ASTR 4010 – Astrophysics I – Professor Caillault – Spring 2015

Office: 237 Physics
Office Hours: Wed. 1:00-2:30 or by appointment
Phone: 542-2883
E-mail: jpc@physast.uga.edu

Textbook: *An Introduction to Modern Astrophysics*, 2nd Ed., by Carroll & Ostlie

Course Structure: This course will be a mixture of lecturing and problem solving. Students are expected to be prepared for discussions of the textbook material and to be responsible for solving the problems that have been assigned.

Homework: Problem sets for each chapter will be assigned approximately a week in advance. The in-class homework problem-solving sessions may include any of the assigned problems, so solve all of them in order to be completely prepared. This component of your course grade (1/3) will be determined by your in-class solutions and your submitted assignments. The assignments may be submitted individually or in groups (of any number).

Attendance: We only meet 30 times during the semester, so class attendance is important. Make sure you sign the attendance sheet that will be circulated during every class.

Exams: There will be a two-part (in-class and take-home) mid-term exam and a two-part final exam. Each exam is worth 1/3 of your course grade.

Grades: The grading scale for the class will be as follows:

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\begin{align*}
A & \geq 93 \\
93 > A- & \geq 90 \\
90 > B+ & \geq 87 \\
87 > B & \geq 83 \\
83 > B- & \geq 80 \\
80 > C+ & \geq 77 \\
77 > C & \geq 73 \\
73 > C- & \geq 70 \\
70 > D & \geq 60 \\
60 > & F
\end{align*}
\]
**Academic Honesty**: The University's Academic Honesty Policy (A Culture of Honesty) is strictly adhered to. Make sure you know and understand the policy.

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**Tentative Class Schedule:**

<table>
<thead>
<tr>
<th>DATES</th>
<th>TOPIC</th>
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<tbody>
<tr>
<td>Jan. 6 (T)</td>
<td>Introduction</td>
</tr>
<tr>
<td>Jan. 8, 13, 15 (R, T, R)</td>
<td>Brief Review of Light and Matter (Chapters 3 and 5)</td>
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<tr>
<td>Jan. 20, 22 (T, R)</td>
<td>Binary Stars and Stellar Parameters (Chapter 7)</td>
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<tr>
<td>Jan. 27, 29 (T, R)</td>
<td>The Classification of Stellar Spectra (Chapter 8)</td>
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<tr>
<td>Feb. 3, 5, 10 (T, R, T)</td>
<td>Stellar Atmospheres (Chapter 9)</td>
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<td>Feb. 12, 17, 19 (R, T, R)</td>
<td>The Interiors of Stars (Chapter 10)</td>
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<tr>
<td>Feb. 24, 26, Mar. 3 (T, R, T)</td>
<td>The Sun (Chapter 11)</td>
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**Feb. 26 – Mar. 5**  
Take-home Midterm Exam: due March 5, 2 PM

**Mar. 5 (R)**  
In-class Midterm Exam (75 minutes)

| Mar. 17, 19 (T, R)     | The Interstellar Medium and Star Formation (Chapter 12)   |
| Mar. 24, 26 (T, R)     | Main Sequence & Post-MS Stellar Evolution (Chapter 13)   |
| Mar. 31, Apr. 2 (T, R) | Stellar Pulsation (Chapter 14)                           |
| Apr. 7, 9 (T, R)       | The Fate of Massive Stars (Chapter 15)                   |
| Apr. 14, 16 (T, R)     | The Degenerate Remnants of Stars (Chapter 16)            |
| Apr. 21, 23 (T, R)     | General Relativity and Black Holes (Chapter 17)          |

**Apr. 23 – Apr. 30**  
Take-home Final Exam: due Apr. 30, 3:30 PM

**Apr. 30 (R)**  
In-class Final Exam (3:30-6:30 PM)