Observational Astronomy / PHYS-UA 13 / Spring 2012/ 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 (Meyer 523, mb144@nyu.edu), whose office hours are TBD (or by appointment), and TA Benjamin Roig (Meyer ???), whose office hours are TBD.

The primary textbook is The Ever-Changing Sky, by James Kaler. In addition, we will use the Edmund Mag 5 Star Atlas the Peterson Field Guide to the Stars and Planets, by Jay Pasachoff, and a laboratory manual. This course will teach you how to understand and use these books.

Each week you will attend one lecture (at 3:30pm Monday in Meyer 102) and one lab.

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. Starting the week of March 11, we will move the lab time later to 7:45pm to accommodate the later sunset and daylight savings time.

You cannot switch between the lab sections, 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.

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 BEFORE THE LECTURE. These are due at the beginning of each lecture. You do not need to hand these in for Lecture #1, but you do for all subsequent lectures. 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.
Lecture and reading schedule:

- **Jan. 23:** Celestial sphere: angle & coordinates  
  (Kaler Ch. 1; Edmund pp. 1–9; Peterson pp. 495–498)
- **Jan. 30:** Introduction to the telescope  
  (Kaler 13.8–13.16; 13.21–13.26; Peterson pp. 503–508)
- **Feb. 6:** Rotation and orbit of the Earth  
  (Kaler Ch. 2.1–2.4, Ch. 3.1–3.13; Peterson p. 499)
- **Feb. 13:** Constellations  
  (Kaler Ch. 4.1–4.9; Peterson pp. 1–26, pp. 32–38; pp. 46–50)
- **Feb. 20:** PRESIDENT’S DAY
- **Feb. 27:** Finding your way in the sky  
  (Edmund pp. 30–32)
- **Mar. 5:** Midterm exam (in class)
- **Mar. 12:** SPRING BREAK
- **Mar. 19:** Physical nature of stars  
  (Kaler Ch. 4.10; Peterson pp. 144–149)
- **Mar. 26:** Variables, Binaries, Nebulae, Galaxies  
  (Kaler Ch. 4.11–4.17; Peterson pp. 194–204, pp. 149–185)
- **Apr. 2:** The Moon  
  (Edmund p. 34; Kaler Ch. 9.1–9.5; Peterson pp. 348–359)
- **Apr. 9:** Planets & their motions  
  (Kaler Ch. 11.1–11.13; Peterson pp. 385–395)
- **Apr. 16:** Moons of Jupiter and Saturn  
  (Kaler Ch. 12.1; Peterson pp. 418–454)
- **Apr. 23:** Precession & nutation  
  (Kaler Ch. 5.1–5.10)
- **Apr. 30:** Tides & eclipses  
  (Kaler Ch. 10; Peterson pp. 359–363, pp. 474–487)
- **May. 7:** Asteroids, Comets, Meteors  
  (Kaler Ch. 12.1–12.5; Peterson pp. 455–473)
- **TBD:** Final exam (cumulative)
Weekly outlook Spring 2012.

- Jan. 23–25: Orion, Jupiter (Sunset: 5:01pm EST)
- Jan. 30–Feb. 1: Orion, First Quarter Moon near Jupiter, Venus? (Sunset: 5:10pm EST)
- Feb. 6–8: Orion, Jupiter, Venus? (Sunset: 5:18pm EST)
- Feb. 13–15: Orion, Jupiter, Venus (Sunset: 5:19pm EST)
- Feb. 22: Orion, Jupiter, Venus (Sunset: 5:38pm EST)
- Feb. 27–29: Orion, Crescent Moon near Jupiter, Venus (Sunset: 5:44pm EST)
  Mercury above 10 deg until 7:15pm
- Mar. 5–7: Mars, Gibbous Moon, Orion, Jupiter, Venus (Sunset: 5:52pm EST)
  Best shot at Mercury, above 10 deg until 7:30pm
- Mar. 11: Daylight Savings Time begins; lab time moves to 7:45pm
- Mar. 19–21: Orion, Mars, Venus, Jupiter (Sunset: 6:52pm EDT)
- Mar. 26–28: Orion, Mars, Venus, Jupiter (Sunset: 7:14pm EDT)
- Apr. 2–4: Gibbous Moon near Mars, Venus, Jupiter? (Sunset: 7:22pm EDT)
- Apr. 9–11: Mars, Venus (Sunset: 7:29pm EDT)
- Apr. 16–18: Saturn from 9pm, Mars, Venus (Sunset: 7:36pm EDT)
- Apr. 23–25: Saturn, Mars, Venus (Sunset: 7:44pm EDT)
- Apr. 30–May. 2: Saturn, Gibbous Moon near Mars, Venus (Sunset: 7:51pm EDT)
- May. 7: Saturn, Mars, Venus (Sunset: 7:58pm EDT)