

PHY 4970 – UNDERGRADUATE SEMINAR

COURSE INFORMATION

PHY 4970, CRN 40368, 3 Credit Hours

Term: Fall 2020

Meeting days/time: R 12:00-2:50 PM

Course (catalog) description: Weekly colloquia describing research at the forefront of physics. Requires a written report. Satisfies the university general education requirement for the Capstone experience. Satisfies the university general education requirement for a Writing Intensive course in the Major. Prerequisite for writing intensive: completion of the university writing foundation requirement.

Prerequisites: permission of instructor and WRT 1060 or equivalent with a grade of (C) or higher.

Course format: Online

PROFESSOR INFORMATION

Name: Dr. Vasyl Tyberkevych

Office location: HHS 274

My student hours (office hours) are T 12:00-2:00 PM or by appointment.

You can reach me at (248) 370-3421 or at tyberkev@oakland.edu

Email policy: Email is the best way to contact me. I will make every effort to return your email within 24 hours.

ONLINE MEETINGS

- Online meetings for assignments review, consultations, etc., will be conducted using Google Meet videoconference system
- The permanent address of Google Meet conference for this course is <https://meet.google.com/gzz-erjg-ucz>
- The meeting time is 1:00-2:50 PM (after the end of colloquium) unless otherwise was agreed beforehand

GENERAL EDUCATION LEARNING OUTCOMES:

This course satisfies the university General Education requirement in the Capstone Experience area. The learning outcomes for Capstone Experience courses state that the students will demonstrate:

- appropriate uses of a variety of methods of inquiry and a recognition of ethical considerations that arise
- the ability to integrate the knowledge learned in general education and its relevance to the student's life and career

This capstone course builds upon the Natural Science and Technology Knowledge (NSTN) area and includes the crosscutting capacities of Critical Thinking and Effective Communication.

This requires that the students will be able to analyze and evaluate relevant information, alternative points of view; synthesize information in order to arrive at substantial conclusions; convey ideas, arguments, or analyses clearly and cogently in written form. The course also satisfies the Writing Intensive requirement in the Major (WIM).

COURSE GOALS AND OUTCOMES

In this course the students will integrate previous knowledge from several physics courses and see how this knowledge is applied to many research areas.

- The students will come to appreciate a variety of methods used in research (for instance, experimental, theoretical, and computational)
- The students will observe how research scientists use critical thinking to assess the validity and significance of their research
- In the process of attending these seminars, the students will become aware of the ethical considerations that arise in research

Upon completion of this course, the students will have been introduced to several of the most exciting areas of research in physics. In particular, the students will be able to:

- compare the different methods of physics research
- identify the limitations inherent in each of these methods
- explain how these methods interact
- write several assignments that are discipline-specific

COLLOQUIA

The colloquia are not meant to form an integrated theme, but rather are an eclectic mix of several areas of research at the forefront of physics. Emphasis will be given to areas of research in which the department has expertise: medical physics, condensed matter physics, and gravitational physics.

WRITING ASSIGNMENTS

Eight writing assignments are described below. Each will be reviewed by the instructor, who will provide suggestions for revisions. A final grade will be given to the revised assignment.

The writing assignments are worth 80 % of the final grade

ATTENDANCE

Except in cases where the university's Excused Absence Policy applies, attendance to all seminars is expected. Please contact the instructor as soon as possible if you are prevented you from attending a seminar.

Attendance is worth 10 % of the final grade

PARTICIPATION

The students are encouraged to participate in the Questions & Answers session that follows each seminar. Although the subjects covered by the seminars are generally not familiar to the students, they are meant to stimulate discussion and critique.

Participation is worth 5 % of the final grade

PLAGIARISM

The students will complete the OU library plagiarism tutorial (https://research.library.oakland.edu/sp/subjects/tutorial.php?faq_id=35).

Completing the tutorial is worth 5 % of the final grade

COURSE GRADE

The course grade will be calculated the following way:

Writing Assignments	80%
Attendance	10%
Participation	5%
Plagiarism Tutorial	5%

GRADING SCALE

LETTER GRADE	MINIMUM %	NUMERICAL EQUIVALENT
A	95	4.0
A-	90	3.7
B+	85	3.3
B	80	3.0
B-	75	2.7
C+	70	2.3
C	65	2.0
C-	60	1.7
D+	55	1.3
D	50	1.0
F	< 50	0.0

ASSIGNMENTS

Below are eight writing assignments. Do no more than one assignment for each colloquium. Each assignment is due one week after the colloquium (except for the last colloquium the assignment must be turned in by the next Monday). You can choose which colloquium for which assignment.

ABSTRACT

Write a 250-word (maximum) description of the colloquium research, as if writing the abstract for a journal article. Although you do not have to use headings or labels, the abstract should be organized as Introduction, Methods, Results, Discussion, Conclusion.

PERSONAL STATEMENT

You are applying to graduate school at the institution of the colloquium speaker. Write a personal statement to go along with your application. Follow the instructions at <https://mitcommlab.mit.edu/broad/commkit/graduate-school-personal-statement>.

POSTER SESSION

Create a poster session about the colloquium talk. Use PowerPoint or similar software. Contact the instructor for a PowerPoint poster template. You do not have to spend money to print out a copy of the poster.

EQUATIONS

Summarize part of the colloquium talk, being sure to include at least five equations. Read David Mermin's essay "What's Wrong with These Equations" (<https://physicstoday.scitation.org/doi/10.1063/1.2811173>) and follow his rules of integrating equations with text. Do not write an intro or conclusion, just part of the methods or results that requires equations. One page maximum. Use the equation editor in MS Word or LaTeX.

PEER REVIEW

Download a journal article based on the research described at the colloquium, and write a critique of the research, as if providing a journal with a peer-review of a manuscript. Include a section of general comments where you assess the importance and correctness of the study, and a section of specific comments where you suggest particular changes to the manuscript.

CITATION

Select a publication published by the colloquium speaker, and look up how many times it has been cited in the literature, using both Google Scholar and the Web of Science. Determine the "h-index" of the colloquium speaker. Write a sentence or two excerpts from a hypothetical review article in which you cite this paper, showing how to properly cite it in the text and how it would be included in the list of references at the end of the paper, using the style of Physical Review Letters. Write another sentence or two excerpt (not the same as the first) in which you cite the paper in the text and reference it at the end using the style of Applied Physics Letters (their "alphabetical" style citing in text by author name and year; often called the "Harvard Style").

RESEARCH PROPOSAL

Write a research proposal to extend the research described during the colloquium. The proposal should follow the guidelines of OU's Provost Undergraduate Research Award (<https://www.oakland.edu/research/student-funding/>). Do not worry about a reference letter or regulatory compliance, just follow the instructions for the student application.

WRITING

Read Part 1 (about 50 pages) of On Writing Well by William Zinsser (find it online at <https://archive.org/details/OnWritingWell>, borrow it from the library, or buy it). Download an article written by the colloquium speaker, and edit it using Zinsser's suggestions so it is better written. You can do this assignment either on paper (red ink), in MS Word (using track changes) or on a pdf (using sticky notes in the pdf reader). Make at least twenty edits.

GRADING RUBRIC FOR WRITING ASSIGNMENTS

Grade	Organization	Spelling & Grammar	Content	Critique
A	The assignment is written very clearly and well organized	Impeccable grammar, spelling and punctuation	All the requirements of the assignment are met	Excellent and all revisions are made
B	The assignment is written fairly clearly and fairly organized	Substantially free of grammar errors, good spelling and punctuation	Almost all the requirements of the assignment are met	Very Good and almost all revisions are made
C	The assignment is written adequately and reasonably organized	Few grammar errors and/or spelling or punctuation issues	Most of the requirements of the assignment are met	Good and most of the revisions are made
D	The assignment is not clear and poorly organized	Multiple grammar errors are present, poor spelling or punctuation	Few of the requirements of the assignment are met	Poor and few of the revisions are made

GRADING RUBRIC FOR PARTICIPATION

Grade	Participation
A	Excellent level of engagement and participation. Complete initiative in introducing meaningful questions and criticism at the end of the seminar
B	Good level of engagement and participation. Regular contributions to the discussion
C	Limited level of engagement and participation. Limited contributions to the discussion
D	Little or no participation or contribution to the discussion

USING MOODLE AND OTHER TECHNOLOGIES

USING MOODLE

- Some of the materials associated with class may be disseminated through Moodle. Students should ensure they have access to Moodle (moodle.oakland.edu).

TECHNOLOGY BACK-UP PLAN

- In the event that your computer crashes or internet goes down, it is essential to have a “backup plan” in place where you are able to log in using a different computer or travel another location that has working internet.
- Any files you intend to use for your course should be saved to a cloud solution (Google Drive, Dropbox, etc.) and not to a local hard drive, USB stick or external disk. Saving files this way guarantees your files are not dependent on computer hardware that could fail.

TECHNOLOGY HELP

- For help using Moodle, use the Get Help link at the top of the Moodle page (moodle.oakland.edu).
- For access to technology and in-person assistance, call or visit the [Student Technology Center](https://www.oakland.edu/stc/) (Link to Student Technology Center: <https://www.oakland.edu/stc/>).
- For general technology assistance, consult the [OU Help Desk](https://www.oakland.edu/helpdesk/) (Link to Help Desk: <https://www.oakland.edu/helpdesk/>).

RESPECT RULES OF NETIQUETTE

- Respect your peers and their privacy.
- Use constructive criticism.
- Refrain from engaging in inflammatory comments.

CLASSROOM AND UNIVERSITY POLICIES

CLASSROOM BEHAVIOR

1. **ACADEMIC CONDUCT POLICY.** All members of the academic community at Oakland University are expected to practice and uphold standards of academic integrity and honesty. Academic integrity means representing oneself and one’s work honestly. Misrepresentation is cheating since it means students are claiming credit for ideas

or work not actually theirs and are thereby seeking a grade that is not actually earned. Following are some examples of academic dishonesty:

- a. **Cheating.** This includes using materials such as books and/or notes when not authorized by the instructor, copying from someone else's paper, helping someone else copy work, substituting another's work as one's own, theft of exam copies, falsifying data or submitting data not based on the student's own work on assignments or lab reports, or other forms of misconduct on exams.
- b. **Plagiarizing the work of others.** Plagiarism is using someone else's work or ideas without giving that person credit; by doing this, students are, in effect, claiming credit for someone else's thinking. Both direct quotations and paraphrases must be documented. Even if students rephrase, condense or select from another person's work, the ideas are still the other person's, and failure to give credit constitutes misrepresentation of the student's actual work and plagiarism of another's ideas. Buying a paper or using information from the World Wide Web or Internet without attribution and handing it in as one's own work is plagiarism.
- c. **Falsifying records** or providing misinformation regarding one's credentials.
- d. **Unauthorized collaboration** on computer assignments and unauthorized access to and use of computer programs, including modifying computer files created by others and representing that work as one's own.

For more information, review OU's [Academic Conduct Regulations](#). (Link to Academic Conduct Regulations:

<https://www.oakland.edu/deanofstudents/policies/>)

2. **BEHAVIORAL CODE OF CONDUCT.** Appropriate behavior is required in class and on campus. Disrespectful, disruptive and dangerous behavior are not conducive to a positive learning environment and may result in consequences. Core Standards for Student Conduct at OU includes
 - a. **Integrity.** See academic conduct policy points above.
 - b. **Community.** Policies regarding disruptive behavior, damage and destruction, weapons, and animals.
 - c. **Respect.** Policies regarding harassment, hazing, and [sexual misconduct](#) (Link to Sexual Misconduct policy: <https://www.oakland.edu/policies/health-and-safety/625/>)
 - d. **Responsibility.** Policies regarding alcohol, drugs, and other substances

See the [Student Code of Conduct](#) for details. (Link to Student Code of Conduct: <https://www.oakland.edu/deanofstudents/student-code-of-conduct/>)

ACCOMMODATION AND SPECIAL CONSIDERATIONS

Oakland University is committed to providing everyone the support and services needed to participate in their courses. Students with disabilities who may require special accommodations should make an appointment with campus [Disability Support Services](#) (DSS). If you qualify for accommodations because of a disability, please submit to your professor a letter from Disability Support Services in a timely manner (for exam accommodations provide your letter at least one week prior to the exam) so that your needs can be addressed. DSS determines accommodations based on documented disabilities. Contact DSS at 248-370-3266 or by e-mail at dss@oakland.edu.

For information on additional academic support services and equipment, visit the [Study Aids](#) webpage of Disability Support Services website. (Link to Disability Support Services website: <https://www.oakland.edu/dss/>)

MENTAL HEALTH AND WELL-BEING

Oakland University is committed to advancing the mental health and well-being of its students. If you or someone you know is feeling overwhelmed, depressed, and/or in need of support, services are available. For help, contact The OU Counseling Center at Graham Health at (248) 370-3465. Student resources can also be found at the [Dean of Students](#) website by clicking on Student Health & Safety Resources. (URL: <http://www.oakland.edu/deanofstudents>)

ATTENDANCE POLICY

Attendance is expected but not required. There are no scheduled makeup exams and no makeup assignments will be given. If you must miss a class due to an emergency, notify me as soon as possible, but not later than 24 hours after the missed class.

EXCUSED ABSENCE POLICY

This policy for university excused absences applies to participation as an athlete, manager or student trainer in NCAA intercollegiate competitions, or participation as a representative of Oakland University at academic events and artistic performances approved by the Provost or designee. A student must notify and make arrangements with the professor in advance. For responsibilities and procedures see [Academic Policies and Procedures](#). (Link to Academic Policies and Procedures: <https://www.oakland.edu/provost/policies-and-procedures/>)

RELIGIOUS OBSERVANCES

Student should discuss with professor at the beginning of the semester to make appropriate arrangements. Although Oakland University, as a public institution, does not observe religious holidays, it will continue to make every reasonable effort to help students

avoid negative academic consequences when their religious obligations conflict with academic requirements. See The [OU Diversity Calendar](#) for more information. (Link to calendar: <https://www.oakland.edu/diversity/calendar/>)

PREFERRED NAME AND PRONOUN

If you do not identify with the name that is listed with the registrar's office, please notify me so that I may appropriately amend my records. In addition, if you prefer to go by a different pronoun, please inform me. For more information including a preferred first name on university records please review OU's [Preferred Name Policy](#) (URL: <https://www.oakland.edu/uts/common-good-core-resources/name-services/>)

SEXUAL MISCONDUCT

Faculty and staff are responsible for creating a safe learning environment for our students, and that includes a mandatory reporting responsibility if students share information regarding sexual misconduct/harassment, relationship violence, or information about a crime that may have occurred on campus with the University. In such cases, the professor will report information to the campus' Title IX Coordinator (Chad Martinez, chadmartinez@oakland.edu or 248-370-3496). You can report such incidents to the Dean of Students Office directly. Students who wish to speak to someone confidentially can contact the OU Counseling Center at 248-370-3465. Additionally, students can speak to a confidential source off-campus 24 hours a day by contacting Haven at 248-334-1274. The [Dean of Students website](#) provides more information on your options and support services. (<https://www.oakland.edu/deanofstudents/sexual-assault-and-violence-initiative/students/>)

ADD/DROPS

As a student, university policy officially gives you the responsibility to add and drop courses. Put in your calendar [deadline dates for dropping courses](#) (even if you think it won't be necessary), and consult the [Drop or Not Guide](#) to make a well-informed decision before dropping a course. (<https://www.oakland.edu/registrar/registration/dropornot/>)

FACULTY FEEDBACK: OU EARLY ALERT SYSTEM

As a student in this class, you may receive "[Faculty Feedback](#)" in your OU e-mail if your professor identifies areas of concern that may impede your success in the class. Faculty Feedback typically occurs during weeks 2-5 of the Fall and Winter terms, but may also be given later in the semester and more than once a semester. A "Faculty Feedback" e-mail will specify the area(s) of concern and recommend action(s) you should take. Please remember to check your OU email account regularly as that is where it will appear. This system is to provide early feedback and intervention to support your success. (Link to Faculty Feedback for students: <https://www.oakland.edu/advising/faculty-feedback/>)

EMERGENCY PREPAREDNESS

In the event of an emergency arising on campus, the Oakland University Police Department (OUPD) will notify the campus community via the emergency notification system. The professor of your class is not responsible for your personal safety, so therefore it is the responsibility of each student to understand the evacuation and “lockdown” guidelines to follow when an emergency is declared. These simple steps are a good place to start:

- OU uses an emergency notification system through text, email, and landline. These notifications include campus closures, evacuations, lockdowns and other emergencies. Register for these notifications at oupolice.com.
- Based on the class cellphone policy, ensure that one cellphone is on in order to receive and share emergency notifications with the professor in class.
- If an emergency arises on campus, call the OUPD at (248) 370-3331. Save this number in your phone, and put it in an easy-to-find spot in your contacts.
- Review protocol for evacuation, lockdown, and other emergencies via the classroom’s red books (hanging on the wall) and oupolice.com/emergencies.
- Review with the professor and class what to do in an emergency (evacuation, lockdown, snow emergency).

Violence/Active Shooter: If an active shooter is in the vicinity, call the OUPD at (248) 370-3331 or 911 when it is safe to do so and provide information, including the location and number of shooter(s), description of shooter(s), weapons used and number of potential victims. Consider your options: [Run, Hide, or Fight](#).