Exploring the Night Sky

Lincoln Hills Astronomy Group

Fall 2010

Rev 0

- **Objective**
  - Learn how to locate and identify objects in the night sky using your naked eye, binoculars, and small telescopes
- **Format**
  - Five (5) evening sessions – 2 hrs each
  - 1st half presentation, 2nd half viewing
  - Begin sessions 2, 3, 5 with Q&A and brief review

- **Equipment**
  - Binoculars
  - Student and instructor telescopes
  - Screen/overhead projector/computer projector
  - Copies of star charts
- **Location**
  - OC lodge and outside for
    - Session 1 – 3, 5
  - Blue Canyon/dark sky site
    - Session 4
- **When**
  - Sept 7, 14, 28 Oct 5, 12 (No class on Sept 21)
  - Blue Canyon - Oct 5 or Oct 12
- **Instructors**
  - LHAG members
- **Cost**
  - $10

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Outline
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- **Session 1 – OC lodge**
  - **Presentation –Orientation to the Night Sky**
  - **Viewing – Naked eye**

- **Session 2 - OC Lodge**
  - **Presentation: The Solar System**
  - **Viewing: more naked eye, binoculars/telescopes for moon, planets**

- **Session 3 – OC Lodge**
  - **Presentations:**
    - **Telescopes and Binoculars.**
    - **Introduction to Deep Sky Objects**
  - **Viewing: More naked eye, binoculars, some telescope**
  - **Assistance with personal binoculars/telescopes**

- **Session 4 – Blue Canyon/dark sky site**
  - **Viewing: Emphasis on Deep Sky Objects with telescopes and binocular objects**

- **Session 5 - OC Lodge**
  - **Presentation: Our Place in the Universe**
  - **Viewing: Review – use of Star charts/ identify objects**
  - **Assistance with personal binoculars/telescopes**

- **Session 1 – OC lodge (Sept 7) Ron**
- **Introduction/Overview** (15 min)
- **Presentation (**1 hr) **<u>Orientation to the Night Sky</u>**
    - "The Big Picture"
        - Celestial Sphere
        - Star motion
    - What Can You See?
        - Constellations
            - Asterisms
            - Zodiac
        - Solar System
            - Planets
            - Moon
        - Double Stars
        - Deep sky objects
        - Star Colors
    - Where to look
        - How high, what direction?
            - Altitude/Azimuth coordinates
        - "Signposts"
            - Big Dipper, North Star, Cassiopeia
        - Where is North?
    - Star Chart Basics
        - How to use
    - Planispheres –
    - What will we see tonight?
        - Big Dipper, Cassiopeia, Summer triangle
        - What's the sky really look like
            - Starry Night examples
        - Moon, Planets (Jupiter)
        - Sagittarius, Pegasus, Hercules, Bootes
- **Naked Eye Viewing** (45 min) (Moon not visible –New moon)
    - N, S, E, W
    - Big Dipper, Polaris, Cassiopeia
    - Summer Triangle: Lyra, Cygnus, Altair
    - Planets – Jupiter
    - Sagittarius, Pegasus, Hercules, Bootes

- **Session 2 - OC Lodge (Sept 14) John C**
- **Presentation:** (1.0 hr) **<u>The Solar System</u>**
  - Sun, Planets, Moon, comets, other planets moon's
  - Ecliptic, planet motion, moon motion
- **Viewing** (1.0 hr) (Moon phase– 1st Qtr – **Sets 11:30 PM**)
  - **More naked eye objects**
    - More Constellations
  - **Binocular objects**
    - Moon – Maria/highlands, others TBD
  - **A few telescope objects**
    - Moon, planets (Jupiter, Neptune, Uranus), double stars

- **Session 3 – OC Lodge (Sept 28) Ron / Dave**
- **Presentation: (**1.0 hr)
  - **<u>Telescopes and Binoculars - Ron</u>**
  - Types, parameters, operation
    - Magnification, Field of View, Light Gathering Power, tradeoffs
  - **<u>Introduction to Deep Sky Objects - Dave</u>**
    - Star Clusters, double stars, nebulae, galaxies
  - Objects for tonight
- **Viewing** (1.0 hr) (Moon waning gibbous – 2 days before 3Q – rises at 9:50 PM)
  - **More naked eye objects**
    - Constellations
  - **Binocular objects**
  - Andromeda Galaxy, Double cluster, Alcor/Mizar, Hercules Cluster (M13),
  - **A few telescope objects**
    - "Our Place in the Double cluster, Albierio, Open/globular cluster, Ring Nebula (M57)
    - Different eyepieces
  - **Assistance with Personal Binoculars/Telescopes**

- **Session 4– Blue Canyon/dark sky site (Oct 5 or 12) Ron**
- **Sky Orientation** (15 min)
    - Locate previous bright objects, constellations in dark sky
- **Viewing** (1.5 hrs) (No Moon – 2 days before New Moon) Sunset 6:41 PM
    - **More visual objects**
        - Constellations for star hopping
    - **Binocular objects**
        - TBD
    - **Deep Sky viewing**
        - Clusters, nebulae, galaxies

- **Session 5 - OC Lodge (Oct 12 or 5) Joel/Dave**
- **Presentation (**1 hr)
    - **Presentation: <u>Our Place in the Universe</u>**
        - Distance scale, Solar system, Milky Way, Local Group, etc, universe
        - Deep Sky object descriptions and how formed
    - **Viewing** (1hr) (Moon – 2 days before 1Qtr– sets 10:16 PM) (Sunset 6:31 PM)
        - **Review– use of Star charts/ identify objects**
            - Locate and Identify visual objects using star chart
                - Constellations , bright stars, planets
            - Locate and identify selected Binocular objects
                - Star clusters, M31, double stars, planets
            - Locate and identify selected Telescope objects
                - Clusters, nebulae, galaxies
        - **Assistance with personal binoculars/telescopes**