

Observational Astronomy / PHYS-UA 13 / Fall 2021 / 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. Michael Blanton (726 Broadway, Rm 941, mb144@nyu.edu), whose office hours are Weds 12:30pm–2:00pm (or by appointment), and TA Nick Faucher (ntf229@nyu.edu).

The primary textbooks are:

- *The Amateur Astronomer's Introduction to the Celestial Sphere*, by William Millar
- *Sky & Telescope's Pocket Sky Atlas*, by Roger W. Sinnott
- *Edmund Mag 5 Star Atlas* (will be supplied to you)
- This laboratory manual.

I will be covering additional material on what moons, planets, stars, and galaxies are, and although you do not need an additional textbook for that material, you may find *Welcome to the Universe!* by Tyson, Strauss, & Gott entertaining and informative. I have noted in the syllabus what chapters in that book are most relevant to what lectures (noted as “WTTU”).

Each week you will attend one lecture (at 3:30pm Monday in Room 375 of the Global Center of Academic & Spiritual Life) and one lab (which will meet in Meyer 224, see below regarding times).

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 224, where we will discuss the contents of the lab and then (when appropriate) go to the observatory.

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>Date</i>	<i>Topic</i>	<i>Reading</i>
<i>Sep. 13</i>	The Celestial Sphere: angles & coordinates	Millar Ch. 2; Edmund pp. 1-9
<i>Sept. 20</i>	Introduction to telescopes	—
<i>Sept. 27</i>	Rotation and Orbit of the Earth	Millar Ch. 4.1-4.5, Ch. 6
<i>Oct. 4</i>	Finding your way in the sky	Edmund pp. 30-32
<i>Oct. 12 (Tuesday!)</i>	Stars	Millar Ch. 3, WTTU Ch. 5-8
<i>Oct. 18</i>	Variables and Binaries	Millar Ch. 3
<i>Oct. 25</i>	Midterm exam in class!	—
<i>Nov. 1</i>	Galaxies	WTTU Ch. 12-13
<i>Nov. 8</i>	The Moon	Millar Ch. 6, Edmund p. 34
<i>Nov. 15</i>	Planets and their motions	WTTU Ch. 2
<i>Nov. 22</i>	Moons of Jupiter and Saturn	—
<i>Nov. 29</i>	Precession & nutation	Millar Ch. 4.6-4.7
<i>Dec. 6</i>	Tides & Eclipses	Millar Ch. 7
<i>Dec. 13</i>	Asteroids, Comets, Meteors	—
<i>Dec. 20, 4pm-5:50pm</i>	FINAL EXAM, GCASL 375	

<i>Date</i>	<i>Planets</i>	<i>Galaxies / Star Clusters</i>	<i>Moon</i>	<i>Sunset</i>
<i>Sept. 13–15</i>	Venus (before 7:35pm), Jupiter, Saturn	—	First Quarter Moon	Sunset 7:07pm EDT
<i>Sept. 20–22</i>	Venus (before 7:24pm), Jupiter, Saturn	Andromeda rising	Full Moon	Sunset 6:56pm EDT
<i>Sept. 27–29</i>	Jupiter, Saturn	Andromeda	—	Sunset 6:44pm EDT
<i>Oct. 4–6</i>	Jupiter, Saturn	Andromeda	—	Sunset 6:32pm EDT
<i>Oct. 12–13</i>	Jupiter, Saturn	Andromeda	First Quarter Moon	Sunset 6:21pm EDT
<i>Oct. 18–20</i>	Jupiter, Saturn	Andromeda	Full Moon	Sunset 6:10pm EDT
<i>Oct. 25–27</i>	Jupiter, Saturn	Andromeda	—	Sunset 6:00pm EDT
<i>Nov. 1–3</i>	Jupiter, Saturn	Andromeda	—	Sunset 5:52pm EDT
<i>Nov. 8–10</i>	Jupiter, Saturn	Andromeda, Pleiades	Crescent Moon	Sunset 4:44pm EDT
<i>Nov. 15–17</i>	Jupiter, Saturn	Andromeda, Pleiades	Gibbous Moon	Sunset 4:37pm EDT
<i>Nov. 22–24</i>	Jupiter, Saturn	Andromeda, Pleiades	Gibbous Moon	Sunset 4:32pm EDT
<i>Nov. 29–Dec. 1</i>	Jupiter, Saturn	Andromeda, Pleiades	—	Sunset 4:29pm EDT
<i>Dec. 6–8</i>	Jupiter, Saturn	Andromeda, Pleiades	—	Sunset 4:28pm EDT
<i>Dec. 13</i>	Jupiter, Saturn	Andromeda, Pleiades	Crescent Moon	Sunset 4:29pm EDT