ASTRONOMY 121 SYLLABUS
SPRING 2015

Course Description
ASTR121 is one of two semester-long courses in introductory astronomy. We delve into the history of astronomical discovery of the local universe, including how astronomers tracked and predicted planetary movements. We explore characteristics and motions of planetary systems, moons, and other celestial bodies in the Solar System. Students will use mathematical techniques and physics to estimate various properties of the Solar System.

Credit
3 credit hours. This course satisfies the General Education Criteria for a Physical Sciences (Natural Sciences and Technology) course and a Quantitative Reasoning II course. Credit not given to students with credit in ASTR 100 or ASTR 210 or GEOL 116. Students with credit in PHYS 212 are encouraged to take ASTR 210.

Prerequisites
Algebra and some trigonometry is required. Previous astronomy courses are not required.

Webpage
Course materials will be updated on Compass 2g
https://compass2g.illinois.edu
Teaching Staff

Jessica Evans, evans35@illinois.edu, Lecture, Section AD8
Yinghe Celeste Lü, ylv4@illinois.edu, Sections AD1-3
Abigail Holmes, alholme2@illinois.edu, Sections AD4-6

Office Hours
The Astronomy Building at Green & Gregory is accessible via Silver and Gold buses (Springfield & Gregory) and the Green (Green & Gregory)

Jessica Evans evans35@illinois.edu
When: Wednesday 3-5 pm
Where: Astronomy Building, ATLAS Room on 2nd floor (SE corner of building)

Yinghe Celeste Lü ylv4@illinois.edu
When: Monday 2-4 pm
Where: 133 Astronomy Building

Abigail Holmes alholme2@illinois.edu
When: Friday 3-5 pm
Where: Astronomy Building Library on 2nd floor

Online Media/Textbook
There is no textbook to purchase for this class. The entirety of reading and reference material is available free, online; a list of necessary readings can be found on the compass ASTR121 page. The online, open-source nature of these readings do not
make them any less required! There are four primary sources of required reading:
(AN) Nick Strobel’s Astronomy Notes www.astronomynotes.com
(WI) Wikipedia
(HP) HyperPhysics

Grading Breakdown, course total 1000 points

Exams - 350 points - 35%
- 2 in-class midterms (Feb 23, Apr 13), not cumulative, 10% each
- Final, 3 hr (8:00-11:00am May 15th), cumulative, 15%
  Students may bring a calculator and a pencil to exams. All required equations will be provided on the exam.

Homeworks - 275 points - 27.5%
  7 take-home assignments submitted online to compass2G
  15% grade reduction penalty every day assignment is late
  >> E-mail late assignments to evans35@illinois.edu

Semester Projects - 325 points - 32.5%
  Night observing (required) 75 points 7.5%
  Solar observing (required) 75 points 7.5%
  Upwells Sundial Lab (required) 75 points 7.5%
  Stellarium Observations (required) 50 points 5%
  Interactive moon phase lab (required) 50 points 5%
  Planetarium trip (optional) 25 points extra credit

Discussion Attendance - 50 points - 5%
  can miss 2 without loss of credit, 3rd absence -25 points, 4th absence -50 points

Projects
Night Observing - student attends one scheduled night observing session with a worksheet to fill out about the session. Details of the scheduled sessions may be found: 
http://www.astro.illinois.edu/academics/courses/nightobs/
Solar Observing - student attends one scheduled solar observing session with a worksheet to fill out about the session. Details of the scheduled sessions may be found: 
http://www.astro.illinois.edu/academics/courses/solarobs/
Stellarium Lab - at-home lab using “observations” made in the free online sky simulator, stellarium
Interactive Moon Phase Lab - student uses online simulations to gain insight on the physical nature of the moon phases
Upwells Sundial Lab - student will visit the Upwells statue and take guided measurements using the Upwells lab manual, available on compass2g.
Planetarium visit - (optional) student attends a Staerkel Planetarium session and brings their TA their ticket stub. Students must sign up before attending as space is limited. No worksheet or paper to fill out, just enjoy the session! Cost of show $3, please bring exact change. Scheduled sessions, sign-ups, and directions: 
http://www.astro.illinois.edu/academics/courses/planetarium/

Class Policies
General: This course will follow all policies in the Student Code (http://www.admin.uiuc.edu/policy/code/).

Attendance:
– Attendance in discussion will be taken at the start of class via a roll call or similar procedure. **If you were late to class and did not have your attendance acknowledged please notify your TA at the end of discussion. It is your responsibility to make sure your attendance has been recorded.** You may miss 2 discussion sections without penalty. The third absence will result in loss of half of your discussion points, and the forth absence, all of them.

– You may be able to attend a section at a different time to accommodate unforeseen conflicts; contact your TA and instructor.

– You are expected to attend lectures and discussion sections. **We will cover material in class that will not always be in the readings, and the lecture material will be included on the exams.** Class time is the most valuable for you if you come prepared, ready to actively engage the material.

**Working With Others:** Discussing course material with your classmates is encouraged, but each student is expected to do his or her own work. On homework assignments, you may work together and discuss the questions, but each student should write up and submit their own answers. For the observing session reports, you may attend the session with a group, but each student must write and submit their own report. On the Upwells lab exercises, you are encouraged to make measurements with a partner but each student must turn in their own lab worksheet. Each student is responsible for understanding and participating in the collection of data, the analysis
process, and the results from the exercise. If you are in any doubt about whether something is allowed or not, ask your instructor or your TA.

**Late Assignments:** Homeworks, labs, and reports have due dates as posted on Compass2G. All assignments are to be submitted to Compass2G. Homework turned in late will be assessed a 15% penalty per calendar day it is late (excepting University holidays). For a well-documented excuse (such as illness) the penalty may be waived at the instructor's discretion. No work will be accepted more than a week after the due date, regardless of medical excuse. In general, late assignments can only be submitted by e-mail to the instructor.

**Make-up Midterms:** Make-up midterms will only be offered if the student has good reason, in accordance with sections 1-501, 1-502, 3-201, and 3-202 of the Student Code. Advance notice and documentation are required for approved school events (e.g., athletic competition), religious observances, and other planned absences. In case of unforeseen circumstances that do not allow you to notify the instructor beforehand (e.g., sudden serious illness, family emergency), contact the Emergency Dean request an Absence Letter to document the exam absence. If you are sick, notify the instructor as soon as possible, preferably before the exam, to work out an alternate exam.

**Make-up Finals:** Undocumented absence from the final exam will result in a grade ABS as per the student code section 3-201. You must notify the instructor of a conflict with the final exam date (e.g., three finals in one day) within one week of notification of the final exam date (section 3-2 intro).
Personal Issues: To insure that concerns are properly addressed from the beginning, students who require reasonable accommodations to participate in this class are asked to see the instructor as soon as possible. All accommodations will follow the procedures as stated in sections 1-107 and 1-110 of the Student Code.

Academic Integrity: Any instance of academic dishonesty (including cheating and plagiarism) will result in a grade of 0 for that component and be documented in the student’s academic file. This includes copying written material from the Internet without proper attribution. Please refer to sections 1-401 to 1-406 of the Student Code.

Decorum:

For the benefit of your fellow students and your instructors, you are expected to follow these basic rules of decorum.

1. Show up for class on time.
2. Mute your cell phone before class begins.
3. Use of electronic devices other than for looking at lecture slides/taking notes is discouraged.
4. Be respectful in class: do not use headphones, talk on your cell phone, read newspapers, or prop your feet up on chairs. Our lecture will be a mostly full house this semester.
5. Be respectful in your interactions with your fellow students and your teachers.
Schedule

DATE
WEEK 1
1/21/2015  LECTURE 1: Intro, resources, teaser, math practice, "mapping out"
1/22/2015  Discussion 1
WEEK 2
1/26/2015  LECTURE 2: Basic Naked Eye Astro, Ang Size, Sky movements
1/28/2015  LECTURE 3: Earth Rev, Seasons
1/29/2015  Discussion 2  Homework 1 Due 1/30
WEEK 3
2/2/2015  LECTURE 4: Moon Phases
2/4/2015  LECTURE 5: Eclipses
2/5/2015  Discussion 3  Homework 2 Due 2/6
WEEK 4
2/9/2015  LECTURE 6: Solar System TL;DR
2/12/2015  Discussion 4  Moon Lab Due 2/13
WEEK 5
2/16/2015  LECTURE 8: Kepler's Laws
2/18/2015  LECTURE 9: Newton's Laws
2/19/2015  Discussion 5  Homework 4 Due 2/20
WEEK 6
2/23/2015  EXAM MT1: Lectures 1-9
2/25/2015  LECTURE 10: Light & Radiation
2/26/2015  Discussion 6
WEEK 7
3/2/2015  LECTURE 11: Spectral Lines
3/4/2015  LECTURE 12: Telescopes
3/5/2015  Discussion 7  Homework 5 Due 3/6
WEEK 8
3/9/2015  LECTURE 13: The Sun
3/11/2015  LECTURE 14: Solar Activity
3/12/2015  Discussion 8  Stellarium Lab Due 3/13
WEEK 9
3/16/2015  LECTURE 15: SS Formation Theories
3/18/2015  LECTURE 16: Planet Properties: Atmospheres, compositions
3/19/2015  Discussion 9  Homework 6 Due 3/20
WEEK 10  SPRING BREAK NO CLASSES
WEEK 11
3/30/2015  LECTURE 17: Earth Geology
4/1/2015  LECTURE 18: Lunar Geology
4/2/2015  Discussion 10
WEEK 12
4/6/2015  LECTURE 19: Terrestrial Planets
4/8/2015  LECTURE 20: Terrestrial Atmospheres
4/9/2015  Discussion 11  **Upwells Lab Due 4/10**

**WEEK 13**
- 4/13/2015  **EXAM MT2 Lectures 11-20**
- 4/15/2015  **LECTURE 21: Jupiter and Saturn**
- 4/16/2015  Discussion 12  **Night Observing Due 4/17**

**WEEK 14**
- 4/20/2015  **LECTURE 22: Jovian Moons**
- 4/22/2015  **LECTURE 23: Uranus and Neptune**
- 4/23/2015  Discussion 13  **Homework 7 Due 4/24**

**WEEK 15**
- 4/27/2015  **LECTURE 24: Other Stuff (Kuiper Belt, Oort Cloud)**
- 4/29/2015  **LECTURE 25: Asteroids, Comets**
- 4/30/2015  Final Discussion 14  **Solar Observing Due 5/1**

**WEEK 16**
- 5/6/2015  **LECTURE 27: Search for Life**

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Final: 8-11:00am May 15th