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.

COURSE NUMBER:	**FSEM100XX**			
COURSE TITLE:	**SIGHT & SOUND: EXPERIENCING THE PHYSICAL WORLD**			
SUBMITTED BY:	Bob Ekey, physics Dave Rettinger, psychology	**DATE:**	9/10/08	
This course proposal has the department's approval. (Put a check in the box to the right.)				**X**

Note: The Faculty Advisory Committee for the UMW Teaching Center has approved funding to enable this course to be team-taught. Please see the attached memo.

COURSE DESCRIPTION. In the space below, provide a one to two 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 combines topics from Physics and Psychology to pose questions about the physical world and our experience of it. We plan to explore light, sound, and the chemical makeup of everyday substances through our sensory experiences using vision, hearing, taste and smell.

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

The content of the course straddles the transition between the pure study of the physical world and our experience of it. By providing students with information and expertise from each of these perspectives we hope to create a holistic understanding of the place of subjectivity in the "objective sciences." We also strive to give students a sense of how the scientific method can be applied to topics of compelling interest, like food, art, and music. Finally, if it goes well, we aspire to transmit just a little of our own wonder at the physical universe and our place in it.

We plan to actively engage the students through interactive lectures, demonstrations, laboratory activities, and student-driven discussion. Assignments will both foster and assess student learning. They will work both individually and in groups to communicate class material in writing and orally. We will expose them to primary source material both by providing it and by teaching them to find it themselves using appropriate research techniques. For example, in exploring light and color, students will participate in a color-mixing lab using lasers and prisms, they will read original psychological research on color perception, and physics material on the wave nature of light. They will apply their learning during a visit to a Washington, D.C. art museum where they will examine painters' use of color for a paper and/or presentation.

SYLLABUS. *Attach a course syllabus.*

SUBMIT this form and attached syllabus electronically as one document to Warren Rochelle (wrochell@umw.edu) or Maya Mathur (mmathur@umw.edu). All submissions **must** be in electronic form.

FSEM 100 Sight & Sound: Experiencing the Physical World

Instructors: Dr. Bob Ekey, Physics
Dr. David Rettinger, Psychology

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Course Description:

This course combines topics from Physics and Psychology to pose questions about the physical world and our experience of it. For example, who has not wondered why the sky is blue, and for that matter, how we know that it is? We will explore light, sound, and the chemical makeup of everyday substances through our sensory experiences using vision, hearing, taste and smell.

You will be an active participant in the course through interactive lectures, demonstrations, laboratory activities, and peer discussion. Assignments will both foster and assess your learning. You will work both individually and in groups to demonstrate your understanding of the course material and your application of it to different situations.

Goals:

As you embark upon your college career, you will discover that there are many different perspectives on how we experience the world. Our primary goal for this course is show you how Physics and Psychology can work together to explore our sensory experiences. We hope to expand your knowledge of these disciplines and your ability to use them in interpreting real-world situations. By the end of this course, we hope that you will have found at least one concept or idea that fascinates and excites you.

Because this is a First-Year Seminar, there are some particular goals we will all be working toward. First, we will introduce you to the fields of Psychology and Physics through research. We'll help you to learn how to find information yourself and how to evaluate it. Having good information is only useful if you can communicate it. We will teach you to use writing and speaking as tools for the exploration and expression of ideas and arguments generally and related to our topics. Finally, we want you to learn to think on your own, examining ideas critically. We will ask you to synthesize material from multiple sources to develop their own views on the topic.

Course Structure:

This is a seminar course – it even says so in the title. What does this mean? A seminar is a course in which everyone teaches everyone else. This is not a lecture in which the professor talks and students frantically write down the material. We are all responsible for each class period. As the professors, we may take up slightly more than our share of air time, but each student should come to class every time prepared to fully engage with each other in discussions and activities. Students will often be the primary class leaders, both of assigned material and of outside research.

Assignments:

In addition to periodic individual assignments (both written and oral), you are required to complete three projects. Detailed assignment sheets will be provided.

1. You will be assigned laboratory write-ups and other short (1-2 page) assignments throughout the semester.
2. Your midterm project focuses on the physical and perceptual qualities of a piece of music. You will choose a musical work, write a 4-5 page paper applying your knowledge of sound and hearing to the work, and discussing why this music appeals to you. You will also make a short (5-10 minute) presentation of the music and your assessment and interpretation of it.
3. At the end of the semester you will take part in a group project on a topic of your choice. We expect you to choose a topic that is related to but expands upon course content. The project will consist of a longer (20 minutes) group presentation during the last week of classes. Each group member will contribute to the preparation and presentation of the material. Each group will also prepare a final paper that combines individually and group-written sections. Each group member will individually write one subsection of the paper, and as a group you will also write a general introduction to the entire paper, a transition between sections, and a conclusion to the entire paper. Individual sections should be 4-5 pages in length. Group sections should combine to roughly 5 pages.
4. Daily community learning consists of class participation, contributions to online discussions, playing well with others, and not running with scissors.

Evaluation:

- Mid-Term Project (25%)
  - Written component
  - Oral presentation
- Group Final Project (35%)
  - Group Presentation
  - Group Paper
  - Individual section
- Homeworks and Laboratory Assignments (25%)
- Daily Community Learning (15%)

Expectations:

Attendance: It is absolutely critical that you attend class, not only for your own benefit, but in order to share your ideas with the group as a whole. Therefore attendance at each class is mandatory, and missing class will result in point deductions from your class participation grade. Attendance will be taken formally on

occasion, when the class seems small. Skipping class can therefore penalize not just you but your classmates as well.

Participation: This grade consists of contributions to class discussions. Participation, in this context means: coming to class prepared, asking good questions, speaking consistently without dominating the discussion, staying on topic, demonstrating your knowledge while at the same time fostering learning in the rest of us, and contributing to a positive atmosphere in class.

Tentative Readings List:

1. Excerpts from *Music, Sound, Technology.* John M. Eargle
2. Excerpts from *Musical Acoustics.* Donald E. Hall
3. Excerpts from *Sensation & Perception.* Jeremy Wolfe
4. Excerpt from *Psychology of Food & Eating.* John Smith
5. Excepts from *Vision and Art: The Biology of Seeing.* M. Livingstone
6. Selected articles, including:
    a. Blakemore & Campbell (1969). On the existence of neurons and the human visual system selectively sensitive to the orientation and size of retinal images. *Journal of Physiology.*
    b. Hecht, Shlaer, & Pirenne (1942). Energy, quanta and vision. *Journal of General Physiology.*
    c. Plomp & Levelt (1965). Tonal consonance and critical bandwidth. *Journal of the Acoustical Society of America.*

Tentative Schedule:

Week		T	Th
1	Getting Started	Syllabus & Themes	Intros & Start Sound
2	Sound	Basic Waves	Basic Ear
3	Sound	Amplitude/Loudness	
4	Sound	Complex Tones	Combining/Separating
5	Sound	Instruments	Instruments Lab
6	Presentations	Musical Interpretation -	Individual Presentation
7	Taste & Smell	Chemosensation	Cooking- Taste, Smell & Flavor
8	Light	EM Waves	The Eye
9	Light	Amplitude	Brightness
10	Light	Wavelength	Color
11	Light	Molecular Aspects	Color Mixing Lab
*12	Light	Seeing Paintings	3d in Paintings
13	Big picture	"The Matrix" - Reality & your senses	
14	Final presentations	Group project presentations	

*DC field trip

MEMORANDUM

TO: BOB EKEY

FROM: ERNEST ACKERMANN, CHAIRPERSON FACULTY ADVISORY COMMITTEE FOR THE UMW TEACHING CENTER

SUBJECT: TEAM TEACHING

DATE: 9/11/08

CC: DAVE RETTINGER, GEORGE KING, JOHN MORELLO

Congratulations! I am happy to inform you that the Faculty Advisory Committee for the UMW Teaching Center will fund the request that you and Dave Rettinger made for Team Teaching the course FSEM Sight & Sounds; Experiencing the Physical World in the Spring Semester 2009. One hire-behind position will be made available to support the work of both you and Dave.

Participants are expected to present their findings through the Teaching Center Colloquium Series as well as participate in on-going discussions throughout the semester through the University Teaching Center web-environment.

Please let me know if you and Dave Rettinger plan to participate.

Feel free to get in touch with me if you have questions or if I can be helpful.