**Xu Du Group**

Quantum transport and low dimensional materials laboratory

**S226**  
Department of Physics & Astronomy  
Stony Brook University  
Stony Brook, NY 11794

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**Phy 335**  
Electronics and Instrumentation Lab  
http://mini.physics.sunysb.edu/~xudu/teaching.html  
Fall 26

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**Organization**

Class Meetings:  
Mon/Wed & Tues/Thurs, 1-3:50pm,  
Room A-127

Professor:  
Xu Du  
B-103, Office Hours: Tues. 10:50-12:50 in B-103 or by appointment  
Send email or phone at 2-8019

Teaching Assistant:  
Norvin Lee (norvin.lee AT stonybrook.edu) and James Pineda (james.pineda AT stonybrook.edu)

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**Description**

All material is divided into Units, each Unit covering internally related topics (see below). Each Unit may occupy from 2 to 5 lab periods. Lab assignments are shown below. You must read the material covering the upcoming lab in the textbook, design needed circuits, do calculations beforehand to be prepared if limited. Extensions of lab time may be arranged with the TA by prior mutual agreement, but should be done only under exceptional circumstances. No subletting is possible.

There will be a short (about 30-45 min) mini-lecture at the beginning of each lab; please come on time. The mini-lecture may cover the main points of the up some other related subject in electronics and physics.

You must have two lab books with lined and graph paper (See Texts). These books will contain your notes and data taken in the lab. After finishing a Unit you should grade, and use the second book for the next Unit.

You will be doing the lab work either individually or in groups of 2 per setup. All students should make the best effort to participate equally in the experimental reports (example report, guidelines) after completion of each unit and submit them for grading along with your lab book. Although you may work in the lab with reports individually. Except for the raw data, the reports are expected to be different and reflect individual work. Copying of any part of the report is unacceptable zero grade, as a first warning.

There will be Midterm practical exam during the semester, and a final exam. Exams include doing experimental tasks in the Lab, explaining the relevant theory essential formulas), and data analysis. Take notes at mini-lectures to prepare for this. Each exam will resemble the lab period and the writing of the report, all lab period. The exams are given in two shifts, so that each student will have to work on the exam problems on his or her own. Active and equal participation in the material covered in mini-lectures during the course will prepare you for the exams. Sign-up sheets for each shift of the midterm (12:30-2:30 pm and 3:00-5: 2-3 weeks in advance.

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**Grading**

At least six units, the midterm and the final must be completed to pass this course. The grading is weighted as 60% Units + 20% midterm + 20% final

**ACADEMIC INTEGRITY:** Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person’s work as your own is a violation of academic integrity. For more comprehensive info including categories of academic dishonesty, please refer to the academic judiciatory website at [http://www.stonybrook.edu/ueae/academicjudiciary/](http://www.stonybrook.edu/ueae/academicjudiciary/)

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**Syllabus and Unit Assignments**

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<th>Unit</th>
<th>Subject</th>
<th>Lab Dates</th>
<th>Reports Due</th>
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<tr>
<td>1a, 1b</td>
<td>Lab instrumentation, signals, resistors</td>
<td>Jan. 24, 25, 26, 27, 30, 31, Mar. 1, 6, 9, 12, 13</td>
<td>Jan. 7, 8</td>
<td>1.1.1-1.2.5, 1.3-1.8</td>
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<tr>
<td>2</td>
<td>Capacitors, inductors, RC filters</td>
<td>Feb. 5, 6, 7, 8, 12, 13</td>
<td>Feb. 19, 20</td>
<td>1.2.6-1.2.8, 2.3, handout Pass Filter demo apple</td>
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<td>3</td>
<td>DC Power</td>
<td>Feb. 14, 15, 19, 20</td>
<td>Feb. 26, 27</td>
<td>4.5-4.7</td>
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<tr>
<td>4</td>
<td>Transistors and Transistor circuits</td>
<td>Feb. 21, 22, 26, 27, 28, Mar. 1, 6, 9, 12, 16, 17</td>
<td>Mar. 21, 25</td>
<td>5</td>
</tr>
<tr>
<td>Midterm</td>
<td>(Units 1-4)</td>
<td>Mar. 19, 20</td>
<td></td>
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<tr>
<td>5</td>
<td>Operational amplifiers</td>
<td>Mar. 21, 22, 26, 27, 28, 29, Apr. 2, 3</td>
<td>Apr. 9, 10</td>
<td>8.3-8.6 Handout</td>
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<tr>
<td>6</td>
<td>Digital Electronics</td>
<td>Apr. 4, 5, 6, 10, 11, 12, 16, 17</td>
<td>Apr. 23, 24</td>
<td>7.1-7.10 Boolean Algebra</td>
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<tr>
<td>7</td>
<td>Analog/Digital Interfacing</td>
<td>Apr. 18, 19, 23, 24, 25, 26</td>
<td>May. 2, 3</td>
<td>7.11 Extra documentation Fitting Handout Minimalist Fitting Code</td>
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<tr>
<td>Final</td>
<td>(Units 4-7)</td>
<td>TBA</td>
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**Texts**

**Required Text(s):**
1. Curtis A. Meyer, Basic Electronics: An Introduction to Electronics for Science Students
2. Two laboratory notebooks, a Science Notebook from the book store

There will not be specific reading assignments from the textbook. However, you should look in the section with a topic similar to each lab, read it and understand it. These are primarily references

**Optional Text(s), on reserve in the physics library:**
3. Rizzoni, Principles and Application of Electrical Engineering
5. J. R. Cogdill, Foundations of Electrical Engineering

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**DISABILITY SUPPORT SERVICES (DSS) STATEMENT** If you have a physical, psychological, medical, or learning disability that may impact your course work, Support Services at (631) 632-8748 or http://studentsaffairs.stonybrook.edu/dss/. They will determine with you what accommodations are necessary and approx documentation is confidential.

Students who require assistance during emergency evacuation are encouraged to discuss their needs with their professors and Disability Support Services. For more information, visit the following website: http://www.sunysb.edu/ehs/fire/disabilities.shtml
Critical Incidents: Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the department or handler any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, and/or inhibits students' ability to learn.

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