Introduction to Astrophysics and Cosmology

Course requirements

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Classes

Wednesday, Thursday, Friday 12:00-14:00 AI 101

Attendance is not mandatory and it will not affect the grades.

If you decide that you do not want to take the class after all, make sure to unregister from the class. Otherwise the class will be failed.

Syllabus

Course description:

This course covers two important topics in Physics: first, Astrophysics, that will show the student the current knowledge of astronomical objects such as stars, galaxies and galaxy clusters. Second, Cosmology that studies the origin of the Universe, its theoretical bases, and observational evidence. In addition, as part of this course we will perform calculations with the Symbolic manipulation Software.

Syllabus

First part of the semester

CURRICULAR UNITS	CONTENTS
UC. 1	Introduction to astrophysics
UC. 2	Radiative transfer
UC. 3	Stellar astrophysics
UC. 4	The end state of stellar evolution
UC. 5	Interstellar medium
UC. 6	Astrophysical plasmas
UC. 7	Extragalactic astronomy
UC. 8	Special relativity

Second part of the semester

CURRICULAR UNITS	CONTENTS
UC. 9	The Big Bang Cosmology
UC. 10	Tensor Algebra
UC. 11	Dynamics of the Universe
UC. 12	Observational bases of the Big Bang Cosmology
UC. 13	Inflation and the very early Universe
UC. 14	Lambda-CDM model

Syllabus

Methodology:

1.Theoretical classes.
2. Solving problems sessions.
3.Computational workshops.

Evaluation:

- Quizzes **40% of the grade**
- Midterm exam ~ *around the 16th of January 2023* **30% of the grade**
- Final exam ~ *around the 7th of March 2023* **30% of the grade**

Exams, Quizzes will be announced in advance in class and via email.

Academic integrity

Academic integrity is very important.

Cheating in exams will have a penalty of a score 0 for the full exam.

Cheating in the quizzes/homework will have a penalty of a score 0 for the relevant part of the Quiz/homework.

Alway cite the source of information for homework!

Recommended reading

I am going to use material from these books for the class:

Arnab Rai Choudhuri: Astrophysics for physicists

There are also many other good books on the topic and plenty of online resources.

Resources

My email: hdenes@yachaytech.edu.ec
Please send me an email, so that I know who is in the class.

Private GitHub repository with slides and course information.
I will invite everyone, please let me know if you use a different email for GitHub, so that I can send an invite.

Class representative?