

## FIRST YEAR SEMINAR COURSE PROPOSAL

UNIVERSITY OF MARY WASHINGTON

Use this form to submit **FSEM 100 topics** courses for review **or any other existing course** that you wish to have designated to meet the first year seminar requirement.

<b>COURSE NUMBER:</b>	FSEM100X		
<b>COURSE TITLE:</b>	PHYSICS FOR FUTURE PRESIDENTS AND WORLD LEADERS		
<b>SUBMITTED BY:</b>	Hai Nguyen	<b>DATE:</b>	1-20-2011
<i>This course proposal has the department's approval. (Put a check in the box to the right.)</i>			

**NOTE:** Please view the attached Call for Proposals or visit the First-Year Seminar blog at <http://firstyearsem.umwblogs.org/> to see the criteria used to evaluate courses proposed to meet the first year seminar requirement. See the report entitled "General Education Curriculum as Approved by the Faculty Senate" for additional details.

**COURSE DESCRIPTION.** In the space below, provide a **1-2 sentence** description of this class. The description will be entered in Banner, and will also be used in other publications about the first year seminar program (such as the "Eagle Essentials" booklet).

This course covers relevant, important and timely topics regarding science and technology, including energy, terrorism and counter-terrorism, health, satellites, gravity, radioactivity, nuclear reactors, atomic bombs, light, and quantum mechanics. This course encourages the development of social skills and fosters a connection between science and the community with emphasis on close reading, careful listening, and logical reasoning.

**RATIONALE.** Using only the space provided in the box below, **briefly** state why this course should be approved as a first year seminar course.

Economic and political issues increasingly have a strong high tech content. If you misjudge the science then you make the wrong decision. Yet, many of our leaders never studied physics, and do not understand science and technology. A typical university student or citizen does not know enough about energy, global warming, nuclear power, atomic bombs, optics, fluids, batteries, LASERS, X-rays, gamma rays, MRI, CAT, and PET scans. This course focuses on developing and strengthening the foundational skills and knowledge that the students need in order to understand today's core science and technology issues, and to become the next generation of world leaders. The course introduces the principles of critical thought and develops the habits of critical thinking through a problem-based approach to learning. With emphasis on close reading, careful listening, civil discourse, logical reasoning and with a format that requires students to apply these skills to real-world situations, the course encourages the development of social skills and fosters a connection between students and the community. Class time will include interactive lectures, demonstrations, laboratory activities, and student-lead discussions. Assignments include individual and group work, and are meant to not only assess students learning, but to foster the ability to design, research, and present both written and oral ideas.

**SYLLABUS.** Attach a course syllabus.

**SUBMIT** this form and attached syllabus **electronically as one document** to Jason Matzke ([jmatzke@umw.edu](mailto:jmatzke@umw.edu)). All submissions **must** be in electronic form.

**University of Mary Washington**  
**Department of Physics**

## **Physics for Future Presidents and World Leaders**

**Required Text: Physics for Future Presidents Richard A. Muller**

- Journal articles on Blackboard from Physics Today
- Science News articles from The New York Times and The Washington Post

**Instructor: Dr. Hai Nguyen**

**Email: [hnguyen@umw.edu](mailto:hnguyen@umw.edu)**

**Office Phone: (540) - 654 – 1207**

**Office Hours: MTWF 9AM-10AM or by Appointment via Email**

**Course Description:** With emphasis on close reading, careful listening, civil discourse, logical reasoning and with a format that requires students to apply these skills to real-world situations, the course encourages the development of social skills and fosters a connection between students and the community. The course covers interesting, relevant, important and timely topics. These topics include, but are not limited to, Energy, Global Warming, Terrorism and Counter-Terrorism, Health, Satellites, Remote-Sensing, Atoms, Gravity, Radioactivity, Nuclear Reactors, Atomic Bombs, Light, and Quantum Mechanics.

**Course Objectives:** The course is designed to introduce and increase students' working knowledge of elementary physics principles, develop and sharpen their critical thinking process, improve their problem solving skills, and prepare them to articulate effectively. The course gives future world leaders, University of Mary Washington Students, the knowledge and understanding that they need to make informed decisions and not be intimidated by technological advances.

## **General Intended Student Outcomes**

**1) Students will increase their scientific literacy.**

**2) Students will communicate effectively.**

- through writing assignments, presentations, and discussions

**3) Students will think critically.**

- read scientific reports with comprehension
- transfer and apply knowledge and skills to new situations
- solve multi-step and non-routine problems involving a range of reasoning skills
- evaluate and analyze arguments from more than one perspective

**4) Students will be aware of their responsibilities to themselves, to humanity, and to their planet**

- examine personal ethics, integrity, values and priorities
- respect individuals with viewpoints, backgrounds or abilities different from their own
- contribute to the welfare of their community and ecosystem

### **Homework:**

A tentative course schedule is given below. Students are required to read the discussion topics and assigned articles given for each week. Each student will come into class with a written summary of a talking point. Each talking point summary is a paragraph composed of 8-10 sentences. We will use the summaries to start the discussions in class. The instructor will collect the summaries after the discussion. Valuable feedback will be given to the students to improve summary writing effectiveness.

Group project: Two students will form a group. Each group is required to write a two-page assessment to be handed in near the end of the semester (week 13). Helpful guidelines for assessment writing and grading rubrics are given below. There will also be a 15 minutes professional group presentation of the assessment during week 13 and week 15.

## **Writing Assessment and Evaluation Rubrics:**

Students will be asked to form groups of two to write assessments. The students will use the topics in class to write the assessment about a specific topic of their interests.

Students will use lecture notes, assigned readings, and other resources to formulate an assessment of the chosen topic.

An assessment is a brief report of the topic. The idea is to convey all-inclusive essential information about the topic without bias in two pages. An assessment will include the following items:

- 1) Name of Topic
- 2) Reasoning
- 3) A Brief History
- 4) Current Data and Trends
- 5) Assess Pros and Cons
- 6) Analysis and Recommendations

The instructor will use the following rubric to evaluate student assessments. A successful assessment must include the six items listed above as well as a superior command of the tools of language. It exhibits some or all of the following characters:

- a) include the six items listed above
- b) appropriate to the audience
- c) single, distinct focus
- d) generally well-developed ideas or narrative
- e) logical flow of ideas or events
- f) opening that draws in reader; effective closing
- g) sense of completeness
- h) each main idea supported by details; narrative brought to life by details
- i) choice of details effective
- j) precise, interesting, and vivid word choice
- k) sophisticated and consistent command of Standard English
- l) precise syntax and spelling

**Format:** Double Space; Size: 12; font: times new roman

**Work cited:** Author #1 et al., Name of the Journal, Volume, Page number, Year.

## Final Paper

I will post on Blackboard many interesting articles from various publications (ex: Physics Today, Science, and Nature) which are related to topics in class.

-----Week 7: Each student will chose an article from BlackBoard and notifies the instructor of his / her choice by the end of week seven. Students may choose different articles not listed on BlackBoard; however, the article will need to get the instructor's approval.

-----Week 10: An outline of the paper will be collected by the end of week 10.

-----Week 16: Final paper is due during the final exam week.

**Format:** Double Space; Size: 12; font: times new roman

**Work cited:** Author #1 et al., Name of the Journal, Volume, Page number, Year.

**Content:** You should address the following questions:

- 1) Title: What have you read?
- 2) Introduction:
  - a. What topic are you reviewing?
  - b. Which paper? Where is it published?
  - c. Can you provide a history of the topic?
- 3) Body:
  - a. How does it connect to the material covered in class?
  - b. Why is it important?
  - c. Pictures? Plots? Graphs? Equations?
- 4) Conclusion:
  - a. What have you learned?
  - b. What are the consequences of the findings in the paper?
  - c. What can you contribute to the information presented in the paper?
- 5) Credits: work cited?

## Tentative Course Schedule: FSEM 100

Week	Discussion	Notes
1 (08-23)	Terrorism: 9/11	
2 (08-30)	Terrorism: Nukes	
3 (09-06)	Terrorism: Biological	
4 (09-13)	Energy: Cost of Energy	
5 (09-20)	Energy: Solar	
6 (09-27)	Energy: Oil	
7 (10-04)	Nukes: Radioactivity and Death	Select final paper
8 (10-11)	Nukes: Weapons	Fall Break 10/09-10/12
9 (10-18)	Nukes: Power, Waste, and Proliferation	
10 (10-25)	Space: Satellites and Spying	Final paper outline due
11 (11-01)	Space: Gravity	
12 (11-08)	Global Warming	
13 (11-15)	Briefs due date	
14 (11-22)	<b>No class on Monday</b>	Thanksgiving 11/24-10/28
15 (11-29)	Presentation	
16 (12-06)	Final Paper Due	Final Exam Week

**Grades:** Possible Points:

Distribution of Maximum Possible Points	
Quizzes	2 @ 100pnts = <b>200</b>
Final Paper	<b>200</b>
Group Project	<b>300</b>
Discussions (summaries)	<b>300</b>
<b>TOTAL</b>	<b>1000</b>

Final grades will be determined from the total points as follows:

A	A-	B+	B	B-	C+	C	D	F
930-1000	900-929	870-899	830-869	800-829	770-799	700-769	600-699	Below 600

**Blackboard:** Lecture notes and communications are sent via emails and posted on Blackboard. There are opportunities throughout the semester to earn extra credit points via discussions in lectures. Therefore, it is to your benefit to show up for class and be ready to discuss the topics.

**Individual Help:** Any student who wishes individual help is encouraged to see me during my office hours, or other times by appointments (hnguyen@umw.edu).

**Plagiarism:** Plagiarism and cheating are serious offenses and may be punished by failure on the exam, paper or project; failure in the course; and/or expulsion from the university.

**Honor Code:** Students are required to follow strictly the Honor Code of the University of Mary Washington.

**Note:** If you have any condition such as a physical or learning disability, which will make it difficult for you to carry out the work as I have outlined it or which will require academic accommodations, please notify me.