

STELLAR ASTROPHYSICS

Physics 3021 – Fall 2009

Time: 2 MWF Lecture Room 5

Instructor: J. R. Sowell

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Web Page: <http://www.astronomy.gatech.edu>

Text: *Introductory Astronomy & Astrophysics (4th ed)*, by Zeilik & Gregory

COURSE POLICY

This course will be taught by conventional lecture methods. Lectures will not necessarily cover all of the material on which the student will be tested – the student is responsible for the material indicated by the instructor.

Objectives: The objective of this course is for the student to acquire a working knowledge of stellar astrophysics (stellar interiors, structure, evolution, and nucleosynthesis).

Attendance: Each student should be aware of the regulations that are listed in the student handbook. The class attendance policy, which the Georgia Tech regulations say shall be at the discretion of the instructor, will be as follows: There will be no prescribed maximum number of unexcused absences for this class. However, if it is apparent that lack of attendance at class may be impairing a student's performance in the course, the instructor may require that the student not miss more classes, under the penalty of failing the course.

Materials: In addition to the textbook, the student will need a **non-programmable scientific** calculator, with trigonometric functions in particular.

Problems: Astronomy is based on math and physics; physics is a problem-solving subject, so to be able to apply the principles of physics, you should work as many problems as possible. **Some problems will be turned in for grading.** Solutions to the suggested problems will be made available to you after the problems have been turned in. If you have difficulty with problems, ask about them in class and pay attention to the method used by the instructor in solving them. **NO HOMEWORK WILL BE ACCEPTED AFTER 3 PM ON THE DATE IT IS DUE. HOMEWORK PROBLEMS SHOWING ONLY AN ANSWER WILL NOT BE GRADED.**

Projects: A Computer Modeling Program will be used to determine the interior structure of a star. Approximately three students will be in a group. The group is responsible for a detailed, well-presented paper. A description of the project and report will be provided at a later date.

Tests: The dates for the tests will be announced in class. There will be three 50-minute tests. They will be given on the dates listed below and will cover the material presented since the previous test. Each test is worth 15%, for a total of 45% of the final grade. The final exam will largely cover material since the third test, but it will also have several comprehensive questions. The final exam grade will be 15% of the final average.

If you miss a test, contact me by telephone or email as soon as possible so that arrangements can be made to take the test PRIOR to the NEXT LECTURE. If you know in advance of a conflict, the test can usually be given prior to the scheduled time.

If you miss a test for a valid reason (i.e., you were too ill to take the test, had a serious family illness, etc.), then you must **SUBMIT A WRITTEN STATEMENT** from the Dean of Students or the Student Health Center, with supporting documentation, as to the cause of the absence to the instructor **ON THE FIRST DAY YOU RETURN TO CLASS**. If the reason is acceptable, your grade will be determined at the instructor's discretion. If you do not submit an acceptable excuse for missing a test, you will receive a "0" for that test. If you miss two tests for any reason whatsoever, you must initiate a conference with the instructor. Failure to do so will result in a "0" for the second test regardless of the reason for the absence.

Regulations regarding cheating and general classroom dishonesty will be strictly enforced.

Observatory Visit: Georgia Tech has a new Observatory on the roof of the Physics Building. There will be several nights when it will be exclusively available for students from this class. Students must visit the Observatory at least once during the semester, but the visit can be ANY night the Observatory is open.

Grading: The total grade consists of (a) GT Observatory visit (5%), (b) homework (20%), (c) computer modeling project (15%), (d) 3 one-hour tests (45% total), and (e) the final exam (15%). Also, extra credit (2%) can be obtained by following the instructor's guidelines regarding a visit to the Fernbank Observatory.

Grading Scale: 90 – 100 = A; 80 – 89 = B; 70 – 79 = C; 60 – 69 = D; 0 – 59 = F
For those taking the course pass/fail, a C or better is considered passing.

Extra Credit: Visiting the Fernbank Planetarium and Observatory is not mandatory, but highly encouraged. The Observatory is open on Thursday and Friday nights. **Extra credit** can be obtained if (1) You see the planetarium show; (2) see the telescope and, if weather permitting, look through it at a celestial object, and (3) write a **typed**, one-paragraph summary of (a) the planetarium show and (b) the objects viewed with the telescope (i.e., describe their appearance). Staple to your report the Planetarium Ticket receipt, which has been SIGNED by the astronomer working there that night. **Fernbank Observatory Visit reports are due no later than 11 am on the last day of class.**

Unexpected Problems: If a snow and/or ice storm (or any other cause for the Institute to close) occurs on a day scheduled for a test, the test will be given on the first day that the class resumes. Check the web pages for information.