ASTRONOMY 220
Introduction to Astrophysics
Spring Quarter 2016

INSTRUCTOR: Dave Meyer
OFFICE: Tech F255  (491-4516)
EMAIL: davemeyer@northwestern.edu
OFFICE HOURS: MWF  12:30 - 1:30 PM

LECTURES: MWF at 2:00 – 2:50 PM  in Tech L361
TEXTBOOK:  Foundations of Astrophysics  (Ryden & Peterson)

PROBLEM SET #1 DUE: Friday, April 15, 2016  2 PM   Tech L361
PROBLEM SET #2 DUE: Friday, April 29, 2016  2 PM   Tech L361

MID-TERM EXAM: Monday, May 2, 2016  2 PM   Tech L361  (1 hour)

PROBLEM SET #3 DUE: Friday, May 13, 2016  2 PM   Tech L361
PROBLEM SET #4 DUE: Friday, May 27, 2016  2 PM   Tech L361

FINAL EXAM: Wednesday, June 8, 2016  3 PM   Tech L361  (2 hours)

Grading Policy

The course grade will be based on the final (45%) and mid-term (25%) exams and four problem sets (30%). Each problem set will be assigned as homework about two weeks before their due dates. The solutions to these problem sets must be delivered to the instructor no later than the due dates listed above – none will be accepted for grading after these deadlines for any reason. The problem set component of your course grade will be based on the 3 problem sets that you complete with the highest scores. The exams will consist of multiple choice questions, brief essay queries, and quantitative problems. In the case of missed exams, make-ups will only be considered under the direst of circumstances and will consist of an oral test.

The Problem Sets

In tackling the problem sets, you should only use the textbook and your class notes as resource material. If you feel the need to use other resources (books, articles, websites, etc.) to complete the problems, you must explain why and cite these resources in your solutions. You are certainly encouraged to discuss the class material and the homework problems with your classmates (and the instructor!). However, each student must independently work out and write their solutions to all of the problems. It is very important that you clearly and legibly show all of your work in arriving at each solution so that partial credit can be awarded (if warranted) in case of incorrect answers.
# Course Outline

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Read Material</th>
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<tbody>
<tr>
<td>March 29</td>
<td>Introduction</td>
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<td>March 30</td>
<td>Charting the Cosmic Ocean</td>
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<td>April 1</td>
<td>The Sky</td>
<td>Read R&amp;P 1.1-1.3</td>
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<td>April 4</td>
<td>Light and Atoms</td>
<td>Read R&amp;P 5.1-5.3</td>
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<td>April 6</td>
<td>Radiative Transfer</td>
<td>Read R&amp;P 5.4-5.6</td>
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<td>April 8</td>
<td>Blackbody Radiation</td>
<td>Read R&amp;P 5.7</td>
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<td>April 13</td>
<td>Stellar Spectra</td>
<td>Read R&amp;P 14.1-14.3</td>
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<td>April 15</td>
<td>Hertzsprung-Russell (HR) Diagram</td>
<td>Read R&amp;P 14.4</td>
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<td><strong>Problem Set #1 Due</strong></td>
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<tr>
<td>April 18</td>
<td>Interstellar Medium</td>
<td>Read R&amp;P 16.1-16.2</td>
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<td>April 20</td>
<td>Interstellar Nebulae</td>
<td>Read R&amp;P 16.3-16.4</td>
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<td>April 22</td>
<td>Star Formation</td>
<td>Read R&amp;P 17.1</td>
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<td>April 25</td>
<td>Planet Formation</td>
<td>Read R&amp;P 8.1-8.3</td>
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<td>April 27</td>
<td>Detecting Exoplanets</td>
<td>Read R&amp;P 12.3</td>
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<td>April 29</td>
<td>Exoplanet Properties</td>
<td>Read R&amp;P 12.4</td>
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<td><strong>Problem Set #2 Due</strong></td>
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<td>May 2</td>
<td>Mid-Term Exam (2 PM in Tech L361)</td>
<td>Read R&amp;P 15.2, 17.2</td>
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<td>May 4</td>
<td>Stellar Evolution</td>
<td>Read R&amp;P 15.2, 17.2</td>
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<td>May 6</td>
<td>Stellar Remnants</td>
<td>Read R&amp;P 18.1-18.2</td>
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<td>May 9</td>
<td>Supernovae</td>
<td>Read R&amp;P 18.3-18.4</td>
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<td>May 11</td>
<td>The Milky Way Galaxy</td>
<td>Read R&amp;P 19.1-19.4</td>
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<td>May 13</td>
<td>The Galactic Center</td>
<td>Read R&amp;P 19.7</td>
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<td>May 16</td>
<td>Galaxies</td>
<td>Read R&amp;P 20.1-20.3</td>
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<td>May 18</td>
<td>Hubble’s Law</td>
<td>Read R&amp;P 20.4-20.5</td>
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<td>May 20</td>
<td>Quasars</td>
<td>Read R&amp;P 21.1-21.5</td>
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<td>May 23</td>
<td>Newtonian Cosmology</td>
<td>Read R&amp;P 23.1-23.2</td>
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<td>May 25</td>
<td>The Accelerating Universe</td>
<td>Read R&amp;P 23.5, 24.1-24.2</td>
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<td>May 27</td>
<td>The Big Bang</td>
<td>Read R&amp;P 24.3</td>
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<td>June 8</td>
<td>Final Exam (3 PM in Tech L361)</td>
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