Astronomy 104 laboratory – honors section -- Spring 2005

Introduction to the sky – individual version

Generalities

This lab is meant to be done by the students outside regular laboratory time, in groups or 3-4. It is done instead of the regular "introduction to the sky" lab in case the weather does not cooperate during regular lab time. Students must be done with this lab whenever they have the sufficient number of clear nights to do it in small groups (four clear nights should suffice).

Only 30% of the credit is given for showing up. The remaining 70% of the credit is awarded for a test, to be done after students have learned the procedure. The next clear night lab is a proper time for this test.

Students should show up without the instructor having to ask them individually. They should call the instructor at 832-5627 to make sure there is someone to help them when they come.

The instructor needs to expose students to the following:

(1) A guided tour of the bright constellations in the Orion – Gemini – Taurus –Auriga – Cassiopeia – Perseus – Andromeda – Polaris region.

(2) Look at a few objects with a 12-inch Meade: Moon, Saturn, Comet Machholtz, Pleiades, double stars, deep sky objects. Have the students appreciate the fact that deep sky objects are faint and hard to see, yet they comprise much of the known universe.

(3) Students must learn the names of at least three bright stars in the sky (one in the West, one in the South, one in the East), and be able to find them by themselves.

(4) Students must learn how to aim the LX200 at a star, how to center it, to use it to align the setting circles with it. They must learn how to aim the LX200 at a star with a given name, and at any Messier object of a given number.

(5) Understand the equatorial mount and sidereal clock.

Materials and devices to have ready:

Block the parking lot and switch off the streetlights. Have flashlights ready.
Handouts: give the students a copy of this writeup, and a star chart.
Put up one 12-in Meade on an equatorial wedge.

Astronomy 104 laboratory – honors section -- Spring 2005

Introduction to the sky and telescopes (individual version)

Procedure

1. The instructor will show the bright constellations in the sky, and aim the Meade 12-inch telescope at Saturn, the Moon (if up), a few bright stars, a double star, and a few deep-sky object. Students must follow the procedure, and learn through practice how to aim the telescope. They must focus the telescope to their own eyes each time they look.

- Students need to follow the procedure carefully. In a few minutes steps, the students will be doing the aiming and adjusting.

2. With the instructor's aid, students must learn how to do the following:

- **Aim the LX200 at a star with name or number given by the instructor.**
  (Steps: Press "STAR" then "NAME" than scroll to the star's name.Press "ENTER". Press "GOTO" to slew to the star. In case of emergency, press "GOTO" again to freeze. If a star's number is given instead of its name, press the numbers instead of pressing "NAME". Saturn is STAR 906.)
- **Aim the LX200 at a Messier object with the number given by the instructor.**
  (Steps: Press "M" then the numberPress "ENTER". Press "GOTO" to slew to the object. In case of emergency, press "GOTO" again to freeze.)
- **Center and focus an object in the field.**
  (Help: If the object is not in the field, use the Telrad, Adjust the Telrad's brightness by turning the switch. Once the object is in the field, slow down the slewing by pressing "FIND" or "CENTER" on the keypad and use the E-W-S-N bottons to move the telescope. Learn where the focuser is.)
- **Learn the names of three stars (in different parts of the sky), aim the LX200 at one of them, center it, and align the setting circles.**
  (Help: Use the LX200 at hightest speed, "SLEW", first, and slow it down for accurate aiming. Use the E-W-S-N bottons to move the telescope. Use the Telrad to get the star into the field. Adjust the Telrad's brightness by turning the switch. Once you have the star in the center, bring it up in the catalog: press "STAR", then "NAME, scroll to the star's name, press "ENTER". Now, with the star in the center and its number shown on the keypad, press and keep down "ENTER" until you hear the beep, three seconds. The keypad should say "Coordinates matched". Now you are free to start using "GOTO".)

3. Practice these steps until you are sure you can do it without help. Check if you are ready to take the test next time. You might find it useful to go out a few times at night and practice five minutes to find your three stars in the sky.

- **Notes:**
  If you press the wrong bottom and want a clear start, pressing "MODE" a few times resets it. While slewing, make sure the telescope never hits anything.)

Please help the instructor to put away the telescopes.

ASTRONOMY 104 WORKSHEET

(Introduction to telescopes test)

Date: ___/ __ / 2005 **Your name:** _____ **Section:** 16

1. ***You did the "introduction to telescopes – individual version" lab on _____.***

2. ***Show three stars in the sky, one in the east, one in the south, one in the west. They are:***

East: _____ ***South:*** _____ ***West:*** _____

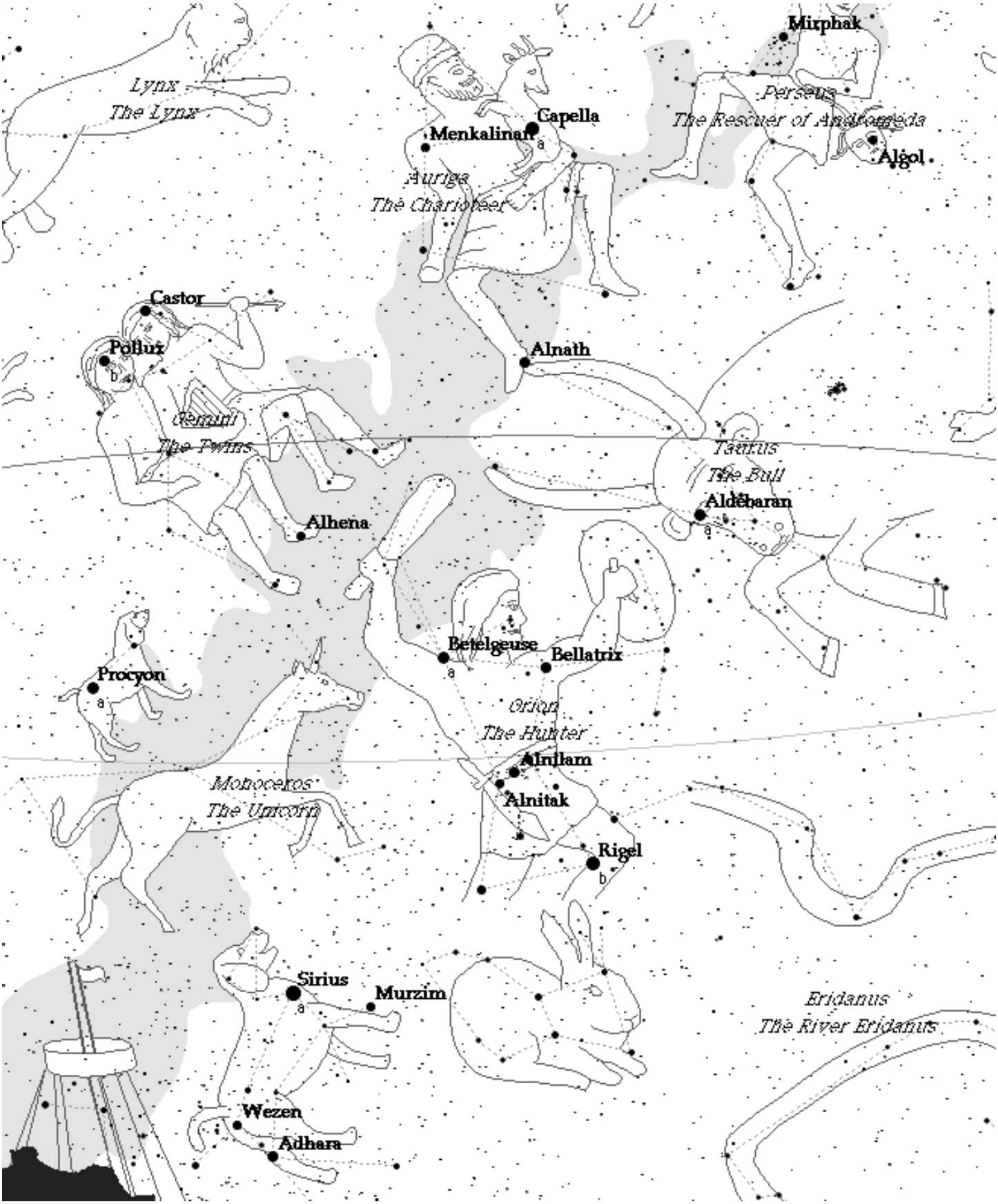
Instructor's initials, how many correct: ( ) _____

3. ***Aim an LX200 at one of the above stars, center and focus. Bring up the star from the catalogue and align the setting circles.***

Instructor's initials, correctly done: _____

4. ***Aim an LX200 at Saturn, at M42, and the star SAO 80333. Center and focus.***

Instructor's initials, how many correct: ( ) _____


Lynx
The Lynx
Mirphak
Perseus
The Rescuer of Andromeda
Capella
Menkalinan
Algol
Auriga
The Charioteer
Castor
Pollux
Alnath
Gemini
The Twins
Taurus
The Bull
Aldebaran
Alhena
Betelgeuse
Bellatrix
Procyon
Orion
The Hunter
Alnilam
Alnitak
Monoceros
The Unicorn
Rigel
Sirius
Murzim
Eridanus
The River Eridanus
Wezen
Adhara