

A - New Course Proposal V. 7.2022 : Entry # 3247**DEAN Decision**

Approved

Date

24/02/05

SCHOOL EPC Decision

Approved

Date

04/04/2024

GEC Decision

Approved

Date

04/25/2024

APIRC Decision

Approved

Date

05/07/2024

Begin Form**Today's Date**

02/05/2024

Your Name:

Adam Anthony

Your Email:aanthon2@highpoint.edu**Are you a Department Chair?**

No

Department Chair Name

Briana Fiser

Email address of your Department Chair

A - New Course Proposal V. 7.2022 : Entry # 3247bfiser@highpoint.edu**By checking below, I certify that my department chair has seen and approved the new course that I am proposing.**

Yes

Please select the appropriate school overseeing this proposal:

Natural Sciences

Which semester is this course to be taught for the first time?

Spring 2025

Information for the Registrar**Choose the department designator from the list below.**

PHY

Proposed Course Number?

1300

Is this course cross listed?

No

Does this course replace a current course?

No

What is the title of the new course?

Atoms & Agendas: The American Nuclear Program

Write the catalog description of your proposed course:

An introduction to the development and ramifications of nuclear science on the American experience, with a focus on nuclear weapons and energy. Students will learn the basic physics upon which these devices operate and explore moral issues arising from the construction, testing, and use of nuclear weapons. We will focus on the interactions between the US nuclear weapons program with affected citizenry, scientists, and government officials including modern day issues. This course satisfies the American Context general education requirement.

How many credit hours will this course be?

4

How will the course be graded?

Letter grade

Please select the course repeat option for this course:

Not repeatable for credit

A - New Course Proposal V. 7.2022 : Entry # 3247**What is the offering cycle for this course?**

Spring semester

Does your course have any prerequisites?

No

Is this new course being proposed because of a new or revised major or minor proposal?

No

Any other comments for the Registrar at this time?

No

Gen Ed and Academic Programs**Is this course part of Gen Ed?**

- Yes

Does your course count in the general education core (one of the core classes that cannot be double-dipped in your major or minor)?

None of the above

Does your course count in any general education categories that can be double-dipped in the core or in a major/minor?

- The American Context

Does this course count towards a major or a minor?

Yes

Please list the Major / Minor and if it is Required or Elective

Applied Physics - Elective

Is this course part of an academic program?

- This course does not fulfill academic program requirements

Does this course include any community engagement?

No

Does this course participate in the GoGlobal Program?

No

Information for Curriculum Review

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Rationale and evidence for new course's consistency with departmental mission:

The Department of Physics aims to provide the general population of students at High Point University with a more diverse selection of general education courses that meet the new general education requirements. Since the discovery of fission in the 1930s, nuclear science, and the very quick realization of the potential uses of this power: devastatingly powerful nuclear weapons and clean energy production, has had a large impact on US politics and foreign policy. This course introduces the basic science that underlies both nuclear weapons and nuclear power, fusion and fission. Students will learn the reasons for, and the methods used in, the development of the first atomic bombs during the Manhattan Project. They will participate in a formal, class-wide debate on the choice of the US Government and Military to drop two bombs on Japanese soil. The class will examine how nuclear science permeated popular culture in the post-war period and explore how rising tensions between global super-powers led to the nuclear arms-race that defined the Cold War period of US history. We will discuss the dual role scientists had in the history of nuclear weapons, from their creators to some of their greatest critics, driven by a fear of mismanagement. Students will examine the many near-misses that could have led to nuclear war. This history, including the eventual arms control treaties and end of the Cold War, provides critical context to understanding today's nuclear landscape. The end of the course will focus on modern-day issues relating to nuclear science. In the weapons space, there are many potential flashpoints including: Pakistan and India, North Korea, and Russia's threat of using tactical nuclear weapons. US companies are also trying to develop small modular nuclear reactors to battle climate change. Students will pick a topic with modern relevance that interests them to do a deep dive and write a persuasive research essay.

The Department of Physics has two mission statements: one for faculty and one for students. The Physics Department's core values for faculty are: undergraduate research with faculty; engaging and effective teaching; interdisciplinary collaborations; theory, experiment, and computation; mentoring; and outreach. The Physics Department's mission for students includes teaching the tools required for discovery, such as problem solving, fundamental physics, experimental methods, computational modeling, mathematics, and communication. This course in particular addresses the problem solving, communication, and mentoring goals of our mission statements. It also addresses the questions of what it means to be a good citizen and good scientist.

The habits of mind promoted by studying physics and its related history— such as curiosity, problem-solving, quantitative reasoning, objective testing of ideas and unambiguous communication – are of benefit to all. We hope this course increases interest in our physics program across campus, perhaps drawing more students to take additional physics courses, by meeting more students where their interests lie, while providing them with valuable technical and interpersonal skills.

List all student learning outcomes for this course.

- SLO1 – Write texts that address audiences in rhetorically appropriate ways (CM #1)
- SLO2 – Formulate and support ideas through the use of credible, genre- and discipline-appropriate sources. (CM #2)
- SLO3 – Organize evidence and logical inferences to reveal important patterns, differences, or similarities in the analysis of an issue or problem. (AS #3)
- SLO4 – Analyze significant connections between the worldviews, power structures, aesthetics, and experiences of multiple cultures historically or in contemporary contexts, incorporating respectful interactions with other cultures. (AD #1)
- SLO5 – Demonstrate an understanding of radioactivity.
- SLO6 – Demonstrate an understanding of the operating principles behind nuclear weapons, including gun-type, implosion-type, and fusion weapons.
- SLO7 – Demonstrate an understanding of the cultural and military context that underlay the use of the atomic bomb on Japanese soil.
- SLO8 – Demonstrate an understanding of the impact of the nuclear arms race on US politics, culture, and policy.
- SLO9 – Demonstrate an understanding of the relationship between nuclear deterrence, mutually assured destruction, and the nuclear triad.
- SLO10 – Describe the current state of nuclear arms control treaties and surrounding modern day issues.
- SLO11 – Demonstrate an understanding of a modern-day issue relating to nuclear science and how it connects to the historical context.

List any units or content areas that will be required for all sections of this course.

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Physics of energy production through fission and fusion.
Radioactivity.
Design of nuclear weapons.
History of nuclear weapons and energy.
Modern day issues relating to nuclear weapons (will change year to year)

List any assignments, tests, or other assessments that will be required for all sections of this course.

Students must participate in a formal debate on the decision of the US to use nuclear weapons in WWII. (SLO3/SLO4)
Students must write a persuasive research paper. This paper must take a stance on a controversial modern issue relating to nuclear science, fairly discuss the strongest arguments for both sides of the debate, and directly refute or rebut the strongest arguments on the opposing side. (SLO1/SLO2/SLO11)

List any readings or other materials that will be required for all sections of this course.

N/A

List any course policies that will be required for all sections of this course.

N/A

If you would like to specify how requirements for contact hours must be met for all sections of this course, please indicate below. (e.g., if any experiential learning activities will replace seat time)

Some class periods may be used as lab sections to perform some basic experiments examining the ideas behind nuclear physics.

Is there anything else the reviewing parties should know about this new course proposal that hasn't been addressed?

N/A

Sample Syllabus

- [Syllabus_Sample_Proposal.pdf](#)