INSTRUCTOR’S INFORMATION
(Instructor reserves the right to amend this information as necessary.)

Semester and Year: Fall, 2019
Section: 81001
Class time and days: Lecture: W and F, 2:20-3:40  Room: WH131
Lab: M, 12:50-3:40  Room: SH227
Instructor: Xiang-Ning Song
Contact Info: Office: Room SH271. Phone: 972-238-6011
Fax: 972-238-6389  e-mail: SongX@dcccd.edu
Office Hours: M & F: 3:40-4:30, T & Th: 3:30-4:30, Wed: 1:00-2:20

Last date to withdraw: 9/9 (without a “W”) or 11/14 (with a “W”).
Final Exam Day and time: 12/9 M 1:50-3:40  Room: WH131

Evaluation Procedures: The course grade is based on the quizzes, lab reports, averaged 4 unit exams, and comprehensive final exam according to the following schedule:
- HW & Quizzes 10%
- Lab Reports 20%
- Averaged unit exams 40%
- Comprehensive Final 30%

Grading Scale: A=90-100%, B=80-89%, C=70-79%, D=60-69%, and F<59%

Attendance Policy: Students are expected to attend all lecture and lab sessions. Missed quizzes, examinations and lab experiments cannot be made up except religious holidays.
Class begins/ends: 8/26 to 12/12.

Required Materials:
University Physics I to III, OpenStax, free to download at OpenStax
Sapling Learning registration through the link on ecampus under HW menu
Lab manual on eCampus (free, but you are responsible to print and bring appropriate pages)

Course Information:
PHYS 2426 (4 Credit Hours) Offered at BHC, CVC, EFC, MVC, NLC, RLC: University Physics II
This is a Texas Common Course Number. This is a DCCCD Core Curriculum Course.
Prerequisite: Physics 2425. Mathematics 2414 credit or concurrent enrollment in Mathematics 2414. Developmental Reading 0093 or English as a Second Language (ESOL) 0044 or have met the Texas Success Initiative (TSI) standard in Reading.
Course Description: The second semester of a calculus-based physics sequence for science, computer science, and engineering majors. Topics include electricity, magnetism, electromagnetism, wave motion, acoustics and optics with emphasis on problem solving. Laboratory experiments supporting the topics are required. (3 Lec., 3 Lab.)
Coordinating Board Academic Approval Number 4001015703
COURSE OBJECTIVES/LEARNING OUTCOMES

1. Lecture: Articulate the fundamental concepts of electricity and electromagnetism, including electrostatic potential energy, electrostatic potential, potential difference, magnetic field, induction, and Maxwell's Laws. State the general nature of electrical forces and electrical charges, and their relationship to electrical current. Solve problems involving the inter-relationship of electrical charges, electrical forces, and electrical fields. Apply Kirchhoff's Laws to analysis of circuits with potential sources, capacitance, and resistance, including parallel and series capacitance and resistance. Calculate the force on a charged particle between the plates of a parallel-plate capacitor. Apply Ohm's law to the solution of problems. Describe the effects of static charge on nearby materials in terms of Coulomb's Law. Use Faraday's and Lenz's laws to find the electromotive forces. Describe the components of a wave and relate those components to mechanical vibrations, sound, and decibel level. Articulate the principles of reflection, refraction, diffraction, interference and superposition of waves. Solve real-world problems involving optics, lenses, and mirrors.

2. Lab: Prepare laboratory reports that clearly communicate experimental information in a logical and scientific manner. Conduct basic laboratory experiments involving electricity and magnetism. Relate physical observations and measurements involving electricity and magnetism to theoretical principles. Evaluate the accuracy of physical measurements and the potential sources of error in the measurements. Design fundamental experiments involving principles of electricity and magnetism. Identify appropriate sources of information for conducting laboratory experiments involving electricity and magnetism.

Policies and Suggestions for Student Success:

1. Exams, Homework and Quizzes: There are 4 unit exams and one comprehensive final exam in this course. You will be given homework for each chapter. It is crucial that you complete and understand every assignment on the Sapling Learning site. I encourage you to work as groups on these assignments. We will have many quizzes consisting of assigned problems and current topic questions at the start of most class periods.

2. Lab and Lab Reports: (1) Lab manual on eCampus is free, but you are responsible to print and bring appropriate pages. Most of the experiments will have a pre-lab assignment that is to be completed and checked by your instructor at the beginning of the lab class before the experiment. The completed lab report will be turned in at the beginning of the following lab class. (2) The lab report should have your name, date, title of this experiment, essay, data & calculation, questions, and pre-lab assignment. (3) A scientific calculator, metric ruler, protractor, loose-leaf paper, and graph paper must be brought to each Lab session. (4) During the Lab, group of 2-4 students could work together in data collection and analysis. Lack of participation and collaboration will affect your grade. (5) Before leaving the Lab session, let the instructor check your data sheet. Return all apparatus to its appropriate location. Clean up the Lab table.

3. Helpful Information: Tutors are available for all subject areas in the Center for Tutoring and Learning Connections (located in M-216) and Science Corner (located in the 2nd floor of Sabine ).

4. Attendance Policy: In order to be successful students must attend and participate in enrolled courses.

5. Academic Progress: Students are encouraged to discuss academic goals and degree completion with their instructors. Specific advising is available throughout the semester. Check Admission Process for more details.

6. FOOD AND BEVERAGE POLICY: It is also the college policy that food, water and drinks are prohibited in all technology classrooms, including all lab rooms.

7. Institution Policies: Institutional Policies relating to this course can be accessed using the link below. These policies include information about tutoring, Disabilities Services, class drop and repeat options, Title IX, and more. Institutional Policies from the following link Institution Policies

8. Lab Safety: Students entering a lab setting should wear shoes that enclose the entire foot and clothing that covers the body (at least) to the knee.

9. Syllabus Change Disclaimer: The instructor reserves the right to amend a syllabus as necessary.
**Units of Instruction/Class Calendar:**
(1) Physics 2426 Tentative Lecture and Exam Schedule.

<table>
<thead>
<tr>
<th>Lecture</th>
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</thead>
</table>
| Vol 1 Ch16 Waves  
HW Assignments on ecampus  
Vol 1 Ch17 Sound  
HW Assignments on ecampus  
Vol 2 Ch5 Electric Charges and Electric Field  
HW Assignments on ecampus  
Vol 2 Ch6 Gaussian’s Law  
HW Assignments on ecampus  
Vol 2 Ch7 Electric Potential  
HW Assignments on ecampus  
**Exam 1: Chapters 16, 17, 5 to 7**  
Vol 2 Ch8 Capacitance  
HW Assignments on ecampus  
Vol 2 Ch9 Current and Resistance  
HW Assignments on ecampus  
Vol 2 Ch10 Direct-Current Circuits  
HW Assignments on ecampus  
**Exam 2: Chapters 8 to 10**  
Vol 2 Ch11 Magnetic Field and Magnetic Forces  
HW Assignments on ecampus  
Vol 2 Ch12 Sources of Magnetic Field  
HW Assignments on ecampus  
Vol 2 Ch13 Electromagnetic Induction  
HW Assignments on ecampus  
Vol 2 Ch14 Inductance  
HW Assignments on ecampus  
**Exam 3: Chapters 11 to 14**  
Vol 2 Ch15 Alternating Current  
HW Assignments on ecampus  
Vol 2 Ch16 Electromagnetic Waves  
HW Assignments on ecampus  
Vol 3 Ch1 The Nature of Light  
HW Assignments on ecampus  
Vol 3 Ch2 Geometric Optics  
HW Assignments on ecampus  
Vol 3 Ch3 Interference  
HW Assignments on ecampus  
Vol 3 Ch4 Diffraction  
HW Assignments on ecampus  
**Exam 4: Vol 2 Chapters 15, 16, Vol 3 ch 1 to 4**  
Comprehensive Final Exam: 12/9 M 1:50- 3:40  
Room: WH131

*Note: The guidelines and days in this syllabus are subject to change, deletion, or amendment at the discretion of the instructor.*
## (2) RLC, SH227 / Fall 2019 / Physics 2426 Lab Schedule

<table>
<thead>
<tr>
<th>Availability Dates</th>
<th>Experiment Number/manual</th>
<th>Lab Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/27</td>
<td></td>
<td>Lab time: Introduction/Lecture/demo</td>
</tr>
<tr>
<td>8/26, 8/31, 9/3</td>
<td>1</td>
<td>Lab 1: <em>Standing Wave</em> (8/26 class doing lab 1 on the first day of class.)</td>
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<tr>
<td>9/7-9/10</td>
<td>2</td>
<td>Lab 2: <em>Velocity of Sound</em></td>
</tr>
<tr>
<td>9/14-9/17</td>
<td>3</td>
<td>Lab 3: <em>Electrostatic Charge</em></td>
</tr>
<tr>
<td>9/21-9/24</td>
<td>4</td>
<td>Lab 4: <em>Equipotential and Electric Field Lines</em></td>
</tr>
<tr>
<td>9/28-10/1</td>
<td>5</td>
<td>Lab 5: <em>Capacitors in Series and Parallel</em></td>
</tr>
<tr>
<td>10/5-10/8</td>
<td>6</td>
<td>Lab 6: <em>Resistors in Series and Parallel</em></td>
</tr>
<tr>
<td>10/12-10/15</td>
<td>7</td>
<td>Lab 7: <em>The RC Circuit: Measuring a Voltmeter’s Resistance</em></td>
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<tr>
<td>10/19-10/22</td>
<td>8</td>
<td>Lab 8: <em>Magnetic Field</em></td>
</tr>
<tr>
<td>10/26-10/29</td>
<td>9</td>
<td>Lab 9: <em>Magnetic Force</em></td>
</tr>
<tr>
<td>11/2-11/5</td>
<td>10</td>
<td>Lab 10: <em>The Oscilloscope</em></td>
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<tr>
<td>11/9-11/12</td>
<td>11</td>
<td>Lab 11: <em>The AC Circuits</em></td>
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<tr>
<td>11/16-11/19</td>
<td>12</td>
<td>Lab 12: <em>Laws of Reflection and Refraction</em></td>
</tr>
<tr>
<td>11/23-11/26</td>
<td>13</td>
<td>Lab 13: <em>Thin Lenses and Lens Combinations</em></td>
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<tr>
<td>12/2, 12/3, 12/7</td>
<td>14</td>
<td>Lab 14: <em>Interference</em> Or Lab time: Lecture/test/make-up lab</td>
</tr>
<tr>
<td>12/9, 12/10</td>
<td></td>
<td>No Lab</td>
</tr>
</tbody>
</table>

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