

OBJECTIVES

After completing this lab, the student will be able to:

1. describe the types of telescopes at the observatory visited.
2. list the scientific instruments at the observatory visited.
3. make a list of any astronomical objects viewed while at the observatory.

STUDENT MATERIALS

Students should bring the following items with them to the observatory:

- pencil
- writing board or pad
- penlight or flashlight
- one of the report forms at the end of this lab

OBSERVATORY EQUIPMENT

The observatory should provide the student with the following:

1. access to telescopes through which the students can observe
2. a tour of the facilities and a description of any observing instruments used at the observatory
3. an astronomer to answer student questions and to give a simple tour of the night sky

STUDENT REQUIREMENTS

Students doing this lab should turn in the Observatory Report form. This form is to be completed individually by each student. The observatory visits should be fun and you will miss out on the best part of astronomy if you simply copy a friend's report. If you do this, it will not count as a completed lab.

INTRODUCTION

Attending an observatory open house or a special observing session provided for your class should be one of the most enjoyable experiences you will have in your astronomy course. There may be observatories in your area which hold regular open houses for the general public. These are usually operated by small colleges or universities. Your lab instructor can tell you when and where such open houses are being held. If there are no such facilities, then your lab or lecture instructor may be willing to hold observing sessions somewhere on campus using small portable telescopes. These telescopes will provide you with an excellent view of the moon, planets, binary stars, and the brighter nebulae in the sky. A little preparation on your part can make your observing experience more rewarding.

Several days before going to the observing facility, you should read up about telescopes in general and about what things are currently visible in the night sky. Your textbook has at least one chapter that covers telescopes. Skim through this to refresh your memory about different types of telescopes and mountings. This material will usually be heavily slanted towards professional telescopes and observatories. However, you may also want to be familiar with amateur telescopes which you are also likely to encounter on the lawn of the observatory or at a campus observing session for your class. Both *Sky and Telescope* and *Astronomy* magazines have articles and advertisements about amateur telescopes. They also have monthly sky charts which tell you what can be seen in the early evening sky. These magazines can be purchased at most bookstores and one or both are usually available in libraries. Their respective websites are www.skypub.com and www.kalmbach.com (click on the Astronomy magazine icon). By making this preparation in advance, you will be better prepared for the terms and jargon used by any astronomers you may encounter and you

will also be in a better position to ask intelligent questions of any astronomers you may meet.

TERMS YOU SHOULD KNOW

aperture
eyepiece
magnification
refracting telescope
Newtonian reflecting telescope
Cassegrain reflecting telescope
Schmidt Cassegrain telescope
equatorial mount
altitude-azimuth mount (alt-az mount)
Dobsonian mount
charge-coupled device (CCD)
north celestial pole
celestial equator
zenith
horizon

PROCEDURE

Preparation for Observing

1. Obtain a list of observatories and their public observing schedule. Your lab instructor will probably be able to help you with rounding up this list.
2. Watch the weather reports and look for a potentially clear night which also occurs on a night listed as a public night at one of the observing sites.
3. Before attending, round up any materials you may want to take with you such as flashlights, star charts, writing materials, insect repellent, etc.

4. You should dress appropriately. Wear pants and comfortable shoes. You may be climbing some stairs, or standing on deck planks; high heels and skirts are not recommended. Most observatories are open to the outside air. If it is cold outside, be sure to bring a jacket, coat, gloves, etc.
5. Before you attend, it may be a good idea to make one last check of the weather. If it has become overcast, you may want to reconsider and try a different night when you can see something. If it is clear, then go out and enjoy the beauty of the starry sky.

At the Observatory

6. If a tour is given, be sure to participate in it. As you tour the facility, look around and see what telescopes and instruments are available for astronomers to use. Ask observatory personnel questions you might have about the observatory.
7. If it is a clear night, look through every telescope available for student and public viewing. It will blow your mind! If any telescopes are set up for hands-on use, you should try pointing them at something in the sky. It's a real challenge, but fun.
8. Make a list of every astronomical object you view during the evening. This should include unaided eye observations of constellations and bright stars and binocular or telescopic views of astronomical objects like the moon, planets, binary stars, nebulae, etc.
9. Before leaving, have one of the astronomers at the observatory sign and date your observing report. This is proof that you actually attended. Turn in this report to your lab instructor. (**Note:** there are two report forms because GSU students are expected to go observing once per semester in a two-semester lab sequence. So, one is to be used by ASTR 1010 students and the second is to be used by ASTR 1020 students.)

NAME: _____

LAB SECTION: _____

OBSERVATORY REPORT for 1st Semester

NAME OF OBSERVATORY: _____ LOCATION: _____

WEATHER CONDITIONS: _____

In the space below describe any telescopes and instrumentation you saw or used while at the observatory. You may need to use some of the terms listed at the beginning of this lab.

List below any astronomical sights you may have viewed such as constellations and bright stars (give their names), the moon, planets, binary stars, nebulae, etc.

ASTRONOMER'S SIGNATURE: _____ DATE: _____

BONUS OBSERVATORY REPORT for 1st Semester

NAME OF OBSERVATORY: _____ LOCATION: _____

WEATHER CONDITIONS: _____

In the space below describe any telescopes and instrumentation you saw or used while at the observatory. You may need to use some of the terms listed at the beginning of this lab.

List below any astronomical sights you may have viewed such as constellations and bright stars (give their names), the moon, planets, binary stars, nebulae, etc.

ASTRONOMER'S SIGNATURE: _____ DATE: _____

NAME: _____

LAB SECTION: _____

OBSERVATORY REPORT for 2nd Semester

NAME OF OBSERVATORY: _____ LOCATION: _____

WEATHER CONDITIONS: _____

In the space below describe any telescopes and instrumentation you saw or used while at the observatory. You may need to use some of the terms listed at the beginning of this lab.

List below any astronomical sights you may have viewed such as constellations and bright stars (give their names), the moon, planets, binary stars, nebulae, etc.

ASTRONOMER'S SIGNATURE: _____ DATE: _____

BONUS OBSERVATORY REPORT for 2nd Semester

NAME OF OBSERVATORY: _____ LOCATION: _____

WEATHER CONDITIONS: _____

In the space below describe any telescopes and instrumentation you saw or used while at the observatory. You may need to use some of the terms listed at the beginning of this lab.

List below any astronomical sights you may have viewed such as constellations and bright stars (give their names), the moon, planets, binary stars, nebulae, etc.

ASTRONOMER'S SIGNATURE: _____ DATE: _____