

Introduction to Astronomy

天文学通识课

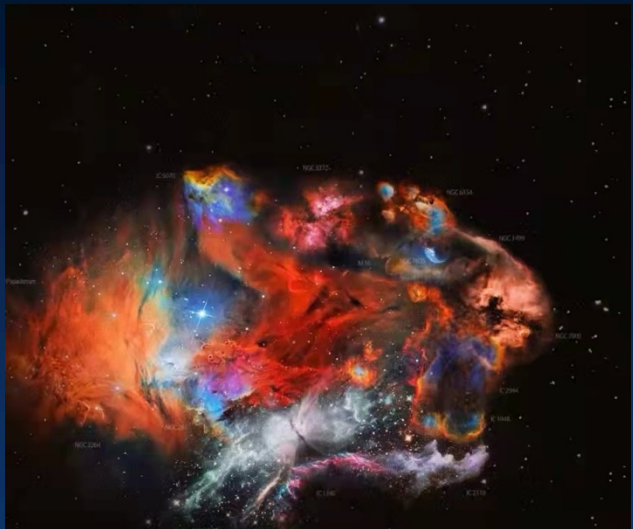
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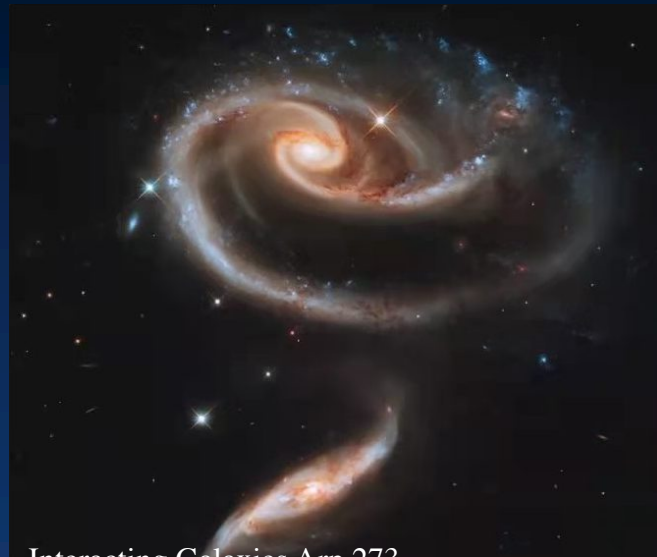
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2022 年 2 月 17 日

虎年快乐 & Welcome to the Universe!



Rosette Nebula
Credit: Nick Wright/Keele University



Interacting Galaxies Arp 273
Credit: NASA, ESA, the Hubble Heritage Team
(STScI/AURA)

课程设置和评分

学习目标：

This course is to provide basic knowledge in astronomy and to introduce scientific thinking method. At the end of this course, you will be able to:

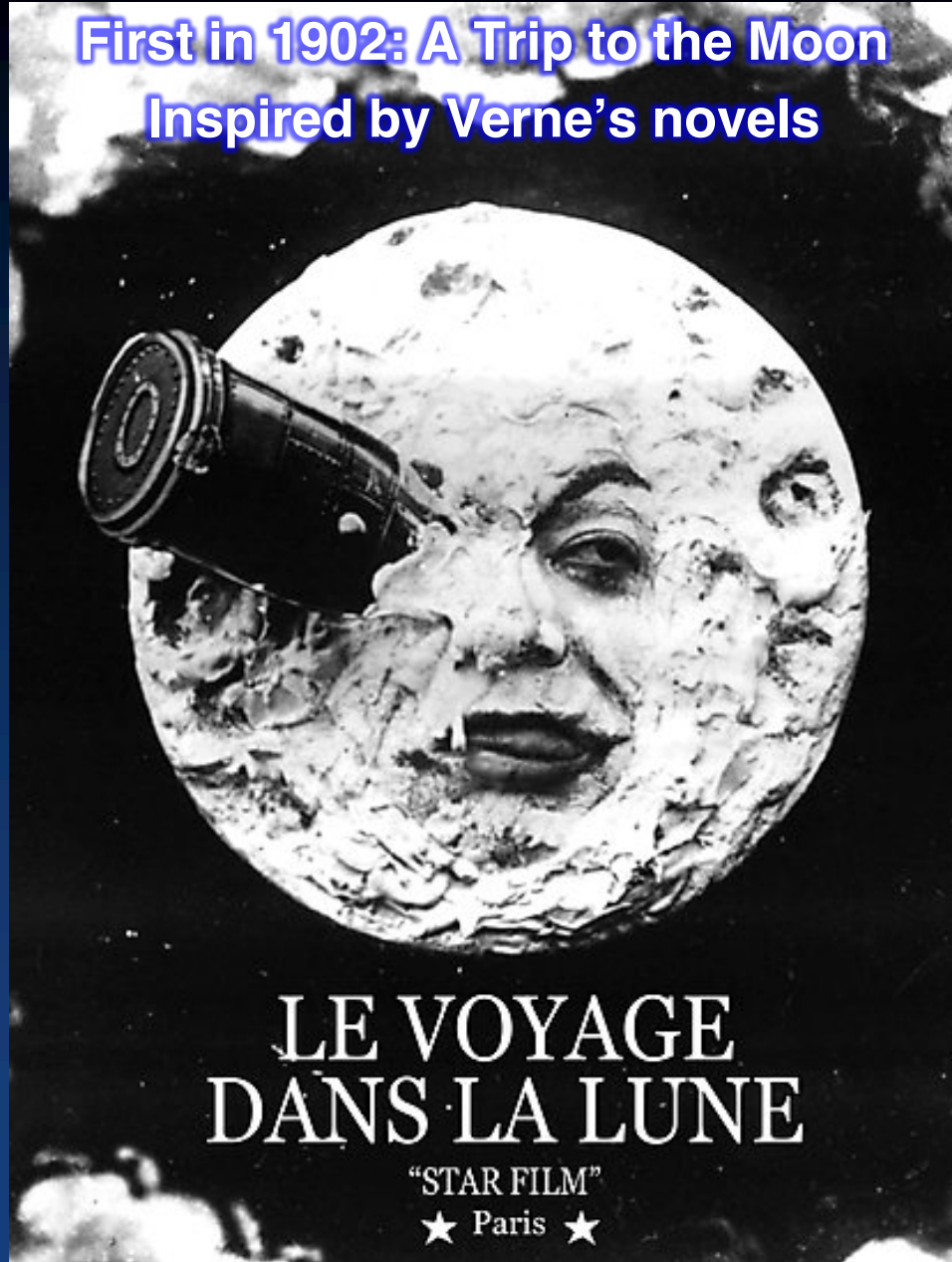
- Describe the scope of astronomy and astrophysics.
- Explain how the scientific reasoning and quantification methods are applied in astronomy.
- Tell the difference between science and fantasy in science fiction.
- Present an argument and support it with evidence, proof, and/or examples.

评分机制：

- 20% Attendance + 10% Involvement + 70% Term Project
- Term Project: 以2-3人为一组，阅读一本天文学相关的硬科幻小说，区分科学和幻想部分，就2-3个关键点评论其可靠性并提供论据，提交一篇论文并完成10分钟演讲。或者设计一个天文学科普艺术品，提供其背景陈述论文，完成10分钟科普演讲。

From Science Fiction to Exploration

First in 1902: A Trip to the Moon
Inspired by Verne's novels



2015 Survival Film: The Martian



They say once you grow crops somewhere you have officially "colonized" it. So technically I colonized Mars. In your face Neil Armstrong!

2019 Space Adventure Film: The Wandering Earth



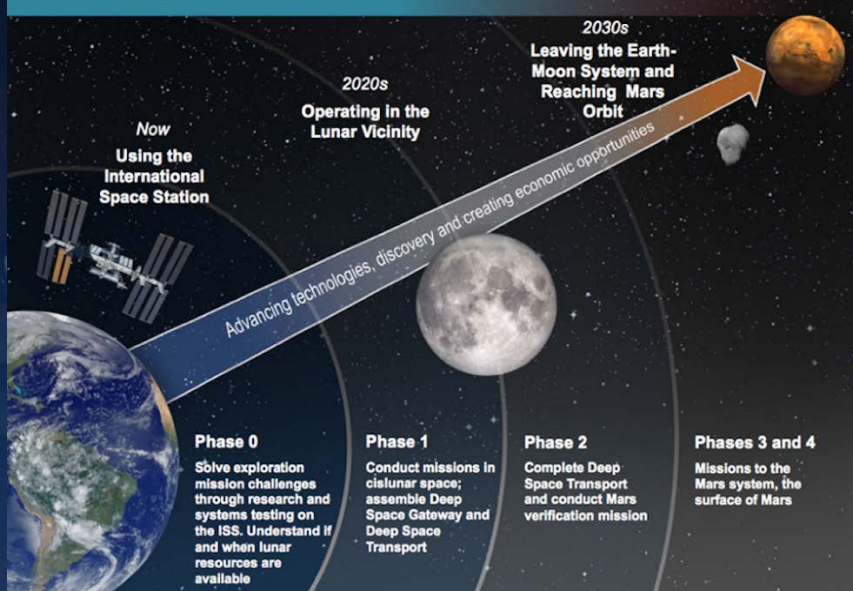
Human Deep-Space Exploration and Long-term Base



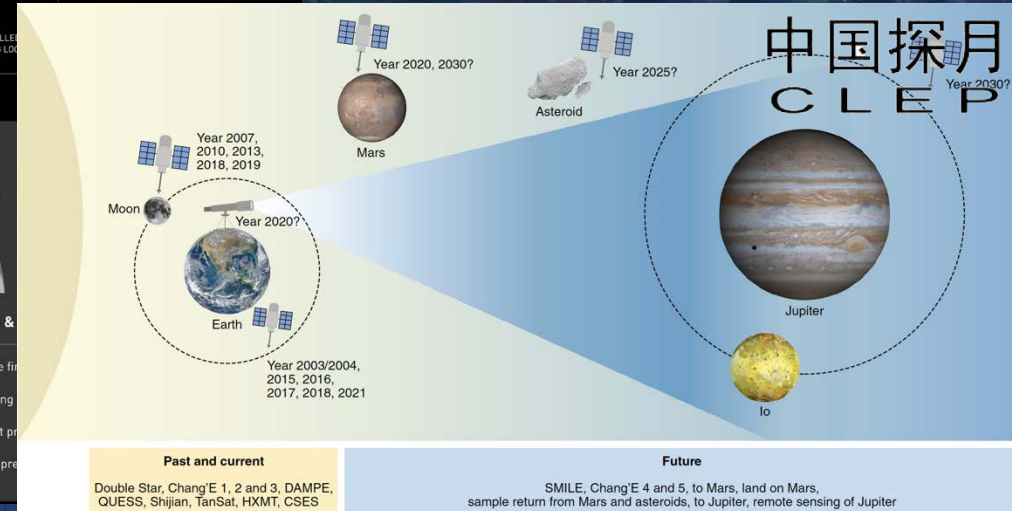
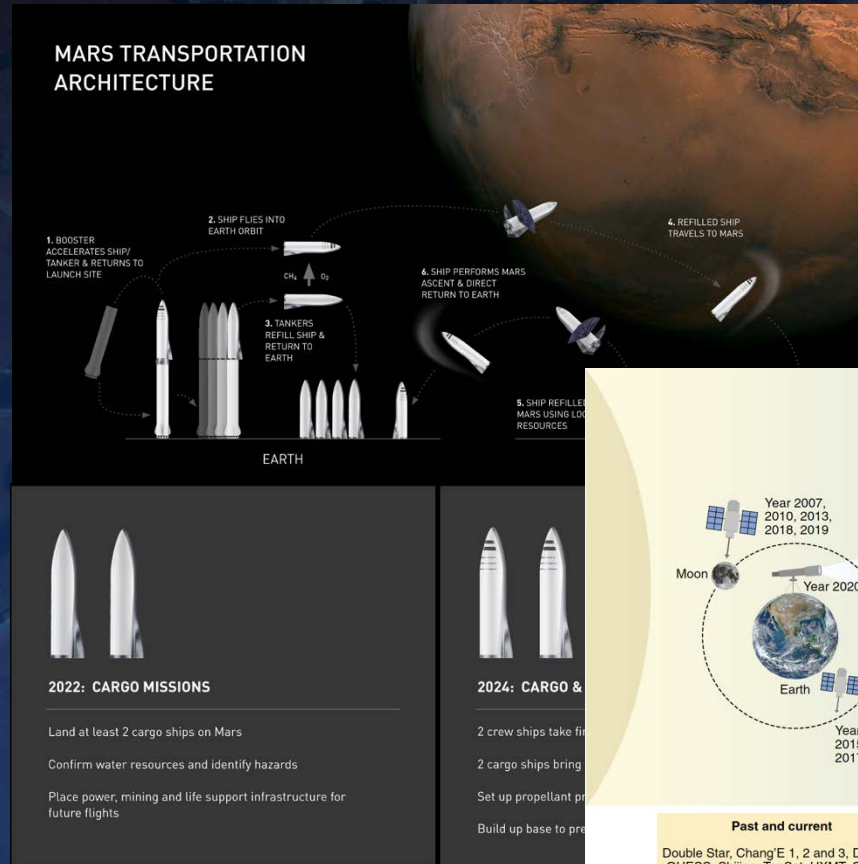
Moon to Mars Plan



Exploring Space In Partnership



MARS TRANSPORTATION ARCHITECTURE



Wei et al., *Nature Astro*, 2018

- Understanding surface and inner structure of planets is the first step to explore resources and establish research/colonization bases.

Class	Date	Topics
1	2/17	Welcome to the Universe!
2	2/24	Inner Solar System
3	3/3	Outer Solar System
4	3/10	Sci-Fi: Science and Fantasy
5	3/17	We Are Stardust
6	3/24	Galaxy
7	3/31	Einstein's Universe
8	4/7	Search for life
9	4/14	Final Presentations
10	4/21	Final Presentations
	TBD	Stargazing Activity



Two things fill the mind with ever-increasing wonder and awe, the more often and the more intensely the mind of thought is drawn to them: the starry heavens above me and the moral law within me.

(Immanuel Kant)

我们的征途是星辰大海

