

PHYS 383H:Honors Circuits and Electronics

| General Course Description:                                    | <p><b>PHYS 383 Circuits and Electronics (3:2:3)</b><br/>         Analysis of DC and AC circuits and systems. Phasors and the time-varying response of lumped circuits. Application of math transforms to circuit analysis. Diodes and transformers. Amplification using operational amps. Digital sampling of analog signals. The laboratory introduces digital acquisition techniques and LABView™ virtual instrumentation software.</p>   |                         |                             |                         |                |            |            |             |            |            |                |            |            |                |            |            |                 |            |            |                   |            |            |
|--|---|-------------------------|-----------------------------|-------------------------|----------------|------------|------------|-------------|------------|------------|----------------|------------|------------|----------------|------------|------------|-----------------|------------|------------|-------------------|------------|------------|
| Honors Contract Topic:   | <p>The student will thoroughly research and report on laser implementation in current technology. Specifically, he will investigate how they are used in reading and writing of CDs and DVDs. A demonstration will also be prepared describing a method of making a laser pointer out of somewhat common household items. On conclusion of the research, the student will prepare a 15-minute oral presentation that is to be presented in class and will write a formal report that is to be 8-10 pages in length.</p>   |                         |                             |                         |                |            |            |             |            |            |                |            |            |                |            |            |                 |            |            |                   |            |            |
| Methodology/Approach:  | <p>The student will research independently using the resources listed below. Student-professor meetings may be arranged for additional instruction.</p>   |                         |                             |                         |                |            |            |             |            |            |                |            |            |                |            |            |                 |            |            |                   |            |            |
| Resources:   | <p>Circuits Textbooks, Electrical Engineering Texts, Library, Internet</p>  |                         |                             |                         |                |            |            |             |            |            |                |            |            |                |            |            |                 |            |            |                   |            |            |
| Evaluation:  | <p>The oral presentation and written report will each represent one half of the project grade. The entire honors project will constitute 10% of the circuits' course grade. A breakdown of the honors grading scheme and comparison with the non-honors grading scheme is given below.</p>  |                         |                             |                         |                |            |            |             |            |            |                |            |            |                |            |            |                 |            |            |                   |            |            |
| <p>Grade Distribution/Criteria:</p><br><p>Course Component</p> | <p>Please list the grade breakdown for both non-honors and honors students in the course.</p> <table border="0" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 35%;"></th> <th style="width: 30%; text-align: center;">Non-Honors<br/>(Points or %)</th> <th style="width: 35%; text-align: center;">Honors<br/>(Points or %)</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;"><u>Project</u></td> <td style="text-align: center;"><u>N/A</u></td> <td style="text-align: center;"><u>10%</u></td> </tr> <tr> <td style="text-align: center;"><u>Labs</u></td> <td style="text-align: center;"><u>20%</u></td> <td style="text-align: center;"><u>15%</u></td> </tr> <tr> <td style="text-align: center;"><u>Exam #1</u></td> <td style="text-align: center;"><u>20%</u></td> <td style="text-align: center;"><u>20%</u></td> </tr> <tr> <td style="text-align: center;"><u>Exam #2</u></td> <td style="text-align: center;"><u>20%</u></td> <td style="text-align: center;"><u>20%</u></td> </tr> <tr> <td style="text-align: center;"><u>Homework</u></td> <td style="text-align: center;"><u>15%</u></td> <td style="text-align: center;"><u>15%</u></td> </tr> <tr> <td style="text-align: center;"><u>Final Exam</u></td> <td style="text-align: center;"><u>25%</u></td> <td style="text-align: center;"><u>20%</u></td> </tr> </tbody> </table> |                         | Non-Honors<br>(Points or %) | Honors<br>(Points or %) | <u>Project</u> | <u>N/A</u> | <u>10%</u> | <u>Labs</u> | <u>20%</u> | <u>15%</u> | <u>Exam #1</u> | <u>20%</u> | <u>20%</u> | <u>Exam #2</u> | <u>20%</u> | <u>20%</u> | <u>Homework</u> | <u>15%</u> | <u>15%</u> | <u>Final Exam</u> | <u>25%</u> | <u>20%</u> |
|  | Non-Honors<br>(Points or %)   | Honors<br>(Points or %) |                             |                         |                |            |            |             |            |            |                |            |            |                |            |            |                 |            |            |                   |            |            |
| <u>Project</u>   | <u>N/A</u>  | <u>10%</u>              |                             |                         |                |            |            |             |            |            |                |            |            |                |            |            |                 |            |            |                   |            |            |
| <u>Labs</u>  | <u>20%</u>  | <u>15%</u>              |                             |                         |                |            |            |             |            |            |                |            |            |                |            |            |                 |            |            |                   |            |            |
| <u>Exam #1</u>   | <u>20%</u>  | <u>20%</u>              |                             |                         |                |            |            |             |            |            |                |            |            |                |            |            |                 |            |            |                   |            |            |
| <u>Exam #2</u>   | <u>20%</u>  | <u>20%</u>              |                             |                         |                |            |            |             |            |            |                |            |            |                |            |            |                 |            |            |                   |            |            |
| <u>Homework</u>  | <u>15%</u>  | <u>15%</u>              |                             |                         |                |            |            |             |            |            |                |            |            |                |            |            |                 |            |            |                   |            |            |
| <u>Final Exam</u>  | <u>25%</u>  | <u>20%</u>              |                             |                         |                |            |            |             |            |            |                |            |            |                |            |            |                 |            |            |                   |            |            |