

Observational Astronomy / PHYS-UA 13 / Spring 2020 / Syllabus

This course will teach you how to observe the sky carefully with your naked eye, binoculars, and a small telescope. You will learn the basics of observable lunar and planetary properties, and the basics of astronomical coordinates and observations. The goal is for you to be able to understand and describe what you see in the sky at night, and to be able to use charts and coordinates to predict it.

The instructors are: Prof. Glennys Farrar (726 Broadway, Rm 954, gf25@nyu.edu), whose office hours are Weds 11am–12:30pm (or by appointment), and TA David Mykytyn (dwm261@nyu.edu).

The primary textbooks are:

- *The Ever-Changing Sky*, by James Kaler
- *Sky & Telescope's Pocket Sky Atlas*, by Roger W. Sinnott
- *Edmund Mag 5 Star Atlas* (will be supplied to you)
- This laboratory manual.

Each week you will attend one lecture (at 3:30pm Monday in Silver Building Room 621) and one lab in room 221 Meyer.

Grades are based on labs (20% on written material, 5% on extra good work), homeworks (10%), the midterm (30%) and the final (35%).

For the homework, there is a sheet of “Lecture Questions” to answer, based on the previous week’s lecture. These are due at the beginning of each lecture, starting the second lecture. **Late homeworks will not be accepted.** Two of these questions will be chosen to be graded each week (obviously, we won’t tell you which two beforehand).

For the midterm and the final you are responsible for material in the labs, the reading, and the homework. In preparing for the exams, use the homeworks as a guide to which material I believe is essential.

Arrive for the lab (on time!) at 7:00pm in Meyer 221, where we will discuss the contents of the lab and then (when appropriate) go to the observatory. **Starting the week of March 9, we will move the lab time later to 7:45pm** to accommodate the later sunset and daylight savings time.

We will begin with Lab #1 the first week, which is indoors. This lab will be **the very first week of class**. After that the labs will proceed sequentially where possible, but whether we are going on to the next indoor lab or next outdoor lab will depend on the weather. Some outdoor labs will come out of order depending on what is visible a given night. Finally, the last lab in this book should have entries filled in **every week**, and should be handed in on the final lab date.

You cannot switch between the lab sections mid-semester, because in general they will be on different schedules. The timing of the indoor and outdoor labs for each section will be driven mostly by the weather. Welcome to observational astronomy!

For the labs: **you MUST arrive on time**, or else you will not be able to access the observatory. In addition, please dress appropriately for remaining outside for an extended period, including hats and gloves when appropriate. **Dress warm!**

Attendance in lab is not optional! You can miss one lab during the semester without penalty: you must however contact the lab instructor explicitly **beforehand** to claim this credit. If you are absent for any other without good cause you will lose credit for that lab. If you miss more than three sessions without good cause, you will not be given a passing grade no matter how you perform in the class otherwise.

Do not use your phones during lab unless directed to!

<i>Jan. 27</i>	The Celestial Sphere: angles & coordinates	Kaler Ch. 1, 3.15; Edmund pp. 1-9
<i>Feb. 3</i>	Introduction to telescopes	Kaler Ch. 13.8-13.13
<i>Feb. 10</i>	Rotation and Orbit of the Earth	Kaler Ch. 2.1-2.6, 2.12, Ch. 3
<i>Feb. 17</i>	PRESIDENT'S DAY: Note there is still Wednesday lab!	—
<i>Feb. 24</i>	Finding your way in the sky	Edmund pp. 30-32
<i>Mar. 2</i>	<i>NYU closed</i>	—
<i>Mar. 9</i>	Midterm exam in class!	—
<i>Mar. 16</i>	SPRING BREAK	—
<i>Mar. 23</i>	Stars	Kaler Ch. 4.1-4.10, 4.15
<i>Mar. 30</i>	Variables and Binaries	Kaler Ch. 4.11-4.13
<i>Apr. 6</i>	Galaxies	Kaler Ch. 4.14, 4.16-4.17
<i>Apr. 13</i>	The Moon	Edmund p. 34; Kaler Ch. 9.1-9.5, 9.9
<i>Apr. 20</i>	Planets and their motions	Kaler Ch. 11.1-11.13
<i>Apr. 27</i>	Moons of Jupiter and Saturn	Kaler Ch. 12.1
<i>May. 4</i>	Precession & nutation	Kaler Ch. 5.1-5.10
<i>May. 11</i>	Tides & Eclipses	Kaler Ch. 10
<i>May. 13</i>	FINAL EXAM, 6:00pm-7:50pm, tbd	

<i>Jan. 27-29</i>	Orion, Andromeda, Mars, Uranus	Full Moon	Sunset 5:08pm EST
<i>Feb. 3-5</i>	Orion, Andromeda, Mars, Uranus	—	Sunset 5:18pm EST
<i>Feb. 10-12</i>	Orion, Andromeda, Mars, Uranus	First Quarter Moon	Sunset 5:28pm EST
<i>Feb. 19</i>	Orion, Andromeda, Mars, Uranus	Full Moon	Sunset 5:36pm EST
<i>Feb. 24-26</i>	Orion, Mars, Uranus	—	Sunset 5:45pm EST
<i>Mar. 2-4</i>	Orion, Mars, Uranus	—	Sunset 5:51pm EST
<i>Mar. 9-11 (New time: 7:45pm EDT)</i>	Orion, Mars & Uranus nearby	Waxing Crescent Moon	Sunset 6:58pm EDT
<i>Mar. 16</i>	Spring Break	—	—
<i>Mar. 23-25</i>	Orion, Mars	—	Sunset 7:14pm EDT
<i>Mar. 30-Apr. 1</i>	M3, Mars	—	Sunset 7:21pm EDT
<i>Apr. 6-8</i>	M3, Mars	Waxing Crescent Moon	Sunset 7:28pm EDT
<i>Apr. 13-15</i>	M3, M5 rising, Mars	Full Moon	Sunset 7:36pm EDT
<i>Apr. 20-22</i>	M3, M5 rising, Mars	—	Sunset 7:43pm EDT
<i>Apr. 27-29</i>	M3, M5, Mars	—	Sunset 7:50pm EDT
<i>May 4-6</i>	M3, M5, M13 rising, M92 rising, Mars	Waxing Crescent Moon	Sunset 8:04pm EDT
<i>May 11</i>	M3, M5, M13 rising, M92 rising, Mars	Waxing Gibbous Moon	Sunset 8:04pm EDT