr. Strangelove*; How deterrence works.

Lesson 26: Nuclear Proliferation (1) – Dangers of Nuclear Proliferation

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/

Lesson 27: Nuclear Proliferation (2) – The Birth of the NPT Regime

"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

Lesson 28: Nuclear Proliferation (3) – Cases of Proliferation Attempts: South Korea and Japan

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

Lesson 29: Ethics of Nuclear Weapons – If necessary, can we use it again?: Lessons from Hiroshima and Nagasaki

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.

Lesson 30: Study guides and tutorials for the Final Exam

【Textbooks/Reading Materials】

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).

PowerPoint files organized and presented by the instructor in classes (uploaded on Blackboard)

More reading materials assigned in this syllabus are available on Blackboard or on the web.

Section 4
【Learning Assessments/Grading Rubric】

(20%) Mid-term exam 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%) Mid-term exam 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.
(40%) 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 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 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.
The titles and contents of each class may be subject to change and adjustment at the discretion of the instructor.