Module 1: Introduction to the Course

15 kiloton detonation in Hiroshima
Module 1: Introduction to the Course

15 kiloton detonation in Hiroshima
Physics/Global Studies 280, **Goals**

(1) to provide a basic understanding of the nature of nuclear weapons, the threat they pose to humankind, and possible ways to reduce and eventually eliminate this threat.

(2) to improve writing skills (in particular technical essays).

**Temperature change in a “Nuclear Winter”**
Introduction of Physics 280 Staff

Matthias Grosse Perdekamp, Course Director and Instructor
  Physics

Nir Friedman, TA
  Physics

Tony Hegg, TA
  Physics

Sphurti Joglekar, TA
  Civil Engineering

Mark Kamuda, TA
  Nuclear, Plasma and Radiological Engineering

Michael Nelson, TA
  European Studies

Jerry Vassalla Nelson, TA
  European Studies
280 Students from Diverse Fields

<table>
<thead>
<tr>
<th>Major</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Political Science</td>
<td>13</td>
</tr>
<tr>
<td>Global Studies</td>
<td>12</td>
</tr>
<tr>
<td>Physics</td>
<td>10</td>
</tr>
<tr>
<td>Biology</td>
<td>3</td>
</tr>
<tr>
<td>Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>Communications</td>
<td>3</td>
</tr>
<tr>
<td>Computer Science</td>
<td>3</td>
</tr>
<tr>
<td>Computer Engineering</td>
<td>2</td>
</tr>
<tr>
<td>Nuclear, Plasma, Radiological Eng.</td>
<td>2</td>
</tr>
<tr>
<td>15 other majors</td>
<td>1</td>
</tr>
</tbody>
</table>

The class subject is multidisciplinary and so are the backgrounds of the students and TAs in class.

Great opportunity to learn from each other!
• Associate Professor at the U of I Physics Department and the U of I Nuclear Physics Laboratory

• Accelerator based research in the area of Nuclear Physics and related instrumentation
  — Quark and gluon sub-structure of protons
  — Dense gluonic matter in the initial state of nuclear collisions
  — Instrumentation development of detection of ionizing radiation

• My group works on three experimental efforts:
  — PHENIX at Brookhaven National Laboratory, Long Island
  — COMPASS at CERN, Geneva, Switzerland
  — Belle at KEK, Tsukuba, Japan
Instrumentation to Measure the Quark and Anti-Quark Polarizations in the Proton with the PHENIX Detectors
History of Physics 280

• First offered in Spring 1982
  —Course development motivated by concern about the growing threat of nuclear weapons and nuclear war
  —Professor Fred Lamb initiated the course and organized a team of 13 faculty volunteers from the Physics, Astronomy, and the Nuclear Engineering departments to teach it

• Second offering in Spring 1983
  —Co-taught by Professors Fred Lamb and Jeremiah Sullivan
  —Was submitted and approved as a regular course

• Has been taught every spring semester since
  —Has served as model for courses elsewhere
  —Most courses elsewhere have now disappeared
  —Physics 280 is arguably the longest running course of its kind
Physics 280 Topics

• Introduction
• Nuclear weapons
• Effects of nuclear explosions
• Nuclear terrorism
• Military systems for delivering nuclear weapons
• Arsenals of “nuclear weapon” states
• Defenses against nuclear attack
• Nuclear arms control
• Future directions
The Physics 280 web site is the “Information Center” for this course:

http://online.physics.uiuc.edu/courses/phys280/Spring13/

Consult it often—every day, if possible—for assignments and updates.

Student handbook → read carefully
→ instructions related to essay writing and submission
   will be followed very closely!
• Lecture-Discussion Meetings
  — Lectures (slides posted on Physics 280 website after each lecture)
  — Videos, demos, Q&A, discussions of readings and current events

• Writing Labs
  — Explanation of the writing assignments and scoring of your work
  — Instruction and guidance on how to write for the course
  — Writing exercises, discussion of readings and current events, assessments
  — Help in revising first versions of assignments
The Structure of Physics 280 – 2

Required Textbooks

• *The Little, Brown Essential Handbook for Writers*, by Jane E. Aaron

• *What Terrorists Want*, by Louise Richardson (paperback)

Required Online Readings

• Selections from *The Day After Midnight: The Effects of Nuclear War* (available as a PDF file on the P280 ‘Documents’ page)

• *Preventing Catastrophic Nuclear Terrorism*, by Charles Ferguson (available as a PDF file on the P280 ‘Documents’ page)

• *The Gravest Danger*, by Sidney D. Drell and James E. Goodby (available as a PDF file on the P280 ‘Documents’ page)
Other sources of information about the subject —

• You are strongly encouraged to read *The New York Times*, *The Washington Post*, *The Los Angeles Times*, and other high-quality sources of news about topics related to the course.

• You are encouraged to bring questions and interesting articles to class to share or ask about.

• You may also mention questions, interesting articles, TV programs, or movies to your Writing Lab TA or to me.
Physics 280 is an Advanced Composition Course

- Previous credit for a Composition course is an absolute prerequisite
- Even if you have already met the UI Advanced Composition requirement, you must do all the writing assignments

Physics 280 has three types of Required Writings

- Required essays
- Research paper proposal
- Research paper
Writing Assignment Details

• *We strictly enforce the UI’s rules on academic integrity*
  
  — All assignments are checked by course staff for compliance with the University’s rules on academic integrity (see the first reading assignment)
  
  — All writing assignments are scanned using plagiarism detection software

• You must write and revise four Required Essays
  
  — Lengths are 1, 2, 3, and 4 pages, respectively
  
  — Each must be revised once (you must submit a second, revised version)
  
  — Both versions count equally
  
  — There are penalties for late submissions
Writing Assignment Details (cont’d)

• You must write and revise a Research Paper Proposal (2 pages)
  — The topic should be chosen in consultation with the staff
  — Your proposal must be approved in advance by the staff
  — Your paper must address both technical and policy aspects of some issue (but the weights need not be 50–50)
  — Your scores on the first and second versions count equally

• You must write and revise a Research Paper (7–10 pages)
  — Scores on the first and second versions count equally

• You may submit one Extra Credit Essay (about 1.5 pages)

• Your Writing Lab participation counts 6% of your writing grade
Exams

• Mid-Term Exam: 2:00–3:30 p.m., Thursday, March 14th
  — Location TBD (it will not be in this room)
  — Closed book
  — Tests factual knowledge and understanding
  — The writing quality of your answers will not be graded

• Final Exam: (time TBD)
  — Location TBD (it will not be in this room)
  — Closed book
  — Tests factual knowledge and understanding
  — The writing quality of your answers will not be graded
  — The final exam will emphasize material presented after the mid-term exam
We will ask you to use an iClicker to answer questions in class —

• to encourage and facilitate discussion and interaction
• to poll you about your experiences and opinions
• to help me communicate more successfully
• to help you determine which topics and points are important
• to give you immediate feedback on how well you are learning

Correct answers using iClickers will earn you —

• full Quiz credit for the class if you answer 50% of the Qs correctly
• all answers to polls will be considered correct

We will not excuse you if you do not have a working iClicker with you, but your lowest iClicker Quiz score will be dropped.

Acquire an iClicker, register it, and bring it to the next class meeting!
Course Grades Will be Assigned Using an Absolute Scale

**Writing Component**
- Required essays (8 versions) 34%
- Research paper proposals and research papers 30%
- Writing Lab participation 6%
- Extra credit essay 2%

**Exam Component**
- Midterm exam 10%
- Final exam 15%
- Lecture-Discussion (iClicker) questions 8%
Plan for Session 2

Announcements and Questions

Video “Race for the Superbomb” (PBS), Part 2

Discussion of the video

Write Required Essay 1 Version 1 (RE1v1) in class (1 page)

Be sure to bring pen and paper to class on Thursday

Your RE1v1 must be handed to a TA before you leave Session 2
Video “Race for the Superbomb” (PBS)
Plan for This Session

Announcements and questions about the course

Questions for discussion

Video “Race for the Superbomb” (PBS), Part 2

Short discussion of the video

Write Required Essay 1 Version 1 (RE1v1) in class today
(RE1v1 will be returned in class on Tuesday)

Your RE1v1 must be handed to a TA before you leave class
Announcements About The Course

First Writing Lab Sessions: Monday, January 28th

Please acquire an iClicker, register it online (see the link on the 12p280 home page), and bring it to the next class meeting!

You will be asked to answer iClicker questions for practice beginning today. You will be asked to answer iClicker questions for credit beginning the second week of classes.

Questions About The Course
iClicker Question

What year did the United States first test a nuclear bomb?

A = 1943
B = 1944
C = 1945
D = 1946
E = 1947

Please discuss this question with your neighbors. Then answer it. You will have 60 seconds.
Physics 280: Session 2

Answer

What year did the United States first test a nuclear bomb?

A = 1943
B = 1944
C = 1945
D = 1946
E = 1947
iClicker Question

Which of the following are allowed by University rules?

A. Helping another student write a paper
B. Using a quotation from a source that is quoting another source
C. Allowing another student to borrow your notes on an Extra Credit Essay event to help them write their Extra Credit Essay
D. Writing papers for two different courses on the same topic
E. Using original material from an earlier paper in a P280 paper
Which of the following are allowed by University rules?

A. Helping another student write a paper
B. Using a quotation from a source that is quoting another source
C. Allowing another student to borrow your notes on an Extra Credit Essay event to help them write their Extra Credit Essay
D. Writing papers for two different courses on the same topic
E. Using original material from an earlier paper in a P280 paper

None of these are allowed
Physics 280: Session 2

Video

“Race for the Superbomb”, Part 2
“Race for the Superbomb”, Part 2

Discussion
Write Required Essay 1 Version 1 (RE1v1)
Your RE1v2 must be put in the 280 Box by 1:55 p.m. Thursday
(do not submit electronic copies of 2nd versions of papers)

Plan for This Session

Announcements and questions about the course

Video “Race for the Superbomb” (PBS), Part 3

Discussion of the video
Announcements About The Course

Please acquire an iClicker, register it online (see the link on the 12p280 home page), and bring it to the next class meeting!

You will be asked to answer iClicker questions for practice today.

You will be asked to answer iClicker questions for credit in the next lecture-discussion (Thursday, January 24).

Be sure to do the reading assignments!

Questions About The Course
Video

“Race for the Superbomb”, Part 3
“Race for the Superbomb”, Part 3

Discussion
iClicker Question

What year did Russia first test a nuclear bomb?

A = 1945
B = 1946
C = 1947
D = 1948
E = 1949
What year did Russia first test a nuclear bomb?

A = 1945
B = 1946
C = 1947
D = 1948
E = 1949
iClicker Question

What year did the United States first test a nuclear bomb?

A = 1943
B = 1944
C = 1945
D = 1946
E = 1947
What year did the United States first test a nuclear bomb?

A = 1943
B = 1944
C = 1945
D = 1946
E = 1947
The year each declared nuclear weapon state first tested a nuclear device:

United States:  1945
Russia:  1949
United Kingdom:  1952
France:  1960
China:  1964
Pakistan:  1998
North Korea:  2006
World Nuclear Weapon Stockpiles 1945–2006
