

STELLAR ASTROPHYSICS

Physics 3021 – Fall 2017

Instructor: J. R. Sowell

Time: 1:55 to 2:45pm MWF Lecture Room 5

Office: W102 Physics Building (404) 385-1294

Office Hours: Anytime but especially MWF 11:00 – 11:30 and 1:30 – 2:00

Email: jim.sowell@physics.gatech.edu

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

Text: [No textbook]

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 astronomy (photometry and spectroscopy) and 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: The student will need a **non-programmable scientific** calculator, with trigonometric functions in particular. **Programmable calculators cannot be used for the tests.**

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 graded.** Solutions to all of the problems will be made available 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 2 PM ON THE DATE IT IS DUE.

HOMEWORK PROBLEMS SHOWING ONLY AN ANSWER WILL NOT BE GRADED.

Projects: A Stellar Project/Paper will be produced during the second half of the semester. It is a combination of many problems, written in a paper format that includes excellent plots and beautiful pictures. A detailed description of the project/paper will be provided *at a later date* (near the middle of the semester). The Project/Paper is worth 20%.

Tests: There will be three 50-minute tests during the semester. They will be given on the dates listed on the Schedule and will cover the material presented since the previous test. The best score of Tests 1, 2 and 3 is worth 15%, the second best is worth 15%, and the third best is worth 10%. The three tests comprise 45% of the final grade. The final exam will cover material since the third test, but it will also have several comprehensive questions. The final exam test score will be 20% of the final grade.

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 an 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. Opening of the Observatory is not a guarantee – it is weather dependent.

Do not procrastinate.

Grading: The total grade consists of (a) GT Observatory visit (5%), (b) homework (15%), (c) Stellar Project/Paper (20%), (d) 3 one-hour tests (40% total), and (d) the Final Exam (20%). 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 usually 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 2pm on the last day of class.**