

# **Science Outreach: Public Understanding of Science**

## **Syllabus**

3 Credit hours; Tier III

Prerequisites – BIO 110 and BIO 112

### **Introduction**

This course/workshop aims to promote public understanding and appreciation of science, by training students to engage with the public effectively and appealingly. The students will develop a series of presentations that increase awareness of the impact of science on many aspects of our daily lives – dubbed the “Science and Me” series - and will deliver the presentations to adult audiences around the community.

The presentations will highlight the role of scientific research in advances in medicine, the food we eat, the hi-tech items that we use, the way we approach aging problems, environmental management and more. Talks will emphasize that these accomplishments are all the results of the cumulative work of many scientists all over the world, who work to understand basic phenomena, to share their knowledge between different scientific disciplines, and to help translate that knowledge to the pharmacy, the bedside, the food industry, the farming industry, the factories, urban planning and government policies.

Through the process of preparing the presentations - in class, and with assistance from a faculty mentor outside of class - the students will gain the necessary scientific knowledge related to their subject of choice, learn to integrate material and concepts, and present them in a manner adequate for non-scientific audiences. Delivering the presentations should enhance the students speaking skills, and discussions in class following each presentation will reflect on the effectiveness of the talks.

### **Course requirements**

Preparation of a presentation and a handout

Preparation of an Instructional Document (see below)

Delivery of the presentation to the class

Delivery of the presentation in three venues and submission of presentation reports

Complete all homework assignments (a list of homework assignments is available upon request).

Attendance is required.

### **Reading materials**

- Book: Persuasive Messages: The Process of Influence by William Benoit and Pamela Benoit.
- A list of articles to be discussed in class is available upon request. (See sample in attachment #2)

## Course plan and broad calendar

The course will be divided roughly into 3 parts:

**Part 1** (weeks 1-5): Choosing topics; building the presentations and class discussions on science outreach related issues.

**Part 2** (weeks 6-10): Delivering the presentations to the class and analyzing their effectiveness.

**Part 3** (weeks 11-15) - Delivering the presentations to audiences in their venues and analyzing the experience to improve the presentations. Switch class presentations (see Below).

*In the first two parts of the course every session will start with each student reporting on their progress in the process and on issues that arose while trying to build the presentation, explaining how they solved them or asking for class input.*

## Detailed syllabus

### Part 1 (weeks 1-5) - Building the presentations

In building the “Science and Me” presentations, students will need to exercise creative approaches and ideas about how to present their material, particularly to an adult, lay audience, and how to generate presentations and handouts that are simple, clear and aesthetically pleasing.

*(note: this syllabus is for a class that will meet twice a week for an hour and 15 minutes sessions. We have offered the course to classes that meet once a week for two hours and 15 sessions).*

### Class #1

- \* Introduction
- \* Sign up for in-class presentation dates
- \* Syllabus
- \* Choose topic/title

A list of suggested topics will be provided, but students are encouraged to suggest their own. Suggested material (popular research articles, science page from the NY Times) will be available in the library (reserved shelf).

Topics are due within a week. Mentors - experts in the field of your topics - will be identified for each student once the topics are finalized.

*Notes:*

- *Previous years' topics and handouts can be found in attachment #3, and on the website at <http://www.scienceandme.org/topics>.*

- Homework assignments are listed in attachment #1.

## **Homework assignments #1 and #2**

### **Class #2**

\* Where is everyone in the process? This is the time to share thoughts, concerns and ideas about your topic.

\* Discussion: How to depict the role of science in different presentation topics.

The discussion will be based on the reading material and homework assignment #1. Each student will present one of the topics they developed for the homework assignment, and will discuss with the class additional ways to show basic science involvement in this issue, as well as anticipated misconceptions.

### **Class #3**

\* A sample “Science and Me” presentation: “Antibiotics, mold and drug resistant bacteria - *Why won't penicillin cure my infection?*” Hannah Alexander.

In the ensuing discussion, we will point out good points, as well as points in need of improvement, and will assemble a detailed “Presentation Guideline” to be used with your own presentations.

## **Homework assignment #3**

### **Class #4-5**

Titles, teasers and handouts.

- We will discuss each student’s title and teaser, and will come up with a guideline for writing an engaging title and an effective teaser for a talk.
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- Guideline for a trifold handout.  
(Note: sample of handout for each past topic can be found on the website, in [presentation topics](#). Click on the word “handout” at the end of each topic).

## **Homework assignment #4**

### **Class #6-8**

\* Class discussion of Science Outreach related papers (homework Assignment #3)

A group of papers per class.

## **Homework assignment #5**

### **Class #9**

Science – The what, the where, and the how. Hannah Alexander.

This session is aimed for undergraduate classes, or classes in which the majority of the students are not science students (e.g journalism students). The presentation describes the

process of “basic research” - choosing the research topic, application for funding, the review process, performing the work (the scientific method), publishing the results (the review process), and other aspects of life in the lab.

### ***Class #10***

Movie – Naturally obsessed. <http://www.thirteen.org/naturally-obsessed/>

## **Part 2 (weeks 5-10) - Sharing presentations with the class**

The student will deliver their presentations to the class. Discussion in class following each presentation will aim to reflect on the efficacy, interest and impact of the talk and the handout in a positive and constructive manner, which will allow the speakers to improve their presentation.

### **Preparation of Instructional Material**

The presentations prepared in this course will become part of the “Science and Me” program, so that they can be used in the future, and possibly by other presenters. To enable this, each presentation will be accompanied with an instructive document that will detail the approach to the subject, the main points the speaker wanted to make, a detailed figure legend for each slide and a list of sources used.

### **Preparation of Trifold brochure**

Each student will prepare a one-page, colorful, trifold brochure to be handed out at the end of the talks. The brochure depicts the main points of the talk and provides further resources for people who seek more information. Examples can be found on the Scienceandme webpage, in [presentation topics](#). *Click on the word “handout” at the end of each topic*.

## ***Homework Assignments # 6-8***

### **Part 3 (weeks 12-16) - Delivering the presentations to audiences in their venues; switching presentations in class.**

**Delivering presentation** - Students will be encouraged to go to at least one presentation in pairs. The student speaker and the visiting friend will report on the presentations, relay their experience with the audience, and discuss ways to improve the presentation before their second session.

A presentation report (appendix 1) will be emailed to [Hannah@scienceandme.org](mailto:Hannah@scienceandme.org) after each presentation. Part of each class session will be devoted to discussing presentation experiences.

## Switching presentations

All presentations are due by the end of the second part of the course via email to [alexanderh@missouri.edu](mailto:alexanderh@missouri.edu), and will be posted on the course web site. During this part of the course, each student will be assigned another student's presentation, and - based on the instructional material - will deliver part of it to the class. This will allow us to re-visit the improved talks following class presentation, to evaluate the instructional manual, and to gain experience in talking about subject with which the students are less familiar.

## Public Understanding of Science course - grade scale

Preparation of presentation, and tri-fold brochure	- 35 %
Deliver presentations in 3 venues	- 30%
Instructional material and cover document	- 15%
Homework assignments	- 20%
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	100%

### Class procedure

1. Attendance is mandatory. If you have a conflict, please get in touch with me before class
2. All homework assignments will be emailed to [Hannah@scienceandme.org](mailto:Hannah@scienceandme.org) the night before their due dates. Comments (using "track changes") will be returned via email.
3. No cell phones or email in class.

### Attachments

1. Homework assignments for Public Understanding of Science course.
2. Reading material for class discussion.
3. Science and Me Presentation topics.

Articles published about the course:

4. 'Show-Me' science outreach to adult populations.
5. Science and Me: A Student-Driven Science Outreach Program for Lay Adult Audiences
6. Science and Me: Intergenerational Interaction Rewards Both Sides

Appendix 1

## **Presentation report**

To be filled by the presenter after each presentation.  
Submit copy to [Hannah@scienceandme.org](mailto:Hannah@scienceandme.org)

Name

Presentation

Date

Venue

Number of people in the audience

Your experience/impression - audience attention, participation, understanding, comments.  
Should we go there again?, What other topics would they like to hear about?

How can we improve?