

# SYLLABUS AND COURSE EXPECTATIONS

## ENTMLGY 2400H: Evaluating Evidence in Biology & Medicine

Spring 2023

3 credit hours

In Person - T & R 11:10 AM – 12:30 PM, Biological Sciences Bldg. Room 676

### Course Overview

Instructor: Dr. Bruce McPheron

Office Hours: By appointment: email [mcpheron.24@osu.edu](mailto:mcpheron.24@osu.edu) (preferred contact method)

Office: 408C Kottman Hall (2021 Coffey Rd)

Prerequisites: Honors standing

### Course Description

We will explore the importance of and challenges to scientific information and literacy in biology and medicine. We use evolutionary theory as the unifying framework for all life on earth. We'll emphasize gaining an ability to scrutinize science as reported in popular sources and to bring additional credible information to bear on how we interpret these reports.

### Course Learning Outcomes

By the end of this course, students should successfully be able to:

- locate, acquire, assess, and summarize science-related information from an array of sources (e.g., scholarly journals, government websites, news outlets, social media, etc.).
- evaluate the currency, relevance, context, authority, accuracy, purpose, reliability, and potential bias associated with a given source.
- compare & contrast the nature of scientific information from various sources (scholarly primary sources, review articles, textbooks, various websites, news outlets, etc.).
- explain why authorities/information sources in one realm (e.g., scientists/peer-reviewed publications) may disagree with authorities/sources in another realm (e.g., public office-holders' [i.e., government] health orders).
- provide examples of how technology has advanced science and medicine and how society has responded to innovations and challenges (e.g., the COVID-19 pandemic).

## General Education Expected Learning Outcomes

As part of the Natural Science/Biological Science category of the General Education curriculum, this course is designed to prepare students to be able to do the following:

- Students understand the basic facts, principles, theories, and methods of modern science.
- Students understand key events in the development of science and recognize that science is an evolving body of knowledge.
- Students describe the inter-dependence of scientific and technological developments.
- Students recognize social and philosophical implications of scientific discoveries and understand the potential of science and technology to address problems of the contemporary world.

How the course fulfills these GE outcomes: To develop lifelong skills for making informed decisions about science and health-related issues, we discuss hypotheses and methodologies, evaluate sources and expertise, interpret scientific data and claims, and weigh relevant evidence. We apply these skills throughout the semester. We operate within the unifying framework of modern evolutionary theory, which recognizes the shared ancestry of all life on earth, and we understand that countless advances in biology and medicine owe much to evolution as a utilitarian, predictive, evidence-based theory.

## Required Course Materials

**Textbook:** *Starry Messenger* by Neil deGrasse Tyson, 2022, Henry Holt and Co, New York.

Do not purchase this book – a copy will be provided to you in class.

**Newspaper:** *The New York Times* Tuesday Science Section

Two steps to access:

1. Use your name.number & password to log onto OSU libraries  
<https://library.osu.edu/>
2. Use short-cut link for NY Times: <https://www-nytimes-com.proxy.lib.ohio-state.edu/>

**Other materials:** (essays, articles, podcasts, videos) will be posted on Carmen and/or shared in class

## Course Technology

### Technology support

For help with your password, university email, Carmen, or any other technology issues, questions, or requests, contact the Ohio State IT Service Desk. Standard support hours are available at [ocio.osu.edu/help/hours](https://ocio.osu.edu/help/hours), and support for urgent issues is available 24/7.

- **Self-Service and Chat support:** [ocio.osu.edu/help](https://ocio.osu.edu/help)
- **Phone:** 614-688-4357(HELP)
- **Email:** [servicedesk@osu.edu](mailto:servicedesk@osu.edu)
- **TDD:** 614-688-8743

### Technology skills needed for this course

- Basic computer and web-browsing skills
- Navigating Carmen ([go.osu.edu/canvasstudent](https://go.osu.edu/canvasstudent))
- CarmenZoom virtual meetings ([go.osu.edu/zoom-meetings](https://go.osu.edu/zoom-meetings))
- Recording a slide presentation with audio narration ([go.osu.edu/video-assignment-guide](https://go.osu.edu/video-assignment-guide))
- Recording, editing, and uploading video ([go.osu.edu/video-assignment-guide](https://go.osu.edu/video-assignment-guide))

### Required equipment

- Computer: current Mac (MacOs) or PC (Windows 10) with high-speed internet connection
- Webcam and microphone: built-in or external webcam and microphone, fully installed and tested or corresponding mobile device with video capabilities, if your group decides on this type of meeting.
- Other: a mobile device (smartphone or tablet) to use for BuckeyePass authentication
- It will be ideal if you can bring either a mobile device, tablet or laptop to you to class each session, as we will be actively searching resources during most classes.

### Required software

- Microsoft Office 365: All Ohio State students are now eligible for free Microsoft Office 365. Full instructions for downloading and installation can be found at [go.osu.edu/office365help](https://go.osu.edu/office365help).

### Carmen access

You will need to use BuckeyePass ([buckeyepass.osu.edu](https://buckeyepass.osu.edu)) multi-factor authentication to access

your courses in Carmen. To ensure that you are able to connect to Carmen at all times, it is recommended that you take the following steps:

- Register multiple devices in case something happens to your primary device. Visit the BuckeyePass - Adding a Device help article for step-by-step instructions ([go.osu.edu/add-device](http://go.osu.edu/add-device)).
- Request passcodes to keep as a backup authentication option. When you see the Duo login screen on your computer, click **Enter a Passcode** and then click the **Text me new codes** button that appears. This will text you ten passcodes good for 365 days that can each be used once.
- Download the Duo Mobile application ([go.osu.edu/install-duo](http://go.osu.edu/install-duo)) to all of your registered devices for the ability to generate one-time codes in the event that you lose cell, data, or Wi-Fi service

If none of these options will meet the needs of your situation, you can contact the IT Service Desk at 614-688-4357(HELP) and IT support staff will work out a solution with you.

## GRADING AND FACULTY RESPONSE

### How your grade is calculated

ASSIGNMENT CATEGORY	POINTS
Class Participation & Attendance (24 of 28 class sessions at 0-5 pts/session)	120
Answers to Worksheets (10 out of 12 assignments @ 10 points each)	100
Group take-home exam #1	60
Group take-home exam #2	60
Individual take-home final exam (all topics from course are fair game)	60
<b>Total</b>	<b>400</b>

*See Course Schedule below for assignment due dates.*

## Descriptions of major course assignments

### Class Participation and Attendance

Description: This class relies on discussion and attendance, and engagement is important. Student attendance will be taken at each in-person class session. Your attendance and participation will be recorded on a 0-5 point scale where 0 indicates absent and 5 is engaged. Your final grade will reflect cumulative points from 24 of the 28 scheduled class sessions. We will discuss expectations at the beginning of class, and I will provide private feedback within the first three weeks of class to each of you to help guide your engagement.

### Worksheets

Description: These enable you to practice interpreting and evaluating information from various sources of science-related data (however good/questionable) that come at us every day, as well as organizing thoughts from your text in preparation for discussion. Worksheets are due and discussed in class on the dates indicated in the **Course Schedule**.

Each Worksheet (posted at Carmen) includes explicit instructions and in many cases the worksheets are good practice for group take-home exams. Deadlines for submitting your work are posted at Carmen. **All work must be original, written by you (or your team).**

To receive full credit your work must: 1) be substantive, 2) demonstrate a good faith effort, and 3) be posted before class commences on the day that it is due. "Substantive" in this context may be defined as "meaningful and explicitly expressed;" thus, be sure you answer the question/prompt fully, using language that is clear and unambiguous. "Demonstrate good faith effort" means you have been conscientious and diligent-- your answer evidences a sincere attempt to do a good job completing the work as opposed to a perfunctory one.

### Group take-home exams

**Description:** These are designed with the **course learning outcomes** in mind. You will be asked to locate various types of sources, evaluate their content and authority, and answer questions regarding information they provide, whether it conflicts with/corroborates other reports, etc.

Your instructor will assign student teams. Each team will complete a Group Contract (posted on Carmen), which provides a written plan for how the team is going to complete the exam—who is doing what, when the team has agreed to meet, etc. Each team will complete one contract per group take-home exam, submit via Carmen, and update it as needed. By signing the Group Contract, team members indicate their intention to adhere to the written plan and to act in accord with the stated behaviors and responsibilities. **All exam work must be original.**

Prior to release of the first group take-home exam, your instructor will provide guidance in class regarding 1) expectations for exam answers, 2) how to function as a team member, and 3) when and how to contact him if an unexpected problem arises that the group cannot solve independently. The class period immediately following the deadline for submitting the final version of the exam answers is devoted to discussing the exam (see syllabus for exam

dates and deadlines).

**Dissension Document for Group take-home exams:** Any student may opt to disagree with their team's answer to a given exam question. If a student disagrees with the team's answer and provides the CORRECT ANSWER, said student will earn the appropriate points (and the team will not). If a student dissents and provides an INCORRECT answer, the student will lose points accordingly.

**How to dissent from a group exam answer:** The student uses the Dissent template (posted on Carmen) to provide a brief but complete justification for an alternate answer and posts the document to the team's Carmen site. If more than two students decide to dissent and wish to provide the same answer, it may be posted as a single dissension, but the document must clearly indicate the names of the dissenting students.

**Self- and peer-evaluation forms.** Templates are posted at Carmen and list the key elements of good teamwork. Upon completion of a given take-home exam, each student will fill out and submit to Carmen one self-evaluation form, and one peer-evaluation form per team member. *The completed forms are confidential; only your instructor will have access to them.*

## Final exam

Description: The final exam will be completed individually outside of class and the assigned final period. This exam will test your cumulative knowledge gained in the course regarding the techniques used in evaluating evidence as well as your ability to interpret various sources of scientific information.

## Late assignments

Without an excused absence, late assignments will be subject to a 10% grade deduction during the first two hours, with additional 10% deductions accruing for every hour it is late. Due to the discussion nature of the exams in class, no late exams will be accepted unless there is a validated excused absence.

## Instructor feedback and response time

Below is my intended availability throughout the course. (Remember that you can call **614-688-4357(HELP)** at any time if you have a technical problem.)

- **Grading and feedback:** For weekly assignments, you can generally expect feedback within **7 days or less**.
- **Email:** I will reply to emails within 24 hours on weekdays (M-F).

## Grading Scale

93-100:	A
90-92.9:	A-
87-89.9:	B+
83-86.9:	B
80-82.9:	B-
77-79.9:	C+
73-76.9:	C
70-72.9:	C-
67-69.9:	D+
60-66.9:	D
<60:	E

## Course Outline:

Date	Topic	Readings/Assignments
January 10	Welcome, nature of the course, and building community	
January 12	Science – what is it and why should we trust it?	Worksheet 1
January 17	Genetics, the building blocks of biology and medicine	
January 19	Evaluating scientific credibility & expertise; The CRAAP test	Worksheet 2
January 24	Evaluating scientific credibility & expertise	
January 26	Who Discovered Evolution?	Video & Worksheet 3
January 31	Evolution – the Connective Tissue of Biology	
February 2	Evolution – the Connective Tissue of Biology	Worksheet 4
February 7	Evolution – the Connective Tissue of Biology	Tyson – Chapter 3
February 9	Evolution – the Connective Tissue of Biology	
February 14	Evolution – the Connective Tissue of Biology	Worksheet 5
February 16	Infectious Disease and Public Health	
February 21	Infectious Disease and Public Health	
February 23	Infectious Disease and Public Health	Worksheet 6
February 28	Infectious Disease and Public Health	

March 1	Exam 1 posted on Carmen	
March 2	On the Origin of Food	Worksheet 7 Diamond (2002)
March 7	A Brief History of Pesticides	
March 9	GMO – Friend or Foe? Exam 1 Answers <b>DUE</b> by 9 AM Discuss exam in class	
March 14	No class – SP break	
March 16	No class – SP break	
March 21	Hunger in Our World (and Backyard)	Tyson Ch. 6 Worksheet 8
March 23	Law and Order	Tyson Ch. 9
March 28	Gender & Identity	Worksheet 9 Tyson Ch. 7
March 30	Gender & Identity	
April 4	Color & Race	Worksheet 10 Tyson Ch. 8
April 6	Color & Race	
April 7	Exam 2 posted on Carmen	
April 11	Cancer	Worksheet 11
April 13	Cancer Exam 2 Answers <b>DUE</b> by 9 AM Discuss exam in class	
April 18	Climate Change	Worksheet 12
April 20	Climate Change	
April	Final Exam available on Carmen	
May	Final Exam due by 12 noon	



## Academic Misconduct

Academic integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other educational and scholarly activities. Thus, The Ohio State University and the Committee on Academic Misconduct (COAM) expect that all students have read and understand the University's Code of Student Conduct, and that all students will complete all academic and scholarly assignments with fairness and honesty. Students must recognize that failure to follow the rules and guidelines established in the University's Code of Student Conduct and this syllabus may constitute "Academic Misconduct."

The Ohio State University's Code of Student Conduct (Section 3335-23-04) defines academic misconduct as: Any activity that tends to compromise the academic integrity of the University or subvert the educational process. Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination. Ignorance of the University's Code of Student Conduct is never considered an excuse for academic misconduct, so I recommend that you review the Code of Student Conduct and, specifically, the sections dealing with academic misconduct.

If I suspect that a student has committed academic misconduct in this course, I am obligated by University Rules to report my suspicions to the Committee on Academic Misconduct. If COAM determines that you have violated the University's Code of Student Conduct (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the University.

If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact me.

## Safe and Healthy Buckeyes

Health and safety requirements: All students, faculty and staff should stay up to date on all university safety and health guidance (<https://safeandhealthy.osu.edu/>). If you are ill, please contact me and do not come to class in-person. If you are concerned about the possibility of being infectious to others with any respiratory concerns in this season of sniffles, sneezes, coughs, colds, flu, and covid, please wear a mask if you are in class. You should feel free to wear a mask at all times should you prefer to do so.

## Inclement Weather Guidelines

Should in-person classes be canceled, we will meet virtually via CarmenZoom during our regularly scheduled time. I will share any updates via Carmen. That's right, the age of "snow days" has officially succumbed to technology.

## Disability Accommodations

The university strives to make all learning experiences as accessible as possible. Students seeking to request COVID-related accommodations may do so through the university's request process, managed by Student Life Disability Services. If you anticipate or experience academic barriers based on your disability (including mental health, chronic, or temporary medical conditions), please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with Student Life Disability Services. After registration, arrange with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. SLDS contact information: [slds@osu.edu](mailto:slds@osu.edu); 614-292-3307; <https://slds.osu.edu/>; 098 Baker Hall, 113 W. 12th Avenue.

## Counseling and Consultation Services/Mental Health

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing. If you or someone you know are suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available on campus via the Office of Student Life Counseling and Consultation Services (CCS) by visiting [ccs.osu.edu](https://ccs.osu.edu) or calling (614) 292- 5766. CCS is located on the 4th Floor of the Younkin Success Center and 10th Floor of Lincoln Tower. You can reach an on-call counselor when CCS is closed at (614) 292-5766 and 24 hour emergency help is also available through the 24/7 National Prevention Hotline at 1-(800)-273-TALK or at [suicidepreventionlifeline.org](https://suicidepreventionlifeline.org).

## Creating an environment free of harassment, discrimination, and sexual misconduct

The Ohio State University is committed to building and maintaining a community to reflect diversity and to improve opportunities for all. All Buckeyes have the right to be free from harassment, discrimination, and sexual misconduct. Ohio State does not discriminate on the basis of age, ancestry, color, disability, ethnicity, gender, gender identity or expression, genetic information, HIV/AIDS status, military status, national origin, pregnancy (childbirth, false pregnancy, termination of pregnancy, or recovery therefrom), race, religion, sex, sexual orientation, or protected veteran status, or any other bases under the law, in its activities, academic programs, admission, and employment. Members of the university community also have the right to be free from all forms of sexual misconduct: sexual harassment, sexual assault, relationship violence, stalking, and sexual exploitation.

To report harassment, discrimination, sexual misconduct, or retaliation and/or seek confidential and non-confidential resources and supportive measures, contact the Office of Institutional Equity:

1. Online reporting form at [equity.osu.edu](https://equity.osu.edu),

2. Call 614-247-5838 or TTY 614-688-8605,

3. Or Email [equity@osu.edu](mailto:equity@osu.edu)

The university is committed to stopping sexual misconduct, preventing its recurrence, eliminating any hostile environment, and remedying its discriminatory effects. All university employees have reporting responsibilities to the Office of Institutional Equity to ensure the university can take appropriate action:

- All university employees, except those exempted by legal privilege of confidentiality or expressly identified as a confidential reporter, have an obligation to report incidents of sexual assault immediately.
- The following employees have an obligation to report all other forms of sexual misconduct as soon as practicable but at most within five workdays of becoming aware of such information: 1. Any human resource professional (HRP); 2. Anyone who supervises faculty, staff, students, or volunteers; 3. Chair/director; and 4. Faculty member.

This course adheres to [The Principles of Community](#) adopted by the College of Food, Agricultural, and Environmental Sciences. For additional information on Diversity, Equity, and Inclusion in CFAES, contact the CFAES Office for Diversity, Equity, and Inclusion (<https://equityandinclusion.cfaes.ohiostate.edu/>). If you have been a victim of or a witness to a bias incident, you can report it online and anonymously (if you choose) at <https://studentlife.osu.edu/bias/report-a-biasincident.aspx>.