

**Boston University International Program at Technische Universität Dresden  
Summer 2004**

**Modern Physics (CAS PY 313)**

**Lecturer** Prof. Dr. Hartwig Freiesleben  
  
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Office ASB E11  
Phone 463-35461  
Time Mon 9:20 - 10:50 Thurs 9:20 - 10:50  
Location WIL 206 C WIL 105 C  
(Drop-ins, appointments, e-mail welcome anytime)

**Discussion**

TA Randy Eichin  
E-Mail r.weigel@physik.tu-dresden.de  
Office none  
Time Fri 13.00 – 14.00  
Location ASB E 20  
(appointments, e-mail welcome anytime)

**Laboratory**

TA Dr. Dietrich Hermsdorf  
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Office ASB 422  
Phone 463-33148  
Time Fri 8:30 - 12:30  
Laboratory CS  
Location PHY B14  
(Drop-ins, appointments, e-mail welcome anytime)

TA Dipl.-Phys. Martin Schulte-Wissermann  
E-Mail schulte@pktw09.phy.tu-dresden.de  
Office ASB E10  
Phone 463-34239  
Time Fri 8:30 - 12:30  
Laboratory MOD, AE, ED, PE  
Location PHY D306, PHY D210, PHY D010, PHY D310  
(Drop-ins, appointments, e-mail welcome anytime)

## Course Material

Text: Serway, Moses, Moyer "Modern Physics", ISBN 0-03-001547-2

Lab: Modern Physics lab packet (will be distributed in due time)  
one bound notebook with square-grid pages for lab reports

## Course Requirements

This course is devoted to the basic quantum mechanical concepts and phenomena required for a fundamental understanding of the world around us: atoms, molecules, electromagnetic waves, the structure and properties of materials. These phenomena and concepts are far from everyday experience and require thorough studying in order to be grasped fully. It is highly advisable to read the assigned text both before and after active participation in the lectures (listening attentively, taking notes, and asking questions). The assignments in this course should not be the starting point of your real work. Advance reading and lecture attendance are required.

### Assignments:

Assignments to a certain week are due after the first lecture of the following week. A list of assigned problems for the first weeks is contained in the course schedule. Assignments handed in after the deadline will not be accepted. Your papers will be marked. You should be prepared to present your solution on the blackboard.

Discussion sections start in the first week of class. At the end of some discussion sections there will be an open-book quiz. You cannot make up for a missed quiz. You are strongly encouraged to ask questions during the discussion sessions to improve your understanding of Modern Physics. Attendance at all scheduled discussion sections is required.

### Laboratory:

Attendance at all scheduled laboratories is required. You are expected to read the instructions and complete any pre-laboratory assignments before you arrive at the lab. Use a bound lab book with a square grid on each page to record all data, observations, interim analyses, unusual procedures, and difficulties encountered. Have the teaching assistant sign your work before you leave the lab. You are expected to prepare your report at home and submit it at the next regularly scheduled lab. The report should consist of:

1. A brief summary of the purpose of the experiment and the experimental approach taken;
2. Well-organized tables of the raw data that you obtained and intermediate results derived from it, including appropriate graphs;
3. A clear statement of your final results with an assessment of the factors affecting their accuracy;
4. Answers to all questions asked in the laboratory manual,
5. A brief discussion of what you personally learned from doing the experiment.

If you missed a lab for good, documented reason (e.g. illness) you can make up for it during on Friday, July 5. Note that only one lab can be made up for.

### **Academic Conduct :**

All work during exams or quizzes must be your own unaided effort. The assignments that you submit must be your own final product, although discussion of strategies and numerical results with others is acceptable. Each member of a lab group must take her/his own notes, answer any questions in her/his own words, and write her/his own summarizing essay. In all other situations, active cooperation and peer teaching among students is strongly encouraged.

### **Assessment:**

Your grade will be based on your total score consisting of the following components with the indicated weighting:

Midterm Exam	20 %	May 27 in lecture	chapters 2-6
Final Exam	30 %	July 8 instead of lecture	cumulative with focus on chapters 7-12
Assignments and Quizzes	20 %	based on all assignments and discussion sections	
Laboratories	30 %	based on all experiments	

### **Experimental Laboratory:**

AE	Atomic Excitation	PHY	D 210
CS	Compton Scattering	PHY	B 14
ED	Electron Diffraction	PHY	D 010
MOD	Millikan's Oil Drop	PHY	D 306
PE	Photo Effect	PHY	D 310