

Physics 518 - Advanced Topics (Modern Optics)

Syllabus - Spring 2018

Instructor: Dr. Michael Goggin

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Please check my webpage for the latest info.

Office Hours: T & Th 12-1 PM

T 4:30-5:30 PM & Th 4:30-5:50 PM

W 3:30-4:20 PM

Also by appointment

Web Page: <http://mgoggin.sites.truman.edu>

Required Texts: *Introduction to Modern Optics, 2nd Ed.* by Grant Fowles

Quantum Optics: An Introduction by Mark Fox

From the Catalog: An in-depth study of selected science topics presented under formal classroom organization (not intended for individualized study).

Note: That was not very helpful but it is always a good idea to have the catalog description on the syllabus.

General Information: There is much more information on optics than can be covered in one semester but that is all the time we have. We are using two texts because there is no single text that has the appropriate coverage. Fowles text on modern optics is no longer modern and Fox's text on quantum optics leaves out some of the details of basic modern optics. We will begin with a review of basic optics and then move on to some more advanced topics. How fast we go will depend on your optics background. We will spend considerable time on polarization and quantum optics as well as coherence and interference. I will try to give you a good theoretical *and practical* understanding of optics and optical elements. The lectures will contain additional information that is not in the texts; you are responsible for this information as well. To be clear, you will be responsible for all course material: what is in the assigned reading from the texts and the lecture material.

We will also perform several experiments. The experiments will count toward your homework grade as a double homework. I have several experiments in mind but the exact number we do will depend on how things go in the lecture portion of the class.

Grades: Your grade will be determined from the best two scores on three "1-hour" exams (25% each), homework (20%), and a comprehensive final exam (30%). You may not drop the homework grade or the final exam. Your final grade will be based on a straight scale: 90-100% = A, 80-89.9% = B, 70-79.9% = C, 60-69.9% = D, and 0-59.9% = F.

Exams: Exams will be two-part: an in-class part to test your "walking around" knowledge of the material. The second part will be take-home. The take-home part will consist of challenging problems that test your ability to synthesize the information and extend it to new systems.

Academic Honesty: Students are expected to do their own work. While it is ok to work on the homework together, it is not ok to simply copy another student's homework. Students are expected to work alone on exams and quizzes without the use of any outside resources except those noted by me at the time of the exam. Students are expected to be honest in their dealings with the professor. A student found to have not upheld these expectations is subject to failing this course and being reported to the Dean of Student Affairs and the Vice President for Academic Affairs.

Office Hours: Office hours are not the only times I am available for help. My listed office hours just indicate the times I guarantee I will be in or near my office (MG 3172) or my lab (MG 3147). I encourage you to come and ask questions when you need help. If you cannot make it during the regular office hours, then please schedule a time to meet with me. My class schedule is posted on my door and on the web. Please check the web for the latest version.

Standard University Policies

Disability Services: If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and the Disability Services office (x4478) as soon as possible. For more info, see <http://disabilityservices.truman.edu/>

Emergency Procedures: In each classroom on campus, there is a poster of emergency procedures explaining best practices in the event of an active shooter/hostile intruder, fire, severe weather, bomb threat, power outage, and medical emergency. This poster is also available as a PDF at this link: <http://police.truman.edu/files/2015/12/Emergency-Procedures.pdf> . Students should be aware of the classroom environment and note the exits for the room and building. For more detailed information about emergency procedures, please consult the Emergency Guide for Academic Buildings: <http://police.truman.edu/emergency-procedures/academic-buildings/>

This six-minute video provides some basic information on how to react in the event there is an active shooter in your location: <http://police.truman.edu/emergency-procedures/active-shooter/active-shooter-preparation>

Truman students, faculty, and staff can sign up for the TruAlert emergency text messaging service via TruView. TruAlert sends a text message to all enrolled cell phones in the event of an emergency at the University. To register, sign in to TruView and click on the Truman tab. Click on the registration link in the lower right of the page under the Update and View My Personal Information channel on the Emergency Text Messaging or Update Emergency Text Messaging Information link. During a campus emergency, information will also be posted on the TruAlert website <http://trualert.truman.edu/>.

Title IX: Truman State University and its faculty are committed to supporting our students and fostering an environment that is free from bias, discrimination, and harassment. If you have encountered any form of sexual misconduct (e.g., sexual assault, sexual harassment, stalking, domestic or dating violence), we encourage you report this to the University. If you speak with a faculty member about an incident of misconduct, that faculty member is a mandated reporter and must notify Truman State University's Title IX Coordinator, Jamie Ball (Violette Hall 1308, jball@truman.edu, 785-4354) and share the basic facts of your experience with her. The Title IX Coordinator will then be available to assist you in understanding all of your options and in connecting you with resources both on and off campus. If you would prefer to have a confidential conversation about an experience, the counselors at University Counseling Services are NOT mandated reporters and they can be reached at 660-785-4014. For after-hours crisis counseling, call 660-665-5621. For more information regarding Trumans policies and procedures relating to any form of gender discrimination, please see <http://eoaa.truman.edu/university-non-discrimination-policy/> and <http://eoaa.truman.edu/complaint-reporting-resolution-procedure/>.

Academic Dishonesty: The General Catalog states: Students are expected to do their own academic work. Any student involved in cheating on a paper, an examination or in any other form of academic dishonesty is subject to disciplinary action, including suspension or expulsion from the class, the students academic program, or the University.

Serious cases of academic dishonesty are reported by the faculty member to his or her Department Chair and to his or her Dean, who may take additional disciplinary action against the dishonest student, including suspension or expulsion from classes in the School. The Dean reports the dishonesty to the Vice President for Academic Affairs, who may also report it to the Vice President for Student Affairs. The Dean may also report the dishonesty to the School in which the dishonest student is enrolled as a major; the Dean of this School may suspend or expel the student from the academic program in the major. The Dean of Students may also suspend or expel the student from the University as outlined in the Student Conduct Code for incidents of academic dishonesty. More information

can be found in the General Catalog (http://catalog.truman.edu/content.php?catoid=13&navoid=625#Academic_Dishonesty) and the Student Conduct Code Section 8.050.01 (<http://www.truman.edu/wp-content/uploads/2014/02/CHAPTER-8-REVISED-August-1-2015.pdf>)

You should add information on what you consider to be Academic Dishonesty in your course.

Attendance Policy: The General Catalog states: A student is expected to be present at all classes. Regular class attendance is necessary in order for a student to achieve the desired standard of academic achievement. Irregular attendance normally results in lower levels of achievement. Students are therefore expected to contact instructors as soon as possible when an absence occurs.

More information can be found in the General Catalog: [://catalog.truman.edu/content.php?catoid=13&navoid=625#Attendance_Policy](http://catalog.truman.edu/content.php?catoid=13&navoid=625#Attendance_Policy)