

# PAA Novice Astronomy Class Syllabus

1. An Introduction to Astronomy – February 4, 2022
  - Our Cosmic Address: Earth, Solar System, Milky Way, Local Group, Virgo Supercluster, Universe
  - Overview of visible objects
  - Sampling of exotic objects: black holes, dark energy, dark matter
  
2. Getting Started in Astronomy – March 4, 2022
  - KISS: minimal initial investment
  - Navigating the night sky
  - Constellations as your guide
  - Naked eye astronomy
  
3. Stars – April 1, 2022
  - Star life cycle
  - Our Sun
  - Colour & Temperature: OBAFGKM
  - Distance
  - Variable stars
  - Take Away: Build a sundial
  
4. The Solar System – May 6, 2022
  - Sun and 8 planets: size, distance, physical characteristics
  - Moons
  - Origins of life
  - Possibility of life in our solar system
  - Dwarf Planets
  - Comets
  - Asteroids
  - Meteoroid, Meteor, Meteorite
  
5. The Moon – June 3, 2022
  - Birth & Evolution of Luna
  - Historical exploration
  - Current exploration
  - Discoveries
  - Future? : Space station, habitation

6. The Sun, Earth, Moon System – September 2, 2022

- Day & Night
- Seasons
- Phases of the Moon
- Moon's influence on Earth
- Eclipses: Lunar & Solar

7. Binoculars – October 7, 2022

- Numerical Designations Demystified: 10 X 50 ??
- Binoculars for astronomy
- Sizes
- Mounting
- Technique
- Focus
- Filters
- Care & Cleaning

8. Constellations – November 4, 2022

- What is a constellation?
- What is an asterism?
- Historical significance & cultural importance
- Seasonal Change
- Constellations as pointers

9. The Electromagnetic Spectrum – December 2, 2022

- EMS overview
- Visible light 400-700 nm
- Infrared
- Microwave
- Radio
- Ultraviolet
- X-rays
- Gamma rays

10. Deep Sky Objects Part 1 – January 6, 2023

- Different Catalogues: Messier, NGC, IC, Caldwell, etc.
- Galaxies
- Clusters
- Double Stars
- Planetary Nebula
- Emission and Reflection Nebulae
- Use of filters

11. Deep Sky Objects Part 2 – February 3, 2023

- Supernovae
- Neutron Stars & Pulsars
- Gamma Ray Bursts
- Magnetars
- Hypernovae
- Quasars
- Blazars
- Black holes
- Gravitational Waves

12. Choosing a Telescope – March 3, 2023

- Types of telescopes
- Types of mounts
- Things to consider
- Purchasing tips
- Procedural and observing tips

13. Eyepieces – April 7, 2023

- Eye relief
- Eyepiece barrel size: 1 1/4" & 2"
- Barlows
- Recommendations
- Filters: neutral density, photographic, light pollution
- Nebula filters: UHC, OIII, H alpha

14. Light Pollution – May 5, 2023

- What is light pollution?
- Types of light pollution
- Impact of light pollution
- Light pollution abatement
- Individual participation

15. Essential Astronomy Resources – June 2, 2023

- Planisphere
- Illumination
- Critter control
- Books
- Magazines
- Star Atlases & references
- Software

16. Trusted Astronomy Resources on the Net – September 1, 2023

- Clubs
- Observation planning
- News & information
- Magazines
- Podcasts
- Space agencies
- Tools

17. Meteor Showers – October 6, 2023

- Cause & effect
- How to view?
- Preparation, equipment, procedure
- Where to view?
- Significant meteor showers
- Extraterrestrial observations

18. Rocks from the Sky – November 3, 2023

- Causal agency
- Meteorite types
- Major events
- Large meteorites on display
- Existential risk & deflection strategies

**December 1, 2023 Postponed**

19. Space Exploration: Part 1 – January 5, 2024

- Space pioneers
- Space race
- Historical exploration of our Solar System

20. Space Exploration: Part 2 – February 2, 2024

- Contemporary exploration by Solar System object
- Space telescopes
- Private sector participation
- Future exploration
- Interstellar space
- Colonization and resource utilization

21. Low Earth Orbit – March 1, 2024

- Conditions of space
- Atmosphere & low Earth orbit overview
- Earth observation & remote sensing
- Communication satellites
- Space observatories
- Space stations
- Space debris
- Technology transfer

**April 5, 2024 Postponed**

22. Exoplanets – May 3, 2024

- History
- Discovery methods
- Exoplanet types
- Earth 2.0
- Observatories
- Amateur contribution
- Future direction

23. Mobile Apps & Computer Software – June 7, 2024

- Tablet & telephone applications
- Online planning
- Planetarium programs

24. Measuring Distance – September 6, 2024

- Early history
- Cosmic Distance Ladder
- Parallax
- Spectroscopic Parallax
- Cepheid variable stars
- Type Ia supernovae
- Cosmological redshift
- Space telescope contribution

25. Dark Matter & Dark Energy – October 4, 2024

- Baryonic Matter
- Standard Model
- Evidence
- Dark Matter candidates
- Dark Energy discovery
- Big Bang & the expansion of the Universe
- Fate of the Universe

26. Electronically Assisted Astronomy – November 1, 2024

- What is EAA?
- Advantages
- Minimum equipment
- Optional equipment
- Camera types & manufacturers
- Cost
- Software
- Field of view
- Setup examples
- Remote observing
- Image capture
- Image stacking & processing

27. Making Sense of Astronomy Terminology – December 6, 2024

- A comprehensive overview of common astronomy jargon from A to Z.