



Department of Physics
College of Education
Salahaddin University-Erbil

Subject: Modern Physics Lab.

Course Book: Year 3

Lecturer's name: Dr.Glara Fuad Hasan

Prof. Dr. Waad S., Prof. Dr. Asaad I. ,
Asis Prof. Dr.Hiwa A., M.Twana K.
M. Kadhim J.

Academic Year: 2022-2023

Course Book

1. Course name	Modern Physics Lab.
2. Lecturer in charge	Dr.Glara Fuad Hasan, Prof. Dr. Waad S., Prof. Dr. Asaad I. , Asis Prof. Dr.Hiwa A., M.Twana K. M. Kadhim J.
3. Department/ College	Physics/ Education
4. Contact	e-mail: gelara.hassan@su.edu.krd
5. Time (in hours) per week	Theory: 6 hrs.
6. Office hours	Sunday & Monday: 8:30-12:30
7. Course code	
8. Teacher's academic profile	For finding the teacher's academic profile of the lecturer members of Modern Lab. see the academic staff website by using the following link: https://academics.su.edu.krd/#2
9. Keywords	
10. Course overview:	A laboratory course that explores the foundations of quantum physics through laboratory experiments. The experimental observations provide evidence for the quantization of energy levels and wave-particle duality. Some other experiments illustrate the hall effect in metal and semiconductors.
11. Course objective:	By the end of the course, students will be able to: 1. Recognize the methods of laboratory technique and analysis; 2. Recognize the relationship of experimentation to the growth and development of scientific theories; 3. Describe, discuss, and perform experiments in modern physics; 4. Interpret the results of experiments and demonstrations of physical principles; 5. Prepare a lab report according to accepted norms.
12. Student's obligation	In the lab., the experiments are illustrated through ordinary methods (white blackboards) and discussions.
13. Forms of teaching	Illustration of experiments theory in the first Lab. time. Experiments will be explained by using general discussion each one per week, and individual discussions with students during their experiments.
14. Assessment scheme	final degree will form from: 1. Report per week 2. Presenting an experiment per week for two students 3. Individual discussing students per week 4. General lab. Practice examine. 5. Theory/lab. examination

15. Student learning outcome:

After successful completion of the courses, the students learns:

- The methods of laboratory technique and analysis
- The relationship of experimentation to the growth and development of scientific theories;
- Describe, discuss, and perform experiments in modern physics
- Interpret the results of experiments and demonstrations of physical principles

16. Course Reading List and References:

1. Laboratory Manual
2. Internet resources.

17. The Topics:

Lecturer's name

- a. First semester Experiments:
 1. Microwave Wavelength measurement
 2. Study of Stefan-Boltzmann's law of radiation
 3. Specific charge of electron (e/m₀) measurement
 4. The Study of Electron Diffraction
 5. Single-slit diffraction and Heisenberg's uncertainty principle
 6. Balmer series / Determination of Rydberg's constant
 7. Study of Atomic spectra of two-electron systems: He
- b. Second semester Experiments
 1. Microwave power and attenuation Measurements
 2. Diffraction of microwaves
 3. Transmission and absorption coefficient of Microwaves
 4. Band gap of germanium
 5. Hall Effect in n-germanium
 6. Hall Effect in metals
 7. The Study of X-rays Characteristics of copper

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18. Practical Topics (If there is any)

19. Examinations:

1. Report
2. Individual discussion
3. General Lab. Exam.
4. Theory/Practice Exam.

20. Extra notes:

There are too many unnecessary holidays that reduce topics given to students.

21. Peer review

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