

**IDIS 395 ST: Misapplication of Science:  
Personal Perils and Social Costs**

Spring 2006  
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Ms. Wendy Juniper

**Course Description:** At some time during their college careers, most students have been exposed to at least rudimentary discussion of the importance of the use of scientific method when engaging in a decision-making process. Rarely, however, are students challenged to investigate the consequences to individuals and society when scientific method is poorly, mistakenly or incompletely applied. Numerous examples exist of the costs associated with misapplication of scientific method in the social and natural sciences, both historically (How could we have believed that a mother's behavior causes her child to be autistic?) and contemporarily (How could we not have realized that ephedra can be deadly?) In this course, students will first gain a deeper understanding of scientific method and its proper application. The remainder of the seminar will be case-based, with students working in teams to investigate how scientific mistakes are made and what might have been done to prevent the social and human consequences that result. **This course is speaking intensive, and meets the requirements of the information literacy initiative. (U1)**

#### **Goals of the Course:**

- To gain a deeper understanding of the distinction between science and pseudoscience, scientific method and related terminology (e.g. sampling, random assignment, instrumentation)
- To further refine literature search skills and learn the optimal use of a variety of search engines and sources.
- To refine and improve critical thinking skills.
- To learn to work effectively as part of team preparing informative, accurate and interesting material for presentation to peers.
- To learn a variety of presentation strategies and when to best use each.
- To learn how to objectively and honestly but kindly critique the work of peers.
- To come to a deeper appreciation of the importance of the proper use of scientific method in making personal decisions and in serving humankind.

#### **Required Readings:**

##### **For Purchase at the Moravian College Bookstore**

Katzer, J., Cook, K. H. & Crouch, W. W. (1998) *Evaluating Information: A Guide for Users of Social Science Research*. Boston, Mass: McGraw-Hill.

Shermer, M. & Linse, P. *Skeptics Society Baloney Detection Kit*.

Wynn, C.M. & Wiggins, A.W. (2001) *Quantum Leaps in the Wrong Direction: Where Real Science Ends and Pseudoscience Begins*. Washington, D.C.: Joseph Henry Press.

### Potential Readings for Discussion Sessions [on Reserve at Reeves Library]

Best, J. (2001). *Damned Lies and Statistics*. Berkeley, CA: University of California Press.

Park, R.L. (2001). *Voodoo Science: The Road from Foolishness to Fraud*. New York: Oxford University Press.

Sagan, C. (1995). *The Demon-Haunted World: Science as a Candle in the Dark*. New York: Random House.

Shermer, M. (1997) *Why People Believe Weird Things*. New York: W.H. Freeman & Co., Chapter 2.

*Skeptic* magazine articles

See also: **Blackboard postings**

[www.skeptic.com](http://www.skeptic.com)

### Grading:

Attendance/Participation	20%
Homework & Mastery Quizzes	25%
Presentation 1	15%
Presentation 2	20%
Team Process Journal	10%
Peer/Self Evaluations	10%

### Description of Grading Procedures:

#### Homework & Mastery Quizzes

**Homework** assignments will be given regularly. We have listed the due dates for the ones we have already decided upon in the class schedule. These include such things as evaluations of assigned articles and short reaction papers on a variety of topics. Since there are no formal exams in this course, occasional (announced) **quizzes** will serve to make sure that you are reading and understanding what you have read. Some quizzes will be “hands on” in the sense that you will be asked to demonstrate your information literacy skills during a computer lab session. The nature and content of these quizzes will be announced no later than the class meeting prior to the quiz or earlier whenever possible.

#### Attendance & Participation

In a seminar course student **attendance** is vital to the success of the course. There is really no way to “make up” missed classes or to learn by “getting the notes from somebody”. Students are expected to attend every class, and to inform the instructors and members of their class team in advance if an absence is unavoidable. All students begin the course with an Attendance grade of

100%. 4 points will be deducted from this grade for each unexcused absence (2 points with a valid, written excuse). Students are expected to *participate* actively in discussions led by the instructors and by other class members. Each class member will complete a self evaluation of their participation following each student-led discussion. These evaluations will contribute to the participation grade. The instructors will also provide feedback to you on our perceptions of your level of participation in class activities. This will be shared with you prior to midterm, and we will make suggestions for improvement if needed.

### **Presentations**

Students will work in teams of 2 or 3 (depending on course enrollment) to research and make two presentations. Specific instructions about the process and due dates will be distributed and discussed when the teams are formed early in the term. [See Instructions and Timeline for Presentations Sheet to be distributed in class.] **Presentation 1** will be shorter (about 10 minutes in length), and the topics will be less complex to research and present than those for Presentation 2. In preparing for the first presentation, students will learn fundamental information literacy skills for multidisciplinary research. Students unfamiliar with the intricacies of *PowerPoint* will use this first opportunity to develop and then refine this and other presentation skills and techniques. Students will also learn to apply a structured evaluation system for the evaluation of the presentations given by their peers. **Presentation 2** will be slightly longer (20-30 minutes) as students will be working on topics that are more involved and complex than those for Presentation 1. These topics will also be more difficult to present clearly and concisely. Students will use the feedback from their first presentation to improve the delivery of their second, major presentation.

### **Team Process Journals**

As described in more detail on the Instructions and Timeline for Presentations Sheet (distributed in class) each member of the team will keep his or her own journal detailing contributions to the team effort. This will include literature search histories as well as documentation of other activities performed on behalf of the team (e.g. “met with reference librarian for help with searching Google”; “found video clip on hypnosis for use in presentation”; “attended team meeting in library”). Journals should also include thoughts and ideas about the team project (e.g. “Maybe we should find out why the government doesn’t get involved in regulating herbal drugs. Is this a political issue?”) Teams will meet at least once with the instructors, as indicated in the Class Schedule, for the explicit purpose of discussing the relative contribution of members and to make suggestions if needed for improving team functioning. Information recorded in the Team Process Journals will also be used to assist us in establishing the quality of the literature search and evaluation process undertaken by the team members in preparing for the two presentations. ***It is definitely in your best interest to be as specific and as detailed as possible in recording details of your literature search, activities and evaluation process in your journals.***

### **Peer and Self Evaluations**

The *self evaluations* completed by all class members following student-led discussions will form one part of this grade. Students will also complete detailed and informative *evaluations of their peers* following Presentations 1 & 2, using the structured method selected and modified by the class during the beginning weeks of the course. Class members will be assigned the other portion of this grade based upon the quality and quantity of the feedback offered to the presenters.

**Students Please Note:** It is within the instructors' purview to apply qualitative judgment in determining grades in the course.

### Calculating Your Grade:

To calculate your final grade, weight each grade earned according to the percentages given above. For example, Presentation 1 is worth 15%. If you score an 80 on it, multiply (.15) (80) for a point total of 12. Adding these points together for all the grading components listed above will give you your final grade for the course (out of 100 points). These points are then converted to a letter grade as follows:

92.6- 100	=	A
89.6 – 92.5	=	A-
86.6– 89.5	=	B+
82.6 – 86.5	=	B
79.6 – 82.5	=	B-
76.6 – 79.5	=	C+
72.6 – 76.5	=	C
69.6 – 72.5	=	C-
66.6 – 69.5	=	D+
62.6 – 66.5	=	D
59.6 – 62.5	=	D-
less than 59.6	=	F

### Academic Honesty

Students are expected to be familiar with the Moravian College Academic Honesty policy, as addressed in your 2005-6 Moravian College Student Handbook. Any needed points of clarification should be addressed to your instructors.

### Changes to this Syllabus

It may be necessary to make minor modifications to the syllabus to make things run more smoothly. If such changes are needed, you will be informed well in advance and will be asked to attach the changes to your syllabus in class. Major changes to course structure, deadlines or grading policy will not be made.

**Students with learning disabilities** who need special accommodations for this course should contact Ms. Laurie Roth, Director of Learning Services at 1307 Main Street (ext. 1510). Accommodations cannot be provided until authorization is received from Learning Services based upon proper documentation of the conditions and needed accommodations.

**Note:** If you use an e-mail address other than your Moravian student address, please either give or e-mail us that information.

**Contact Information:**

*Wendy Juniper* can be reached by campus e-mail at [wajuniper@moravian.edu](mailto:wajuniper@moravian.edu), by telephone at 610-861-6181, or by instant messaging AOL screen name: Junisahn. If you need to reach one of the other members of the reference staff, please contact them at 610-861-1543.

The quickest way to reach *Dr. Toedter* is through campus e-mail [meljt01@moravian.edu]. She monitors her e-mail during the week whether on or off campus. Expect her to answer phone messages (610) 861-1565 via e-mail as well, except under unusual circumstances. Her office is in the Psychology Department in the PPHAC building on the second floor facing W. Laurel Street (Room 227). The Psychology department secretary, Jackie Giaquinto, is next door to her office and may also be able to help you, depending on the question.

**Office Hours (Dr. Toedter):** Monday 10:30-noon Wednesday 4-5pm  
Thursday 11:30-noon & 2-4pm or by appointment

## Class Schedule

Class Meeting	Topic	Assignment DUE
(1) Mon 1/16	What is pseudoscience?	None
(2) Wed 1/18	Project Idea Workshop	Wynn & Wiggins, Ch. 1-3 Katzer, Ch. 1-2 Reaction paper: video
(3) Mon 1/23	Creating Searchable Questions Begin Presentation 1 Research <i>Sign ups</i> : Discussions Presentation teams	Top 2 Choices <b>DUE</b> Katzer, Ch. 3-4
(4) Wed 1/25	Choosing & Using Databases	Evaluation of assigned article using Katzer, Ch 1-4 <b>DUE</b>
(5) Mon 1/30	Source Evaluation Tips for Evaluating Abstracts	Katzer, Ch. 5
(6) Wed 2/1	Source Evaluation (cont.) Student-led Discussion 1 <hr/>	Read article for Discussion 1 Source evaluation <b>DUE</b>
(7) Mon 2/6	Favorite Presentation Discussion Student-led Discussion 2 <hr/>	Favorite presentation <b>DUE</b> Read article for Discussion 2
(8) Wed 2/8	Developing Evaluations for Presentations	<b>Annotated Bibliography for Presentation 1 DUE</b>
(9) Mon 2/13	Individual Meetings	Group Process Journals <b>DUE</b>
(10) Wed 2/15	Citing Sources/Avoiding Plagiarism Student-led Discussion 3	Read article for Discussion 3

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<b>Class Meeting</b>	<b>Topic</b>	<b>Assignment DUE</b>
(11) Mon 2/20	Presentation 1	Work on Presentation
(12) Wed 2/22	Finish Presentations Revise Evaluation Form	Peer Evaluations <b>DUE</b>
(13) Mon 2/27	Measurement Noise & Bias	Katzer, Ch. 6, 7, 9
(14) Wed 3/1	Advanced Searching I Student-led Discussion 4	Read article for Discussion 4
<b><i>Spring Break---Enjoy!!!!</i></b>		
(15) Mon 3/13	Advanced Searching II Student-led Discussion 5	Katzer, Ch. 10-11 Read article for Discussion 5
(16) Wed 3/15	Results, Relationships, Control & Inference Student-led Discussion 6	Katzer, Ch. 12-13 Read article for Discussion 6
(17) Mon 3/20	Cool Tips I: PubMed Student-led Discussion 7	Read article for Discussion 7
(18) Wed 3/22	Ethics of Information Use	Evaluation of article using Katzer Ch. 6,7,9
(19) Mon 3/27	Meta-analysis vs. Reviews	Katzer, Ch. 8
(20) Wed 3/29	Cool Tips II	Read article for Discussion 8

Student-led Discussion 8

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<b>Class Meeting</b>	<b>Topic</b>	<b>Assignment DUE</b>
(21) Mon 4/3	Cool Tips III Student-led Discussion 9	Shermer, pp. 2-8 Read article for Discussion 9
(22) Wed 4/5	The Magic Chinese Pill	Take Home Quiz (Shermer) Prepare for Presentation 2
(23) Mon 4/10	TBA	<b>Annotated Bibliography for Presentation 2 DUE</b>
(24) Wed 4/12	Individual Meetings	Team Process Journals <b>DUE</b>
<b><i>Easter Break---Enjoy!!!!</i></b>		
(25) Wed 4/19	TBA	Evaluation of article using Katzner Ch. 10-13 Work on Presentation 2
(26) Mon 4/24	Presentations	Work on Presentation 2
(27) Wed 4/26	Presentations	Work on Presentation 2