

MORAVIAN UNIVERSITY SPRING OBSERVING LOG

Did I See It?	Object (Constellation)	Description
All Sky	Constellation ID	Find them with the green laser/ Don't bring down a plane.
Moon	Moon	You better know the phase if it's visible
Planet	Mercury	Visible in evening, mid-March
Planet	Venus	Visible very low in the spring evening sky
Planet	Mars	Visible in the spring evening sky
Planet	Jupiter	Visible in the spring evening sky
Planet	Saturn	Not Visible in the spring evening
Planets	Uranus and Neptune	(Uranus) High in west (Neptune) Not visible
Stars	Betelgeuse (Orion)	Red supergiant star—3500K/575 ly, M2Iab
	Rigel (Orion)	Blue bright supergiant star—11,000K/860 ly, B8Iab
	Sirius (Canis Major)	Brightest nighttime star—10,000K/8.9 ly, A1V
Multiple Star Systems	<ul style="list-style-type: none"> Alcor/Mizar triple system (Ursa Major) Beta Monocerotis 	<ul style="list-style-type: none"> <u>Alcor/Mizar</u>. Mizar also has a gravitationally bound star orbiting it. <u>β Mon</u>: A +4.6 / B-C +5.4 +5.6/, BC separation 2.8", A-B/C separation 7.4", 690 ly, 34 Myo
Double Stars	<ul style="list-style-type: none"> Eta-η Cassiopeiae (Cassiopeia) 	<ul style="list-style-type: none"> <u>η Cas</u>: +3.44/+7.51 mag., 19.42 ly, 12" separation RA: 00^h 49^m 06^s; Dec.: +57° 48' 55"
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<u>Abbreviations</u>	<ul style="list-style-type: none"> 32 Eridani 	<ul style="list-style-type: none"> <u>32 Eri</u>: +4.8/+6.1 mag., 290 ly, 6.8" separation RA: 03^h 54^m 18^s; Dec.: -02° 57' 17.0"
Byo: Billion years old	<ul style="list-style-type: none"> Mintaka (δ Orionis) 	<ul style="list-style-type: none"> <u>Mintaka</u>: +2.4/+6 mag., 1200 ly, 53" separation Belt star farthest to the NW; top belt star
Myo: Million years old	<ul style="list-style-type: none"> Rigel (Beta-β Orionis) 	<ul style="list-style-type: none"> <u>Rigel</u>: +0.13/+6.7 mag., 773 ly, 9.5" sep., very difficult. Orion's lower right knee (blue supergiant)
Kyo: Thousand years old	<ul style="list-style-type: none"> 145 Canis Majoris also called the winter Albireo 	<ul style="list-style-type: none"> <u>145 CMa</u>: +5/+5.84 mag., 27" separation RA: 07^h 16^m 37^s; Dec.: -23° 18' 56" optical double (two stars in the same line of sight), colorful.
ly: light years	<ul style="list-style-type: none"> Castor (α Geminorum) 	<ul style="list-style-type: none"> <u>Castor</u>: +1.9/+3.9 mag., 51 ly, 7" separation Fainter of the two head stars of the Gemini twins
M: Messier Object	<ul style="list-style-type: none"> 38 Geminorum (Gemini) 	<ul style="list-style-type: none"> <u>38 Gem</u>: +4.8/+7.3 mag., 350 ly, 7.3" separation RA: 06^h 54^m 39^s; Dec.: +13° 10' 40"
NGC: New General Catalog	<ul style="list-style-type: none"> Iota-ι Cancri (Cancer) 	<ul style="list-style-type: none"> <u>ι Cnc</u>: +4.02/+6.57 mag., 330 ly, 30.6" separation RA: 08^h 46^m 42^s; Dec.: +28° 45' 36"
“: seconds of arc	<ul style="list-style-type: none"> Tegmine, (Zeta-ζ Cancri) 	<ul style="list-style-type: none"> <u>Tegmine</u>: +5.58+5.99 mag., 84 ly, 5.06" separation RA: 08^h 12^m 13^s; Dec.: +17° 38' 52"
': minutes of arc	<ul style="list-style-type: none"> Theta-θ Cancri (Cancer) 	<ul style="list-style-type: none"> <u>θ Cnc</u>: +6.4/+6.4 mag. 500 ly, 5" separation RA: 08^h 31^m 35.7^s; Dec.: +18° 05' 40"
	<ul style="list-style-type: none"> 24 Comae Berenices called the spring Albireo 	<ul style="list-style-type: none"> <u>24 Com</u>: +5.11/+6.33 mag., 610 ly, 20.1" separation Colorful double, spectral types K0, A9. RA: 12^h 35^m 58^s; Dec.: +18° 17' 10"
	<ul style="list-style-type: none"> 35 Comae Berenices 	<ul style="list-style-type: none"> <u>35 Com</u>: +5.1/+9 mag., 30" separation, optical dble. double +5.1/7.2 mag., 324 ly, 1" separation RA: 12^h 54^m 07^s; Dec.: 21° 09' 19"
	<ul style="list-style-type: none"> Algieba (Gamma-γ Leonis) 	<ul style="list-style-type: none"> <u>Algieba</u>: +2.37+3.64 mag., 130 ly, 4" separation RA: 10^h 19^m 58^s; Dec.: +19° 50' 29"

Moravian University Spring Observing Log, cont.

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<p>Double Stars</p> <p><u>Abbreviations</u></p> <p>Byo: Billion years old Myo: Million years old Kyo: Thousand years old ly: light years M: Messier Object NGC: New General Catalog “: seconds of arc ‘: minutes of arc</p>	<ul style="list-style-type: none"> • 54 Leonis (Leo) • 19 Lyncis (Lynx) • Delta-δ Cephei (Cepheus) • Nu-ν Draconis (Draco) • Cor Caroli (α Canis Venatici) • Kappa-κ Bootis (Bootes) • Xi-ξ Bootis (Bootes) • Polaris (α Ursae Minoris) North or Pole Star 	<ul style="list-style-type: none"> • <u>54 Leo</u>: +4.5/+6.3 mag., 290 ly, 6.3” separation RA: 10^h 56^m 30^s; Dec.: +24° 39’ 39” • <u>19 Lyn</u>: +5.8/+6.9 mag., 14.8” separation along with a third component at mag. +7.6 at 3.5” separation. RA: 07^h 24^m 11^s; Dec.: +55° 14’ 59” • <u>δ Cep</u>: +4.04/+6.3 mag., 887 ly, 41” separation RA: 10^h 19^m 58^s; Dec.: +19° 50’ 29” • <u>ν Dra</u>: +4.88/+4.88 mag., 99ly, 62” separation RA: 17^h 32^m 11^s; Dec.: +55° 11’ 03” • <u>Cor Caroli</u>: +2.90/+5.60 mag., 115 ly, 19” separation RA: 12^h 56^m 02^s; Dec.: +38° 19’ 06.167” • <u>κ Boo</u>: +4.54/+6.69 mag., 155 ly, 13.5” separation RA: 14^h 14^m 04^s; Dec.: +51° 32’ 38” • <u>ξ Bootis</u>: +4.76/6.78 mag., 22.1 ly, 4” separation RA: 14^h 52^m 09^s; Dec.: +19° 01’ 58” • <u>Polaris</u>: +2.02/+8.7 mag., 430 ly, 18” separation, very difficult because of the magnitude difference.
<p>Visual/Binocular Open Clusters</p>	<ul style="list-style-type: none"> • Ursa Major Cluster • Hyades (Taurus): Aldebaran not part of it. • M45 Pleiades (Taurus) best at low magnifications 	<ul style="list-style-type: none"> • <u>UMC</u>: Sirius/Big Dipper minus Dubhe and Alkaid. The sun is moving through it right now. • <u>Hyades</u>: Old open cluster which is composed of the “V” in the head of Taurus minus Aldebaran, 150 ly distant, 300-400 stars, 625 Myo. • <u>M45</u>: New open cluster, 440 ly, 50-100 Myo, 1000+ stars, notice all of the blue stars.
<p>Open Clusters</p>	<ul style="list-style-type: none"> • NGC 457 (ET Cluster-Cass.) • Double Cluster (Perseus) Also called NGC 869/884 NGC 869 NGC 884 • M41 (Canis Major) • NGC 2264: Christmas Tree asterism in Monoceros • M46 (Argo Puppis) • M47 (Argo Puppis) • M48 (Hydra) • M44, Beehive or Praesepe (Cancer) • M67 (Cancer) • M35 (Gemini) • M36 (Auriga) • M37 (Auriga) • M38 (Auriga) 	<ul style="list-style-type: none"> • <u>NGC 457</u>: +6.4, 7900 ly, 21Myo • <u>Double Cluster</u>. Very new. Visible with unaided eye from suburbs, more than 300 blue super giants in each. <u>NGC 869</u>: +3.7, 7500 ly, 12.8 Myo related to NGC 884 <u>NGC 884</u>: +3.8, 7500 ly, 12.8 Myo related to NGC 869 • <u>M41</u>: +4.5, 2300 ly, 190 Myo, 100 members, large angular diameter, 4° south of Sirius. • <u>Christmas Tree</u>: total brightness +3.9 mag., about 1/2 degree across and contains about 40 stars • <u>M46</u>: +6.1, 5400 ly, 300 Myo, 500 stars (faint) • <u>M47</u>: +4.2, 1600 ly, 78 Myo, 50 stars • <u>M48</u>: +5.5, 1500 ly, 300 Myo, 56 stars • <u>M44</u>: +3.7, 550 ly, 600 Myo, 100 stars. Very large ang. dia., related to Hyades (similar movement). • <u>M67</u>: Old, many faint stars, 3.2-5 Byo, 2,700 ly • <u>M35</u>: +5.3, 2800 ly, young, 100+ members, large and rich. • <u>M36</u>: +6.3, 4100 ly, 25 Myo, 60 members • <u>M37</u>: +6.2, 4500 ly, 450 Myo, 500 members • <u>M38</u>: +7.4, 4200 ly, 220 Myo, 500 members?

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Globular Cluster	M3, (Canes Venatici)	Bright globular—500,000 stars, 8 Byo, 33,900 ly
Did I See It?	Object (Constellation)	Description
Stellar Nursery, Emission and Dark Nebulae	M42 (Orion nebula)	Great Nebula in Orion, trapezium is birthing region with stars 10^5 years old, 1350 ly, 300 solar masses
Supernova Remnant	M1, Crab Nebula (Taurus) Charles Messier's first object	1054 AD supernova depicted on West Mesa in Chaco Canyon pictograph, 6500 ly distant, diameter is 11 ly
Planetary Nebula	Eskimo, NGC 2392 (Gemini)	It is a bipolar, double-shell planetary nebula. Small but distinct and bluish in color
Galaxy	M33, (Andromeda)	Largest galaxy of local group, 2.4 Mly, 6×10^8 stars
Satellite Galaxies	M32, M110 (Andromeda)	Satellite galaxies of the Andromeda Galaxy
Two Galaxies very close together	M81/M82 (Ursa Major)	Two galaxies very close together—M81, spiral galaxy, 11.8 Mly and M82, irregular galaxy, 12 Mly. A starburst is being triggered by the nearness of M81.
Galaxy	Whirlpool (Canis Venatici-hunting dogs)	Two spiral galaxies in collision near the end of the handle of the Big Dipper, 25 Mly distant
Other Objects		

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