

OLLI Course Bio

Professor Emeritus [Gibor Basri](#) taught in the Astronomy Department at UC Berkeley for 35 years. His favorite classes were the introductory courses for non-majors and small freshman seminars. He enjoys making science accessible to the general public and received the Carl Sagan Prize for Science Popularization in 2016.

Syllabus What's New in Astrophysics: 2025?

The James Webb telescope is only one of a number of new space- and ground-based missions that are already or about to be pushing our frontiers. I will discuss some of their results and what they hope to achieve as they explore the universe. The primary areas of research are in cosmology, galaxy evolution, and exoplanet atmosphere. Appropriate for a lay science fan.

Week 1 June 23 Results from the James Webb Telescope

Due to the brief nature of this mini-course, it will necessarily be only a tasting menu. I'll start with a brief description of the telescope and its various instruments. The primary science goals of the mission are 1) understanding the very early Universe, including dark matter and galaxy formation, and 2) learning more about exoplanets, especially their atmospheres. I will talk about some of the surprises in the early Universe, including the unexpectedly early formation of massive black holes and large galaxies. I will also mention some of the early announcements that proved incorrect. I'll discuss how JWST has also contributed to the "Hubble tension", which may presage new physics.

Week 2 June 28 New Missions Coming Soon

We finish the JWST section by moving to exoplanet atmospheres. I'll explain why JWST is such a leap forward, and how it does these very

difficult observations. I'll then discuss the early results, which have been more ambiguous and unclear than hoped for. Next we move on to a number of exciting American and European missions that have already started or will in the next few years. These include DESI, ELT, and the Vera Rubin telescopes on the ground. In space we have Euclid, the Nancy Roman telescope, and Plato. As with JWST, their foci are on cosmology and/or exoplanets. They will generate an enormous amount of new data that should help with understanding dark matter and dark energy, formation of galaxies and the cosmic web, and greatly increase our collection of exoplanets.

Web Resource: Ethan Seigel's "Starts With a Bang"

<https://medium.com/starts-with-a-bang>

This is a well-written almost always correct set of articles on many astrophysical topics at a level similar to this course. Stays pretty current.