PHYS 335 – Advanced Physics Lab

COURSE SYLLABUS: Fall 2025

INSTRUCTOR INFORMATION

Instructor: Dr. Heungman Park (Associate professor in Physics and Astronomy)
Office Location: Science Building room 240
Office Hours: Tuesday, Thursday: 11:00 AM - 12:00 PM, Wed: 9:00 - 12:00 PM, or by appointment
Office Phone: 903-886-8654
Fax: 903-886-5480 (Department of Physics and Astronomy)
University Email Address: heungman.park@etamu.edu
Preferred Form of Communication**:** email
Communication Response Time: within 48 hours

COURSE INFORMATION

Materials – Textbooks, Readings, Supplementary Readings

Textbook(s) Required: none
Software Required: none
Optional Texts and/or Materials: none

Course Description

An introduction to the equipment and techniques of experimental physics. Experiments are selected from a wide range of topics in fundamental and applied physics. Research-grade equipment is utilized in many of these experiments. Examples of experiment topics include:

- The Franck-Hertz experiment demonstrating the quantum nature of atomic energy levels,
- Millikan's oil drop experiment for measuring the charge of the electron,
- Oliver Lodge's experiment on electromagnetic wave propagation,
- Nuclear radioactivity and radiation detection,
- Plasma states of dilute atomic and molecular gases, and their quantized light emission,
- Studies of light-matter interactions using quantized light absorption with UV-Vis and FTIR measurements,
- Photoluminescence spectroscopy for investigating quantum mechanical excitation and recombination processes.
- Semiconductor physics, P-N junctions, and applications.

Student Learning Outcomes

- Demonstrate the ability to design and conduct an experimental investigation, analyze and interpret experimental data, including detailed error analysis.
- Demonstrate skills used in experiments including: instrumentation, computer programming, data visualization and analysis software, and the use of the scientific literature.
- Demonstrate the ability to communicate an experimental investigation in both written and verbal form.

COURSE REQUIREMENTS

Minimal Technical Skills Needed

None

Instructional Methods

The course focuses on intensive lab activity in advanced physics topics. Experimental guidelines are provided for each lab. Students will learn how to use modern experimental instruments and understand the underlying physics concepts of the experiments.

Student Responsibilities or Tips for Success in the Course

Students must check the course website and perform each lab. Presentations and lab reports will be assigned.

GRADING

Final grades in this course will be based on the following scale:

A = 90% - 100%

B = 80% - 89.9%

C = 70% - 79.9%

D = 60% - 69.9%

F = 50% or Below

* A minimum of 70% attendance is required for a grade of A,B,C,D.

Grading Procedure

- Attendance and lab activity participation: 10 %
- Presentations: 10 %
- Lab reports: 50 %
- A comprehensive exam: 30 %

* The scales can be adjusted by the instructor. The final grading policy will be announced before the final exam. Students with attendance below 70% will receive a grade of F, regardless of assignment and test scores.

TECHNOLOGY REQUIREMENTS

LMS

All course sections offered by East Texas A&M University have a corresponding course shell in the myLeo Online Learning Management System (LMS). Below are technical requirements

LMS Requirements:
https://community.brightspace.com/s/article/Brightspace-Platform-Requirements

LMS Browser Support:
https://documentation.brightspace.com/EN/brightspace/requirements/all/browser_support.htm

YouSeeU Virtual Classroom Requirements:
https://support.youseeu.com/hc/en-us/articles/115007031107-Basic-System-Requirements

ACCESS AND NAVIGATION

You will need your campus-wide ID (CWID) and password to log into the course. If you do not know your CWID or have forgotten your password, contact the Center for IT Excellence (CITE) at 903.468.6000 or helpdesk@etamu.edu**.**

Note: Personal computer and internet connection problems do not excuse the requirement to complete all course work in a timely and satisfactory manner. Each student needs to have a backup method to deal with these inevitable problems. These methods might include the availability of a backup PC at home or work, the temporary use of a computer at a friend's home, the local library, office service companies, Starbucks, an ETAMU campus open computer lab, etc.

COMMUNICATION AND SUPPORT

If you have any questions or are having difficulties with the course material, please contact your Instructor.

Technical Support

If you are having technical difficulty with any part of Brightspace, please contact Brightspace Technical Support at 1-877-325-7778. Other support options can be found here:

https://community.brightspace.com/support/s/contactsupport

Interaction with Instructor Statement

The instruction will respond within 24 hours by email. Each graded assignment and test will be returned within a week.

COURSE AND UNIVERSITY PROCEDURES/POLICIES

Course Specific Procedures/Policies

General Classroom
Students are expected to be on time and present for all class meetings. If an emergency results in an absence, the student should contact the instructor as soon as possible informing the instructor of the emergency and inquiring about ways to make up for the missed class. The instructor will make a judgment on how to handle the situation. Possible reasons for excused absence are listed in the "Student's Guidebook" under class attendance policy. Attendance and tardy records will be maintained and both may result in deductions from your overall grade. Five unexcused absences will automatically result in a failing grade.

Syllabus Change Policy

The syllabus is a guide. Circumstances and events, such as student progress, may make it necessary for the instructor to modify the syllabus during the semester. Any changes made to the syllabus will be announced in advance.

University Specific Procedures

Student Conduct

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. The Code of Student Conduct is described in detail in the Student Guidebook.
http://www.tamuc.edu/Admissions/oneStopShop/undergraduateAdmissions/studentGuidebook.aspx

Students should also consult the Rules of Netiquette for more information regarding how to interact with students in an online forum: https://www.britannica.com/topic/netiquette

ETAMU Attendance

For more information about the attendance policy please visit the Attendance webpage and Procedure 13.99.99.R0.01.
http://www.tamuc.edu/admissions/registrar/generalInformation/attendance.aspx

http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/academic/13.99.99.R0.01.pdf

Academic Integrity

Students at East Texas A&M University are expected to maintain high standards of integrity and honesty in all of their scholastic work. For more details and the definition of academic dishonesty see the following procedures:

Undergraduate Academic Dishonesty 13.99.99.R0.03

http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/undergraduates/13.99.99.R0.03UndergraduateAcademicDishonesty.pdf

Graduate Student Academic Dishonesty 13.99.99.R0.10

http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/graduate/13.99.99.R0.10GraduateStudentAcademicDishonesty.pdf

Students with Disabilities-- ADA Statement

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact:

Office of Student Disability Resources and Services
East Texas A&M University
Gee Library- Room 162
Phone (903) 886-5150 or (903) 886-5835
Fax (903) 468-8148
Email: StudentDisabilityServices@etamu.edu
Website: https://www.etamu.edu/student-disability-services/#tamuc-section-212408

Nondiscrimination Notice

East Texas A&M University will comply in the classroom, and in online courses, with all federal and state laws prohibiting discrimination and related retaliation on the basis of race, color, religion, sex, national origin, disability, age, genetic information or veteran status. Further, an environment free from discrimination on the basis of sexual orientation, gender identity, or gender expression will be maintained.

Campus Concealed Carry Statement

Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in East Texas A&M University buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and East Texas A&M Rule 34.06.02.R1, license holders may not carry a concealed handgun in restricted locations.

For a list of locations, please refer to the Carrying Concealed Handguns On Campus document and/or consult your event organizer.

Web url:
http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/34SafetyOfEmployeesAndStudents/34.06.02.R1.pdf

Pursuant to PC 46.035, the open carrying of handguns is prohibited on all East Texas A&M campuses. Report violations to the University Police Department at 903-886-5868 or 9-1-1.

Artificial Intelligence Software Usage Policy

East Texas A&M University acknowledges that there are legitimate uses of Artificial Intelligence, ChatBots, or other software that has the capacity to generate text, or suggest replacements for text beyond individual words, as determined by the instructor of the course.
Any use of such software must be documented. Any undocumented use of such software constitutes an instance of academic dishonesty (plagiarism).
Individual instructors may disallow entirely the use of such software for individual assignments or for the entire course. Students should be aware of such requirements and follow their instructors' guidelines. If no instructions are provided the student should assume that the use of such software is disallowed.
In any case, students are fully responsible for the content of any assignment they submit, regardless of whether they used an AI, in any way. This specifically includes cases in which the AI plagiarized another text or misrepresented sources.
13.99.99.R0.03 Undergraduate Academic Dishonesty

13.99.99.R0.10 Graduate Student Academic Dishonesty

COURSE OUTLINE / CALENDAR

*The schedule is subject to change. All changes will be announced in class.

				Schedule
Week 1	8/25/2025	-	8/29/2025	Introduction and data analysis
Week 2	9/1/2025	-	9/5/2025	Labor Day / Presentation #1
Week 3	9/8/2025	-	9/12/2025	Presentation #2 / Exp 1
Week 4	9/15/2025	-	9/19/2025	Exp 1 / Exp 1
Week 5	9/22/2025	-	9/26/2025	Exp 1 / Exp 1
Week 6	9/29/2025	-	10/3/2025	Exp 2 / Exp 2 (report 1 - formal)
Week 7	10/6/2025	-	10/10/2025	Exp 3 / Exp 3 (report 2 - short)
Week 8	10/13/2025	-	10/17/2025	Exp 3 / Exp 3
Week 9	10/20/2025	-	10/24/2025	Exp 3 / Exp 4
Week 10	10/27/2025	-	10/31/2025	Exp 4 / Exp 5 (report 3 - formal)
Week 11	11/3/2025	-	11/7/2025	Exp 5 / Exp 5 (report 4 - short)
Week 12	11/10/2025	-	11/14/2025	Exp 5 / Exp 5
Week 13	11/17/2025	-	11/21/2025	Exp 6 (report 5 - formal) / Exp 6
Week 14	11/24/2025	-	11/28/2025	**Final presentation 1/** Thanksgiving Break
Week 15	12/1/2025	-	12/5/2025	**Final presentation 2 (report 6 - short)**
Week 16	12/8/2025	-	12/12/2025	**Final week**