

Observing Challenge – The twelve easy non-labors of Obs. 101

These activities will help you learn the night sky and see many of its stellar jewels. If you have been making the observations recommended in the course outline you will have already completed those with gray back grounds.

References to sketching and/or viewing objects that call for binoculars are optional. If you have found and observed the main naked eye object(s) you have completed the task. For example, in item 17 if you have found Auriga, the Pentagon and 3 goats, you have completed the task. Sketching promotes memory and we just can't walk by calling attention to nearby binocular objects that provide a deeper experience. You only need to complete twelve to get a certificate of completion, but why not do them all over the next year.

The seasonal notations assume you are observing in the evening, but an early riser or night owl can move forward in the seasons. Forms to record your observations are available online, or just record them in a notebook. Each observation should include Date / Time / Sky Conditions / Location / binoculars or equipment used. Notify us of your completion. We'd love to see them but that is not required to get your certificate.

Season		Activity
All Year	1	Find at least six named stars (1st Magnitude) on "The Evening Sky Map", skymaps.com or other source and then find them in the sky. Look their magnitudes up. The 25 brightest are in a chart in Learning the Constellations, but you can google charts as well.
All Year	2	Find Polaris and the Little Dipper (Ursa Minor). Can you see all 7 stars?
All Year	3	Find the rabbit and woman on the Moon. Gibbous to Full phase.
All year	4	Look up on www.heavens-above.com or other app to find when the ISS - International Space Station will pass over your location. See the International Space Station or ISS.
All Year	5	Review chart of annual meteor showers. Lay out on pallet or reclining chair and see at least one meteor.
All Year	6	See the "Old Moon in the New Moon Arms" or earthshine. Visible 2-4 days after new moon and before new moon. Small Crescent phase.
All Year	7	Sketch the Big Dipper and Polaris the North Star. Sketch them again 6 hours later.
All Year	8	Determine your limiting magnitude of your favorite observing site using https://www.globeatnight.org/magcharts . Do it when there is no moon in the sky.
All Year	9	Take a weekly picture with your phone or camera for the four weeks of the class from the same spot of the Sun setting or rising. Compare your pictures. Travels faster near the equinoxes than when near Solstice
When Visible	10	Challenge: Find when Venus is going to be close to Crescent Moon in the sky and try to find it in the daytime with

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		Binoculars and Naked Eye. Only do when Venus is away from Sun and try to block sun with a roof line or similar.
When Visible	11	Find Jupiter. Sketch it in the constellation it is in. Challenge: Using binoculars stabilized on tripod or against something look at Jupiter's moons and sketch their positions.
When Visible	12	Find Mars. Comment on color. Sketch it in the constellation it is in.
When Visible	13	Find Saturn. Sketch it in the constellation it is in.
When Visible	14	Find Venus and/or Mercury in the morning before sun rise or evening sky after sun set. Challenge: Measure the distance from horizon using your fist = 5 degrees.
Winter	15	Sketch the constellation Canis Major with the brightest star Sirius. With binoculars find the bright open cluster M41 near the dog's heart.
Winter	16	The brightest constellation Orion with two 1st mag stars and 5 bright 2nd mag stars. Sketch it labeling Rigel and Betelguese. With binoculars look at M42 in the sword.
Winter	17	The Winter Hexagon. The brightest area in the sky with 8 first magnitude stars. Including the brightest star Sirius at Mag -1.2. Sketch and label just these bright stars. Start memorizing their names. Note the variety of star colors with and without binoculars.
Winter Spring	18	Find the dim zodiac constellation Cancer between Gemini and Leo the Lion. With binoculars look for the Praesape-M46 and the open cluster M67.
Winter Spring	19	Sketch the constellation Auriga including the Pentagon and 3 goats. Label the yellow star Capella and with binoculars find the open clusters M36, M37, and M38.
Winter Spring	20	Sketch the constellation Gemini with it's twin 1st Mag Stars Castor and Pollux. Look in the left foot for the open cluster M35.
Spring	21	In dark skies look for the tuft on the Lion's tail. This is now the constellation Coma Berenices named after a real Egyptian Queen. Look up her true story and look at this large cluster with binoculars. In this and in Virgo below reside many Galaxies, most beyond the reach of Binoculars.
Spring	22	Sketch Leo the Lion with the King Star Regulus. This is a Zodiac constellation so it may have the moon or planets in it.
Spring	23	Sketch the zodiac constellation Virgo with its bright star Spica.
Spring	24	Trace out the Spring Diamond which includes Arcturus, Spica, Denebola, and Cor Caroli. Sketch just the diamond and label the 4 stars.

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Spring Summer	25	Find the keystone of Hercules and then M13 with binoculars.
Spring Summer	26	Find the zodiac constellation Libra. With binoculars look at Alpha Lib "Zuben El Gemubi". It is a wide double mag 2.8 and 5.2.
Spring Summer	27	In the handle of the Big Dipper can you see Mizar and Alcor naked eye?
Spring Summer	28	Sketch the Constellations Bootes and Corona Borealis. Note the 4th brightest star Arcturus and it's color. Mu is a binocular double 4.3 and 7.1 mag.
Spring Summer	29	Trace out the winding circumpolar constellation Draco. Find Thuban between Mizar and Alcor and the Little Dipper. Thuban was the pole star when the Pyramids were built.
Spring Summer	30	Using the Big Dipper, make an arc to Arcturus and speed on to Spica.
Summer Fall	31	Find the constellation Ophiuchus above Scorpius. Trace it out. With binoculars look for M10, M12, and IC 4665.
Summer Fall	32	Find the Dolphin and the Arrow (Delphinus and Sagitta). Sketch them.
Summer Fall	33	Go to a dark site and see the Milky Way. Sweep it with Binoculars. Note the dark lane in Cygnus.
Summer Fall	34	Identify Aquilae and using Binoculars find M11. Off the beak of the eagle.
Summer Fall	35	Identify Sagittarius. Using chart and Binoculars find M20, M8, and M22. Note Sagittarius star cloud – Steam coming out of kettle, naked eye under a dark sky.
Summer Fall	36	Serpens is the only divided constellation. Trace it out. Challenge: With Binoculars find M5 in Serpens Caput is a bright Mag 7 Globular Cluster and M16 a bright diffuse nebula.
Summer Fall	37	Sketch Cygnus the Swan with Deneb a blue white distant supergiant. With Binoculars find open M39 and binocular double Omicron Cyg.
Summer Fall	38	Sketch Lyra the Lyre noting Vega. With binoculars look at Epsilon Lyrae (next to Vega), a double through binoculars and the double double through a telescope.
Summer Fall	39	Sketch the circumpolar constellation Cepheus. Note the color of the Variable star Mu with binoculars and the star Delta which is another famous variable star known as a Cepheid.
Summer Fall	40	Trace out Scorpius. Note Antares Color. Using chart and Binoculars find M6, M7, and M4.
Summer Fall	41	Trace out the Summer Triangle. Name the three 1st magnitude stars and three Constellations.

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Fall	42	Identify the Square of Pegasus or the Fall Square. How many stars can you count in it? Note under bright skies you will probably see none! Challenge: Find M15 with binoculars.
Fall	43	Sketch the Zodiac Constellation Capricorn. Find the globular cluster M30 in binoculars.
Fall	44	Sketch the zodiac constellation Pisces. The western fish is a nice circlet below the Square of Pegasus. You'll need dark skies
Fall	45	Sketch the Zodiac Constellations Aries and Triangulum next to it. Challenge; Find the bright spiral galaxy M33 with binoculars in Triangulum
Fall	46	Trace out the zodiac constellation Aquarius. Challenge: With Binoculars find bright globular cluster M2
Fall	47	Using Square of Pegasus find Diphda in Cetus (follow east side of square south) and Fomalhaut in Pisces Austrinus (west side of square south). These are the brightest stars in this part of the sky. Fomalhaut is at magnitude 1.2 and Diphda at 2.02.
Fall	48	Find Perseus. With binoculars look at the Double Cluster between Perseus and Cassiopeia. Look at the Alpha Perseid Cluster around Alpha Perseus. Check Algol to see if it is almost as bright as Alpha Perseus. If a lot dimmer it is in eclipse.
Fall	49	Sketch Andromeda which looks like a Horn of Plenty with its tip attached to the Square of Pegasus. Star hop to the Andromeda Galaxy (M31) with Binoculars and naked eye if you have dark skies.
Fall Winter	50	Find Cassiopeia. Sweep with Binoculars and find Open Cluster M52.
Fall Winter	51	Find the zodiac constellation Taurus. Look at the Pleiades M46 naked eye and with Binoculars. Also note the Hyades with red star Aldebaran naked eye and with binoculars.