

The Ohio State University

MythBusters: An Introduction to Applied Interdisciplinary Research Methods

Autumn Semester 20XX

ARTSCI 1137.XX (1 credit hour)

Professor: Lorraine S. Wallace, PhD

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Course Time and Location: TBD

Office Hours: By appointment

Course Description:

Throughout our daily lives, we regularly encounter interesting situations that spark our interest and curiosity. For example, have you ever considered questions such as (1) is yawning is contagious, (2) are men are better at following maps than women, (3) can you eat a spoonful of cinnamon without drinking water, or (4) does footwear choice affect driving performance? Common questions such as these have been explored and tested on the long-running *MythBusters* (<http://www.discovery.com/tv-shows/mythbusters/>) television series. Throughout the seminar, we will watch and critique select *MythBuster* clips to enable us to delve deeply into how studies or experiments are designed and executed to reliably answer real-world situations encountered in everyday life. Using *MythBuster* clips as a foundation, we will critically and comprehensively explore key ingredients in scientific study design, including: (1) proposing a solid and measurable research question, (2) developing sound experimental methodology, (3) meticulous observation and measurement, (4) designing data analysis plans, (5) interpretation and reporting of generated findings, (6) identification of study strengths and limitations, and (6) planning and delivering a dissemination plan. This seminar is geared towards students in all fields of study.

Course Objectives:

1. To introduce students to the key ingredients in scientific inquiry and study design.
2. To provide students an opportunity to devise a research question and design a scientific study to address a real-world question of interest.
3. To enable students to understand the benefits of synthesizing multiple disciplinary perspectives.
4. To provide students an opportunity to develop their oral presentation skills.

Course Website:

Students are required to make regular use of Carmen (<https://carmen.osu.edu>) during this seminar. The Carmen site contains assignments, readings, content links, and more. Students are responsible for all material contained in Carmen, unless specific material is listed as optional.

Course Evaluation:**Class Participation:**

Regular attendance and active participation in discussions are a must to be successful in the course. Poor class attendance (missing more than one class) will negatively impact your overall class participation grade.

(10% of total course grade)

Written Assignments and Hands-on Experiments:

Throughout the semester, students will individually complete a combination of five (5) short written assignments and hands-on experiments/projects.

(50% of total course grade)

Final Group Project:

Working in small groups (approximately 3 students), students will write a 5-page grant proposal to address a scientific myth that they would like to test. The grant proposal will draw upon all of concepts presented throughout the seminar.

(30% of total course grade)

Final Group Project Oral Presentation:

Each small group of students will present the scientific myth they would like to test to the class. Presentations will be approximately 12 minutes (8 minutes for presentation and 4 minutes for class discussion).

(10% of total course grade)

Grading Scale:

A	93-100
A-	90-92
B+	87-89
B	83-86
B-	80-82
C+	77-79
C	73-76
C-	70-72
D+	67-69
D	60-66
E	0-59

You are expected to be a good academic citizen. Come to class on time and be prepared for class when it begins. If you arrive more than 15 minutes late, you will not earn attendance/participation points for that day. Courtesy needs to be maintained in the classroom at all times. Respect your classmates and instructor. Show your respect for each other by waiting until the class is over to have private conversations. Wait until class is dismissed to pack up or leave the classroom.

Use of electronic devices (laptop computers, tablets, smartphones, etc.) in class for any purpose except directly related to academics is prohibited. Any violations of the policy will result in an automatic deduction of 2 percentage points from the student's final grade.

Course Schedule:

Week #	Topic(s)/Activity(ies)
1	<ul style="list-style-type: none"> • Seminar introduction and syllabus review • What is science? What is a myth? • Viewing and discussion of <i>MythBusters</i> clip #1
2	<ul style="list-style-type: none"> • The nature of evidence • Asking questions and finding answers • Viewing and discussion of <i>MythBusters</i> clip #2
3	<ul style="list-style-type: none"> • Developing measurable research questions • Viewing and discussion of <i>MythBusters</i> clip #3
4	<ul style="list-style-type: none"> • The science of measurement and observation • Viewing and discussion of <i>MythBusters</i> clip #4
5	<ul style="list-style-type: none"> • Designing a study to answer the research question • Viewing and discussion of <i>MythBusters</i> clip #5
6	<ul style="list-style-type: none"> • Statistics and significance • Viewing and discussion of <i>MythBusters</i> clip #6
7	<ul style="list-style-type: none"> • Probabilities and error • Viewing and discussion of <i>MythBusters</i> clip #7
8	<ul style="list-style-type: none"> • Interpreting research findings • Viewing and discussion of <i>MythBusters</i> clip #8
9	<ul style="list-style-type: none"> • Identifying study strengths and weaknesses • Viewing and discussion of <i>MythBusters</i> clip #9
10	<ul style="list-style-type: none"> • Disseminating study findings • Viewing and discussion of <i>MythBusters</i> clip #10

11	<ul style="list-style-type: none"> • The process and importance of scientific peer review • Viewing and discussion of <i>MythBusters</i> clip #11
12	<ul style="list-style-type: none"> • Pseudoscience • Viewing and discussion of <i>MythBusters</i> clip #12
13	<ul style="list-style-type: none"> • Science and the public • Viewing and discussion of <i>MythBusters</i> clip #13
14	<ul style="list-style-type: none"> • Final Group Project Oral Presentations
15	<ul style="list-style-type: none"> • Final Group Project Oral Presentations

Academic Misconduct:

It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term “academic misconduct” includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct <http://studentlife.osu.edu/csc/>.

Disability Services Statements:

Students with disabilities (including mental health, chronic or temporary medical conditions) that have been certified by the Office of Student Life Disability Services will be appropriately accommodated and should inform the instructor as soon as possible of their needs. The Office of Student Life Disability Services is located in 098 Baker Hall, 113 W. 12th Avenue; telephone 614- 292-3307, slds@osu.edu; slds.osu.edu