Astr/Phys 3210 **Recent Progress in Astronomy** **Spring 2011**

Instructor:	Dr. Andy Layden
Office:	112 Overman Hall, 372-8653, laydena@bgsu.edu
Office Hours:	MW 2:30–3:20 pm, TR 12:30-1:20 pm, or by appointment.
Optional Text:	*Pathways to Astronomy,* Schneider & Arny, 2009.
Class Schedule:	Thurs 6:00–7:40 pm in 106 Overman Hall *[2 Credit Hours]*
Course Website:	http://physics.bgsu.edu/~layden/a321.htm

Overview: We will investigate various topics in astronomy in more depth and with more physical and mathematical rigor than was done in ASTR 2010 or ASTR 2120. These may include solar system exploration, extrasolar planets, pulsars, gravitational collapse and black holes, galaxies, large-scale structure in the universe, active galaxies and quasars, and cosmology. Students have significant input into which topics are covered. The investigation will be done in part by reading and discussing articles on key topics, and in part by students researching and presenting talks to the class on topics of their own choosing. Homeworks will help students understand the topics through algebra-level calculations and simulations of actual astronomical observations and derivations.

Learning Outcomes: Students completing this course successfully will be able to:

(1) Speak about and describe knowledgably current topics in modern astronomy;

(2) Perform calculations and analyze data that support the modern understanding of astronomy;

(3) Present technical information more effectively via spoken presentations.

Grading:

• Participation of in-class discussions of reading assignments	25% of final grade
• Homework assignments	32% of final grade
• Three 15 minute talks presented to the class	33% of final grade
• Questions asked of other speakers after talks	10% of final grade

At several times during the term I will post your current (estimated) course grade. You may access your grades "24/y" via My.BGSU.edu (select our course, Tools, MyGrades).

Over the course of the semester, Andy will assess your contributions in the following ways:

1) Discussion Days:

(a) You are expected to **read all of the assigned articles** (background reading in Schneider & Arny is recommended but optional), attend class, and participate in the class discussion (30-40 min). You will also **find a short article** related to the main article(s) and informally **present it to the class (turn in a copy)**. Andy will judge your daily participation on the following scale:

- 5 pts = attended and participated well; good article, well presented
- 4 pts = attended and participated modestly; fair article, fairly presented
- 3 pts = attended but did not participate in discussion; off topic article, poorly presented
- 0 pts = did not attend

At the end of the term, Andy will compile your daily participation grades according to this example: imagine there are 6 discussion days over the semester, and you get 4, 5, 4, 3, 0, 5 pts giving you a sum of 21 out of a possible 30 pts = 70%. *Discussion participation is worth 25% of your overall grade in the course.*

(b) **Homework** will be collected at the start of most discussion days. The homeworks are typical physical/mathematical problems faced by astronomers in the process of learning about the universe, though these are simplified for an algebra-level student. Physics majors have an advantage here, so will be asked to do some additional work, often estimating uncertainties in the derived quantities. Homeworks will be graded on the usual 100-point scale (90-100=A, 80-90=B, 70-80=C, 60-70=D, <60=F). Let's say there were 4 homeworks assigned over the course of the semester, and you got 95%, 85%, 90% and 100%, giving you a mean score of 93%. *The mean homework score is worth 32% of your overall course grade.*

2) Talk Days:

(a) Each of your **talks** will be graded (A/B/C/D/F) in terms of:

- clear and effective organization
- correct facts and concepts
- demonstrating you understand the content, both the "big picture" and the details
- presenting evidence to back up your statements (pictures, graphs, statistics, equations/calculations)
- answering audience questions.

You will give three 15-min talks over the course of the semester. *The average of the three scores (expressed as a % according to (1b) above) will contribute 33% to your overall course grade.*

(b) When you are in the audience, you are expected to be attentive. When a talk is over, aim to **ask at least one question** (substantative please!) to ask of the speaker (each talk day will have several speakers). Andy will monitor who is asking questions, how many, and the level of the questions. On each talk day, Andy will rate your participation as a questioner as:

- 4 pts = attended and asked at least 3 good questions
- 3 pts = attended and asked 1-2 good questions
- 2 pts = attended but did not ask questions
- 0 pts = did not attend

At the end of the term, Andy will compile your points following the example in (1a) to arrive at a percentage of available points. This percentage is worth 10% of your overall grade in the course.

Your final course grade is thus composed of *[the examples given above are shown in square brackets]:*

0.25 * your Discussion Day participation percentage [e.g., 70%],
0.32 * your Homework average percentage [e.g., 93%],
0.33 * your mean score on Talks [e.g., 88%],
0.10 * your Talk Day question percentage [e.g., 86%],

and converted to a letter grade using the usual 100-point scale (90-100=A, 80-90=B, 70-80=C, 60-70=D, <60=F). Our sample student would receive (0.25*70%) + (0.32*93%) + (0.33*88%) + (0.10*86%) = 85% = B for the course. *Andy reserves the right to curve grades up (for exceptional effort, etc), but not down.*