

Einstein's Universe: High Energy Astronomy AST202

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OFFICE HOURS (T-204)

Monday: 11.00 a.m. – 12.00 a.m.
Tuesday: 8.00 a.m. – 9.00 a.m. [online] & 11.00 a.m. – 12.00 a.m.
Wednesday: 11.15 a.m. – 12.15 p.m.
Thursday: 11.15 a.m. – 12.15 p.m.

REQUIRED TEXTBOOK: The Cosmic Perspective: Stars & Galaxies, Bennett et. Al.
LAB MATERIALS: CLEA/Spitzer & Hubble /Astronomy through Practical Investigations
OTHER MATERIAL: Scientific Calculator

COURSE OBJECTIVES:

Upon completion of this course, students will be able to do all of the following:

1. Understand the scientific method and how it applies to astronomy. This will provide an understanding of how our ideas about the universe have evolved over the ages, especially during the past century using technological advances.
2. Know the origins and trace the development of astronomy and classical physics including the development of gravitation. Special emphasis will be given to Galileo and Newton.
3. Discuss the effect and influence of Albert Einstein, his views on the scientific world, and the world's view of Albert Einstein.
4. Have a basic understanding of the development and implications of Special Relativity. Topics will include; the limit of the speed of light, time dilation and length contraction, and realistic space travel.
5. Have a basic understanding of the development and implications of General Relativity. Topics will include; the curvature of space-time, the bending of light, the apparent slowing down of time around supermassive black holes, and time machines.
6. Understand the various end results of stellar evolution, and how stellar mass influences a star's death. Topics discussed will include; white dwarf stars, neutron stars, supernovae and black holes.
7. Discuss the observational characteristics of Active Galaxies and their implications for galactic evolution.
8. Understand how distance measurements are made in galactic astronomy and the limitations therein.
9. Understand the implications of modern cosmology from an observational viewpoint and discuss the various future scenarios for the fate of the universe.
10. Gain a sufficient understanding of astronomical phenomena in order to have an appreciation for recent developments in the field.

PROCEDURES FOR ACCOMPLISHING OBJECTIVES:

Course objectives will be achieved through classroom lecture/discussion, lab activities, and exams. Mastery of the MA07 prerequisite is essential to a successful course experience. If you have not studied algebra recently you must review the basics.

ATTENDANCE:

Because of the nature and amount of the material in this course, it is crucial that each student attend every lecture and laboratory session.

Each student is allowed two absences for the semester, and permits the instructor to withdraw or fail any student that exceeds the number of absences.

WITHDRAWAL POLICY:

Students who wish to withdraw, without academic penalty, must do so by mid-semester. Any student who hasn't withdrawn by this time will be required to finish out the semester, regardless of their grade.

Any student who wishes to withdraw but has not formally done so will be considered to still be in the class and a final grade will be administered.

It is the students' responsibility to complete the proper withdraw procedure, NOT the instructors!

GRADES:

The semester grade will be weighted in the following manner:

Lecture Exams = 35 %

Final Exam 15%

Homework and Project 10%

Lab Coursework = 40%

A grading curve will not be applied to the final grades and extra-credit is not available.

EXAMS:

There will be four (4) lecture exams and a cumulative final. The lower of the lecture exams will be discarded when calculating the final grade. The grade of the final exam will not be dropped when computing the final grade.

Make up exams will not be administered, without exception. If a student misses an exam, the grade will be entered as a zero.

LAB COURSEWORK:

Various forms of coursework will be assigned as part of the laboratory section of the class. These labs are to be worked on in groups containing no greater than 2 students. However, each student in a group should write up their laboratory exercise individually. Copying another student's work is strictly forbidden. Failure to hand in 3 or more lab reports will result in possible disciplinary action. Quizzes that cover the material in the labs will be administered for grades at the instructor's discretion.

All assigned work will be handed in exactly one week after it is set. Any work that is not handed in when requested, regardless of the reason, will not be accepted*.

*If a student knows that they will be absent from a class when an assignment is due, arrangements can be made to turn in the assignment as long as the instructor prior to the date of absence has granted the student permission.

CHEATING:

Suffolk County Community College has instituted the following policy regarding academic integrity, which can be found in the SCCC student handbook – "Any student who is caught cheating will be punished to the fullest extent of the college's cheating policy".