

# **Nuclear Weapons – History and Future Prospects**

## **8.S271**

### **Introduction**

**Robert P. Redwine**  
Department of Physics

**James J. Walsh**  
Department of Political Science

**Richard Lanza**  
Department of Nuclear Science and  
Engineering

**Jean Mongu Bele**  
Laboratory for Nuclear Science

**William A. Barletta**  
Department of Physics

**Areg Danagoulian**  
Department of Nuclear Science and  
Engineering

**Michael V. Hynes**  
Laboratory for Nuclear Science

**David Chichester**  
Idaho National Laboratory

# Subject Organization

- **8.S271 - 6-Unit Subject**
- **Prerequisites – 8.01, 18.01**
- **Meets weekly on Mondays in 26-414 (the Kolker Room)**
  - **Time – 1:00 – 2:30 pm**
  - **First class - January 31, 2022**
  - **Last class - May 9, 2022**
  - **For Presidents Day week – class meets on Tuesday (Feb. 22)**
  - **No class during Patriot's Day week (April 18)**
- **Reading lists– some suggested, some required**
- **Letter grades – (A-F)**
- **Grades based on**
  - **Class attendance**
  - **Class participation**
  - **Short exercises in class**
  - **Writing assignments**

# Class Leaders

- **Robert P. Redwine, Department of Physics**
  - 26-453
  - 617-253-3600
  - redwine@mit.edu
- **Areg Danagoulian, Department of Nuclear Science and Engineering**
  - 24-220
  - 617-324-6329
  - aregian@mit.edu
- **James J. Walsh, Security Studies Program**
  - E40-468
  - 617-324-3712
  - j.walsh@mit.edu
- **William A. Barletta, Department of Physics**
  - 26-567
  - 617-253-6502
  - barletta@mit.edu
- **Michael V. Hynes, Laboratory for Nuclear Science**
  - 24-030G
  - 617-253-6943
  - mvhynes@mit.edu
- **Jean Mongu Bele, Laboratory for Nuclear Science**
  - 24-030G
  - 617-253-0355
  - Jean@mit.edu
- **Richard Lanza, Department of Nuclear Science and Engineering**
  - NW14-2222
  - 617-253-2399
  - lanza@mit.edu
- **David Chichester, Idaho National Laboratory**
  - 208-526-8920
  - david.chichester@inl.gov

# Syllabus

**Class 1 - Prelude to the Manhattan Project -- HYNES**

**Class 2 - The Manhattan Project -- HYNES**

**Class 3 - Nuclear Testing -- HYNES**

**Class 4 - Weapon Effects -- BELE**

**Class 5 - Nuclear Weapons and the Cold war -- WALSH**

**Class 6 - Arms Control and Disarmament, 1945-1989 -- WALSH**

**Class 7 – Safeguards-Domestic and International – LANZA, CHICHESTER**

**Class 8 - Nuclear Forensics -- DANAGOULIAN**

**Class 9 - The Multilayer Defense -- BARLETTA**

**Class 10 - Case Studies in Proliferation -- WALSH**

**Class 11 - The Black Market and its Manipulation -- HYNES**

**Class 12 – Current Status of Nuclear Weapons -- REDWINE**

**Class 13 - The Future of Nuclear Weapons -- WALSH**

# Reading List - Suggested

**The American Atom: A Documentary History of Nuclear Policies from the Discovery of Fission to the Present**  
Philip L. Cantelon (Editor) Richard G. Hewlett (Editor), Robert C. Williams (Editor)

**The Fly in the Cathedral: How a Group of Cambridge Scientists Won the International Race to Split the Atom**  
Brian Cathcart (Author)

**The Making of the Atomic Bomb**  
Richard Rhodes (Author)

**Dark Sun: The Making of the Hydrogen Bomb** FICHE  
Richard Rhodes (Author)

**The Manhattan Project: The Birth of the Atomic Bomb in the Words of Its Creators, Eyewitnesses, and Historians**  
Cynthia C. Kelly (Editor),

**The Manhattan Project: A Documentary Introduction to the Atomic Age**  
Michael B. Stoff (Author), Jonathan F. Fanton (Author), R. Hal Williams (Editor)

**Racing for the Bomb: General Leslie R. Groves, the Manhattan Project's Indispensable Man**  
Robert S. Norris (Author)

**The Los Alamos Primer: The First Lectures on How To Build an Atomic Bomb**  
Robert Serber (Author)

**Lise Meitner: A Life in Physics (California Studies in the History of Science)**  
Ruth Lewin Sime (Author)

**Atoms in the Family: My Life with Enrico Fermi –**  
Laura Fermi (Author)

**The Curve of Binding Energy: A Journey Into the Awesome and Alarming World of Theodore B. Taylor**  
John McPhee (Author)