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2017

### General Astronomy 110 Syllabus (Zero Textbook Cost)

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# Syllabus

Title of Course: **GENERAL ASTRONOMY**  
**AST 110 Spring/ Fall 2017**

**Class hours 3**  
**Lab hours 2**

**Credits: 4**

## Course Description

This course presents a panoramic view of modern astronomy. It introduces students to fundamental concepts about our universe starting from basic sky observations to the structure and origin of the universe. It presents the fundamental ideas of the astronomical scientific methodology as a human inquiry that leads us into a better and progressive understanding of all the universe around us. Topics to be covered include the scientific method, age and origin of the universe and the solar system, description of planets, interactions between light and matter, the sun, gravity, black holes and dark matter, among others.

This is textbook free course. All materials used are from open noncommercial electronic resources (most of them under a Creative Commons Attribution License) available free of cost to the students. That includes the textbook, laboratory manual, software and videos.

**Course Prerequisites: (ENG 88 or ESL 62) and ACR 94 and MAT 8**

## Text Resources:

**Title:** *ASTRONOMY*

Authors: Andrew Fraknoi, David Morrison, Sidney C. Wolff

Publisher: OpenStax, Rice University

**ISBN-10 1-938168-28-3**

**ISBN-13 978-1-938168-28-4**

This textbook is in PDF format and can be downloaded from the following web page:

**<https://openstax.org/details/books/astronomy>**. It is also available in printed form for a very low price.

**Laboratory:** Laboratory material will proceed mainly from two sources, a printed manual provided to the students during the first laboratory and the software Stellarium that is a free open source planetarium for your computer. Stellarium will be available in all laboratory computers and the can be downloaded from the following web page: **<http://www.stellarium.org/>**

## Additional Resources:

In addition to the textbook and laboratory resources, this course will be using the **Teach Astronomy Web Course**. It is a comprehensive online astronomy course, textbook and video series created by Dr. Chris Impey. It can be accessed at the following web page: **<http://www.teachastronomy.com/>**

To expand and reinforce the concepts taught in class you will be required to watch videos from **BMCC's Library Video Database**. Please familiarize yourselves with the use BMCC Library video databases, especially with Films on Demand and Kanopy.

## **Blackboard**

A great amount of course material will be available through Blackboard, that includes the syllabus, class notes and laboratory material. All students must check that their Blackboard accounts are accessible, and working properly. Also, students must verify that the contact email in Blackboard is set up and working properly since all course announcements will be made through that system only. If you have any issues with Blackboard please go to **E-Learning Center** located at **S-510A**. To set your university email or solve any problems related to it, you must go to the **IT Office** located at **S-140**.

## **Course Email**

This course will rely on email to conduct business, make last minute announcements, and so on. It is assumed that students will check their college email at least once per day for possible course announcements.

## **Course Policies:**

### **Laboratory Reports**

All Laboratory reports are due **a week after the laboratory was performed or next laboratory meeting in case of holidays or changes in schedule only**. If you do not attend to a Laboratory, you will be still responsible to hand in the report on time. No excuses will be accepted. All reports must include a cover sheet. If you have to send a report by email, it must be one single file in PDF format only.

### **Cell Phones and Other Electronic Devices**

Cell phones and other electronic devices should *not* be seen, heard or used during lecture, laboratory or during any examination. The repeated appearance of a phone or other electronic device is grounds for ejection from class and subject to a class disruption report to BMCC's Behavioral Assessment Response Team (BART), at my discretion. In case of an emergency situation where having access to a cell phone is a necessity, you must inform me prior to the class, laboratory or examination in question. **No head gear/headphones are permitted in class or laboratory**. If you want to make a recording of the lecture, you must likewise inform me prior to the start of class.

### **Classroom Etiquette: Expected behavior at class and laboratory**

As members of the BMCC community, it is the responsibility of all to uphold the values of respect, dignity and concern for self and others. Any improper remarks, disrespectful or disruptive behavior toward the instructor/professor or any other student will be dealt harshly and immediately, and reported to BMCC's Behavioral Assessment Response Team (BART).

**Important Laboratory Rules: (1) Absolutely consumption of food or beverages are NOT allowed in the laboratory. There are NO exemptions to this rule and NO excuses for its enforcement. (2) Appropriate dress is required in the laboratory, shoulders, legs and feet are to be covered.** If you need to take a medication, you will have to go out of the laboratory to take it and come back. Refusal to obey this rule will cause immediate removal from the laboratory, a report against the student will be filed in the Science Department and to the College BART System.

### **Evaluation & Requirements of Students**

Test format will be multiple choice. Final grade will be calculated based on a point system of 480 points<sup>1</sup> distributed in the following way:

Laboratory reports 140 pts (10 Reports at 10 points each)

Three partial exams 240 points (80 points each)

Final Examination (Comprehensive) 100 pts

<sup>1</sup> Final number of points may vary depending particular circumstances.

	<b>TOPIC<sup>2</sup></b>	<b>CHAPTERS</b>	<b>LABORATORY EXPERIMENT<sup>2</sup></b>
<b>1</b>	Science and the Universe: A Brief Tour & The Scientific Method	1	Math for Astronomy
<b>2</b>	Observing the Sky: The Birth of Astronomy	2	Measurement
<b>3</b>	Orbits and Gravity	3	Lenses and Telescopes
<b>4</b>	Earth, Moon, and Sky	4	Phases of Venus
<b>5</b>	Radiation and Spectra	5	Acceleration due to Gravity
<b>6</b>	Other Worlds: An Introduction to the Solar System & Earth as a Planet	6, 7	Retrograde Motion
<b>7</b>	Earthlike Planets: Venus and Mars & The Giant Planets	10, 11	Celestial Sphere, Star Maps
<b>8</b>	Rings, Moons, and Pluto & Comets and Asteroids: Debris of the Solar System	12, 13	Spectra
<b>9</b>	The Sun	15, 16	Heliocentric Parallax
<b>10</b>	The Birth of Stars and the Discovery of Planets outside the Solar System	21	Hertzsprung-Russell Diagram
<b>11</b>	Stars from Adolescence to Old Age	22	Galaxy Identification
<b>12</b>	The Death of Stars & Black Holes and Curved Spacetime	23, 24	Variable Stars
<b>13</b>	The Milky Way Galaxy	25	Hubble's Law
<b>14</b>	The Big Bang	29	Phases of the Moon; Time of Moonrise; Eclipses
<b>15</b>	Finals Week		

<sup>2</sup> Lectures and laboratory experiments are subject to change depending on class interests, allowed time and availability.

<b>Course Student Learning Outcomes (Students will be able to:)</b>	<b>Measurements (Means of assessment for student learning outcomes listed in first column)</b>
1. Students will be able to collect astronomical data in table format	1. Lab write-ups
2. Students will be able to plot astronomical data	2. Lab write-ups
3. Students will be able to interpret plotted astronomical data	3. Lab write-ups, exam questions

	<b>General Education Learning Outcomes</b>	<b>Measurements (means of assessment for general education goals listed in first column)</b>
	<b>Communication Skills-</b> Students will be able to write, read, listen and speak critically and effectively.	Laboratory write-ups
	<b>Quantitative Reasoning-</b> Students will be able to use quantitative skills and the concepts and methods of mathematics to solve problems.	Laboratory write-ups, exams
	<b>Scientific Reasoning-</b> Students will be able to apply the concepts and methods of the natural sciences	Laboratory write-ups, exams

