PHYS 212 S2014 Study Guide for Test #4  and Final    
  
Test#4 will have regular questions, derivations, and problems (Chapters 29, 30, & 31)  
  
1. Chapter Reading. 2. Practice WileyPlus assignments. 3. Study lecture notes.

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| **Chap 29: Magnetic Field of a Long Straight Wire:** | |
| http://edugen.wiley.com/edugen/courses/crs1650/art/math/halliday8019c29/math011.gif |  |
| http://edugen.wiley.com/edugen/courses/crs1650/art/common/pixel.gif | |

http://edugen.wiley.com/edugen/courses/crs1650/art/math/halliday8019c29/math069.gif  
  
Finding magnetic field using Ampere’s law and Biot-Savart law.

**Chapter 30: Magnetic Flux** The *magnetic flux* http://edugen.wiley.com/edugen/courses/crs1650/art/math/halliday8019c30/math008.gifthrough an area *A* in a magnetic field http://edugen.wiley.com/edugen/courses/crs1650/art/math/halliday8019c30/math002.gifis defined as



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| **Faraday's Law of Induction** If the magnetic flux http://edugen.wiley.com/edugen/courses/crs1650/art/math/halliday8019c30/math008.gifthrough an area bounded by a closed conducting loop changes with time, a current and an emf are produced in the loop; this process is called *induction*. The induced emf is http://edugen.wiley.com/edugen/courses/crs1650/art/common/pixel.gif | | |
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| http://edugen.wiley.com/edugen/courses/crs1650/art/common/pixel.gif | | |
| http://edugen.wiley.com/edugen/courses/crs1650/art/common/pixel.gif | | |
| http://edugen.wiley.com/edugen/courses/crs1650/art/math/halliday8019c30/math258.gif |  | |
| http://edugen.wiley.com/edugen/courses/crs1650/art/common/pixel.gif | | |

**Lenz's Law** An induced current has a direction such that the magnetic field *due to the current* opposes the change in the magnetic flux that induces the current. The induced emf has the same direction as the induced current.

Chapter 31: Electricity: Generation and Electricity: Transmission using [Transformers.](file:///C:\Documents%20and%20Settings\mahesp\Local%20Settings\temp\Transformet%20prob%20set%202.docx)  
  

Chapters 31: AC circuits

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Final Exam: Chap 32 and Study Test #2 and Test #3 and the materials covered in them. Refer back the study guides for Test #2 and Test #3.