This course will primarily review our current understanding of the formation of the Sun, solar-like stars, and their planets. We will discuss the collapse of molecular cloud cores, the properties of protostars, the formation and propagation of supersonic jets and outflows, the different types of young stars, the birth of brown dwarfs, the evolution of young stars towards the main sequence, planet formation, and the origin of the solar system and meteorites.

Classes will be 90min and will take place in the Fern Room, every Friday from 1:00 - 2:30 PM, in this 2 credit course, covering the following topics:

1. The Formation of the Solar System
2. Molecular Clouds, Cloud Cores, and Chemistry
3. Turbulent Fragmentation and Collapse Processes
4. Molecular Outflows
5. Herbig-Haro Jets
6. Embedded Sources and T Tauri Stars
7. Circumstellar Disks and Accretion
8. Pre-Main Sequence Binaries
9. FUors and EXors
10. Brown Dwarfs: Formation Scenarios and Early Evolution
11. Formation of Giant Planets
12. Formation of Terrestrial Planets
13. Extrasolar Planets
14. The Initial Mass Function, Massive Stars, and Clusters
15. Extragalactic star formation on cosmic timescales

Each class will give an overview of a certain topic. The first 10 minutes of each class, a student will lead a discussion of a recently published ApJ Letter on the subject of the class (handed out the week before) to illustrate current research in the particular field.

The goal of the course is to provide an overview of our current understanding of star and planet formation, an area that is developing almost explosively at the moment, but also to illustrate the probing and searching nature of the research process, which is always more messy and uncertain than the clean results that eventually appear in text books once a subject has been fully understood.

There will be no exam, but at the end of the course, all students will have to write an observing proposal on a subject to be chosen by each student among the topics that have been discussed during the course. We will then all form an Observing Proposal Committee, and will together discuss the merits and weaknesses of each proposal. I will discuss the review process as it is being applied at all major observatories and the criteria that must be fulfilled to successfully win observing time.

The final course grade will be based on engagement in the course, presentations of ApJ Letters, and the observing proposal.

There is no textbook for this course, instead I will provide pdf files of relevant chapters and reviews.

Feel free to contact me with any questions you may have.
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