

ASTR101: General Astronomy

Sections 0101-0110, Spring 2016



Professor: Lee Mundy

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(Put "ASTR101" in your email subject line)

Office: CSS 0205 or PSC 1162

Office Hours: M 9:00-10:00 am, Tu 1:00-2:00 pm

or by appointment – email to set a time

Course Description:

Welcome to Astronomy 101! You are about to embark on a tour of our known Universe in one short semester. We hope that you find this course enjoyable and walk away with a better knowledge and understanding of the universe that we live in. With that goal in mind, the course focuses on major concepts in astronomy and where possible ties those concepts into issues relevant to your life and how we came to exist. For example, global warming, an important worldwide issue, is also central to understanding the differences between the environments of Venus, Mars, and Earth. At a more philosophical level, understanding how our universe works and how planets, stars, and galaxies are formed gives us a better perspective on our place in the universe and how special planet Earth is to our continued survival.

Most of you have chosen this course to fulfill your science requirement. GENED courses are designed to ensure that you will take a look at several different academic disciplines and the way they create and analyze knowledge about the world. We will introduce you to ideas and issues that are central to a major intellectual discipline and involve you actively in the learning process. Please take advantage of the opportunities this course offers!

Course Expectations:

Attendance: In order to succeed in this course, I expect you to attend lectures, discussion sections, and labs. This is very important! The material on the homeworks and exams are based on the material covered in the lectures, discussion sections, and labs. If you have to miss a lecture, be sure to look at lecture slides and make sure that you understand what was covered. See a Teaching Assistant or me if you have questions. There will be times during the semester, in both lectures and discussions, when we will do written activities. The activities will count towards your grade in the class; you must be present in class when the written activity occurs to get credit. If you miss a class activity, you need a valid university excuse to make it up.

Preparation: You will understand the lecture more easily if you preview the reading assignment. A more careful reading is recommended after lecture. You should review your class notes and the lecture slides before the next lecture to make sure that everything is clear. I encourage you to ask questions in class, in discussion, in lab, and during office hours.

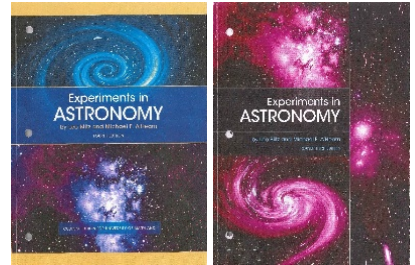
Study Habits: Study the material each week and ask for help if you need it. If you just cram the night before the exam, you probably will not do very well. It is better (and easier) if you keep up with the material each week. If you have questions, please see me or any TA. We are here to help you succeed.

Course Materials:

Class Textbook: *The Cosmic Perspective Fundamentals*, by Bennett, Dohahue, Schneider, Voit. You do not need a CD or any online access for this class - just the hardcopy textbook. You may buy a used version if you wish. We will be covering most, but not necessarily all, of the material in the book. There will be reading assignments associated with the lectures. You are responsible for materials covered in the lecture, discussion, and labs.



Class Lab book: You must purchase lab book: *Experiments in Astronomy* by Leo Blitz and Michael F. A'Hearn. You should get the new fourth edition (about \$35). An unused copy of the third revised edition (about \$50 new) is also OK if you get a good deal. Be sure that the book is 100% intact, as you will have to tear pages out to hand in. You may not use photocopies of the book for your labs.



ELMS Page: We will use ELMS in this course. I will post the lecture slides and homework assignments on ELMS. I will make class announcement through ELMS – for example if class is cancelled due to snow. Your grades on assignments and exams, and point total throughout the semester will be available on ELMS.

Class Web Page: <http://www.astro.umd.edu/~lgm /ASTR101/> will have course information, supplementary readings, and interactive programs to make ASTR101 fun and to help you learn. See cool space pictures and movies! I will use ELMS, not the webpage, for communications with you.

Class Meetings Places and Times:

Lectures meet in PHYS 1412 on TuTh from 11:00am to 12:15pm. Lectures are led by the professor and will include demonstrations, slides, videos etc. There will be in-lecture activities that are graded.

Discussion Sections meet in room CSS 2400 or CSS 2428 at times listed below **starting the week of Feb 1**. Discussion sections are led by a Teaching Assistant (TA). Discussion provides a smaller and more informal environment for further development of the material taught in lecture. There are in-discussion activities that are graded.

Lab Sections meet in room CSS 1109 at times listed below **starting the week of Feb 1**. You are required to attend lab section in order to do the labs; you **MAY NOT** start writing answers to the lab outside of the lab room. You must go to the lab time associated with your section number each week. If you expect to miss your lab section due to illness or a University approved excuse, you should contact your TA as soon as you know and make arrangements to attend another section in the same week if at all possible.

Discussion Sections and Labs:

Your weekly 50-minute discussion section is an integral part of this course. The sections are run by the TAs, with just general guidelines from me; they will normally include preparing you for lab, review of lecture material, presentation of material related to lecture, and in-class exercises. These sections serve as a forum to enhance your understanding of the course material. Your TA is an excellent resource; get to know them and use that resource! Homeworks, exams, and other work will be returned to you by your TA. Please attend all your discussion sections. If you have to miss a discussion session for a valid reason, talk to your TA for options for making up any missed work.

Understanding laboratory techniques and reaching conclusions based on careful observations is a hallmark of scientific inquiry. Your weekly 2-hour lab is an important part of this course that provides you with the opportunity to think like a scientist. Our goal is that you leave ASTR101 at the end of the semester with critical thinking skills that will allow you to better appreciate science in the news and elsewhere that you encounter it. Be sure to attend the discussion section and lab combination for which you registered. The only way to switch sections is through the registrar's office; **unofficial changes are not allowed**. Memorize your section number and put it on everything that you turn in.

Section	Lab	Discussion	TA
01	Room: CSS 1109 Time: Tu 5:30-7:30 pm	Room: CSS 2400 Time: Tu 3:30-4:30 pm	Ginny Cunningham
02	Room: CSS 1109 Time: W 8:30-10:30 am	Room: CSS 2400 Time: Tu 3:30-4:30 pm	Ginny Cunningham
03	Room: CSS 1109 Time: W 11:00-1:00 pm	Room: CSS 2400 Time: W 10:00-10:50 am	Marie Bernard
04	Room: CSS 1109 Time: Th 8:30-10:30 am	Room: CSS 2400 Time: W 10:00-10:50 am	Marie Bernard
05	Room: CSS 1109 Time: W 6:00-8:00 pm	Room: CSS 2400 Time: W 11:00-11:50 am	Zeeve Rogoszinski
06	Room: CSS 1109 Time: Th 3:30-5:30 pm	Room: CSS 2400 Time: W 11:00-11:50 am	Zeeve Rogoszinski
07	Room: CSS 1109 Time: Th 6:00-8:00 pm	Room: CSS 2400 Time: W 12:00-12:50 pm	Jimmy Knell/ Anjali Mittu
08	Room: CSS 1109 Time: F 10:00-12:00 pm	Room: CSS 2400 Time: W 12:00-12:50 pm	Jimmy Knell/ Anjali Mittu
09	Room: CSS 1109 Time: W 1:00-3:00 pm	Room: CSS 2428 Time: W 11:00-11:50 am	Robyn Smith
10	Room: CSS 1109 Time: F 1:00-3:00 pm	Room: CSS 2428 Time: W 11:00-11:50 am	Robyn Smith

Grading:

Your grade is accumulated on a point scale throughout the semester with assignment totals summarized in the table below: 5 homeworks at 10 points each; 12 discussion activities at 5 points each; 8 lecture activities at 5 points each; and 11 lab activities at 15 points each. A description of each of these components is detailed later in this syllabus. You should note that there are a total of 155 points in homework and lecture/discussion activities, and 165 points in lab activities. It is impossible to get a passing grade in this course by just showing up for the exams!

ASSIGNMENT	Syll Quiz	Homework	Discussion	Lecture	Labs	Exam I	Exam II	Final	Total
Total Points	5	50	60	40	165	100	100	200	720

Letter grades will be assigned based upon your cumulative point total – no curve. The table below gives the correspondence between point total and letter grade. Grades for discussion sections may be adjusted slightly so that the average total numerical score given by each TA is similar. Here is how your letter grade will be determined from your point total in the class.

Letter Grade	A	B	C	D	F
Points Needed	648-720	576-647	504-575	432-503	0-431
Percentage	90%-100%	80%-89%	70%-79%	60%-69%	0%-59%

The use of an absolute point scale makes it possible for everyone in the class to do well; it is up to you to put in the effort. I use +/- modifiers on letter grades for the course; you will get a "+" if you are in roughly the upper 1/3 of point range in a letter grade and a "-" if you are in the lower 1/3. You can monitor your current percentage estimate of your grade in ELMS as the semester progresses.

If you are unsure about why something was marked wrong or you believe that it was incorrectly marked wrong, please contact your TA promptly. Grading can be reconsidered for only a reasonable time after the assignment is returned to you, typically 7-10 days. We make every effort to grade your work correctly and to record your grades correctly into ELMS. We can make mistakes despite our best efforts. **The last day for notifying us of suspected errors in previously recorded grades is Monday May 2.**

In addition to the regular assignments, there will be **40 points in extra credit assignments** during the semester. These will be study questions which are due at the beginning of each exam: 10 point assignments for each mid-term and a 20 point assignment due at the final.

Homeworks:

There are a total of six homeworks in this course. Homeworks will be handed out in lecture and due in lecture; homeworks will also be posted on ELMS. The dates that the homeworks are due are listed in the lecture schedule; the questions will be handed out and posted one week in advance of the due date. Your answers may be written neatly or typed on **a separate page from the questions**; there will be a deduction of 2 points for answers squished into the space between the questions or written on the back. It is perfectly ok for you to copy the questions over to your answer page and then use as much space as needed to write the answer. Solution sets to the homeworks will be posted on ELMS.

Homeworks will be collected at the beginning of the lecture in which they are due. Fifteen minutes after the start of the lecture, any homework not turned in will be considered late and two points will be deducted from the total. **Homeworks may not be turned in by email.** If you experience a valid emergency, you must write me and your TA an email **before the assignment is due**, telling us why you will be late.

Although you may discuss the homework problems with your friends, the final write-up *must be in your own words* (see Academic Integrity below). If you consult a reference other than the course text, please acknowledge it in your homework - *this includes websites!* To be 100% clear, you may not post the homework questions to the web for answers; **you may not cut-and-paste your answer from a website**; both violate the Honor Code.

Midterm Exams:

There will be two in-class 75-minute mid-term examinations which will be held in PHYS 1412 on **Tuesday, March 1 and Tuesday, April 12**. These exams are closed book with no notes, no calculators, and no other electronic devices allowed. You will only be allowed to leave the classroom at a specified times as you complete the exam. Each exam will consist of 25 multiple choice questions and five short answer essay questions. These exams are incremental (i.e., non-cumulative) checkups on how well you have learned the material. The schedule of lectures included in this syllabus shows what material will be covered on each exam. Please bring only a pencil and your ID card to both midterms and the final.

If for whatever reason, the University is *officially* closed on the exam date, the exam date shifts to the next lecture date.

Final Exam:

According to University schedule, the **final exam** for this course will be held on **Thursday May 12 from 8:00 am to 10:00 am in PHYS 1412**. This final exam is cumulative; it will cover *all* material discussed in this course. The final will consist of 35 multiple choice, 6 short answer essay questions and questions and 1 long answer essay question.

This exam is also closed book with no notes and no calculators allowed. Please bring a pencil and your ID card to the final.

Missed Exams:

If you are not able to take an exam due to illness or other legitimate reasons (as outlined in the Academic Info section of the schedule of classes) and you wish to take a make-up exam, you must contact me by email **before** you miss the regularly-scheduled exam, or as soon as possible after the exam if it is an unanticipated event (accident, sickness) on the day of the exam; work with me via email immediately to arrange a time for your make-up.

Make-up exams will be given within one week of the regular exam. The make-up exams will consist of ½ oral questions and ½ written essays questions, no multiple choice questions.

If you have a known university event (sports or otherwise) in the day of a midterm exam, you are

responsible for contacting me at least a week in advance of the exam with the official excuse and we will arrange a time for you to take the exam: either a make-up exam or the regular exam depending on your availability.

If you miss the final exam and have a *valid written* excuse, you must arrange for a make-up final within 48 hours after the scheduled exam. The make-up final, like the make-up midterms, will be oral and written, no multiple choice questions.

Contact Information and Office Hours:

The Prof. and the Teaching Assistants all hold office hours that are open to everyone. There is someone available for several hours each day of the week - we are here to help! When contacting us by email, always be sure to put "ASTR101" in the subject line to ensure that your email is not overlooked. You may directly contact your TA with questions or problems with discussion or lab. You may contact all of us at the astr101 email if you have general questions.

If you have sensitive personal issues or concerns, or you have concerns which involve any of the TAs, you may email me at lgm@astro.umd.edu and make an appointment to talk with me.

Name	Office	Office Hours	Email
Prof. Lee Mundy	PSC 1153	M 9:00-11:00 am Th 1:00-2:00 pm	astr101@astro.umd.edu
Marie Bernard	CSS 0253	M 3:00-4:00pm Tu 12:30-1:30 pm	christianmembernard@gmail.com
Ginny Cunningham	PSC 1248	W 2:00-4:00 pm	vcunning@astro.umd.edu
Jimmy Knell	CSS 0255	M 11:00 am – 1 pm	jknell@terpmail.umd.edu
Anjali Mittu	CSS 0253	F 1:00-3:00 pm	anjmittu@gmail.com
Zeeve Rogoszinski	PSC 1248	M 11am-Noon F 11:00 am –Noon	zero@astro.umd.edu
Robyn Smith	PSC 1238	Tu 9:45-10:45 am F 10:00 – 11 am	rsmith@astro.umd.edu

Special Circumstances:

Students with a documented disability should let me know as soon as possible so that appropriate academic accommodations can be made. If you have special requirements for taking exams, it is your responsibility to contact me in advance of each exam. We will work with you to make appropriate arrangements.

Academic Integrity:

The academic community at the University abides by a Code of Academic Integrity. Acts of academic dishonesty include cheating, fabrication, facilitating academic dishonesty, and plagiarism. Activities including, but not limited to, cheating on exams or quizzes, copying homework from a friend or book, allowing your homework or paper to be copied, and submitting forged excuses for absences from exams are violations of this code. Academic Dishonesty hurts the whole University of Maryland community - if you are aware of an incident in ASTR101, please report it as required by the Code. If we suspect that an incident of academic dishonesty has occurred, we will turn the case over to the Student Honor Council to investigate and resolve. If the suspected party is judged 'responsible' for the act(s) of academic dishonesty, the normal sanction is a course grade of 'XF' on the student's academic transcript which denotes failure due to academic dishonesty. This is far worse than an F. More information can be found on the web at <http://www.shc.umd.edu/SHC/Default.aspx>; pay particular attention to the links for students.

The lab exercises are similar from semester to semester. It is a violation of the Code to copy a lab from a previous semester, to copy the lab of a fellow student, etc... you get the picture. Unless explicitly told otherwise by a TA or myself, you should not pre-fill-in or otherwise start working on a lab outside of the lab room. In the lab room, you will often be working with a partner. The written portions of you lab should always be in your own words; you answers should not be identical to your lab partner's answers.

Safe Learning Environment:

The campus meant to be a safe place to learn, free from harassment and intimidation of any kind. If you have experienced any form of harassment as a member of the university community, you should contact the Office of Civil Rights & Sexual Misconduct on campus. See the university policies and procedures on <http://www.umd.edu/ocrsm/policies-and-procedures/> for more information. Please be aware that faculty (professors and TAs) are required by university policy to report any instance of misconduct observed or brought to their attention. For confidential assistance with a harassment matter, contact CARE (see <http://www.health.umd.edu/care>).

GENED Requirements:

ASTR101 is intended for non-science majors and requires no more than a modest, high-school level science and math background. This course satisfies U. Maryland's requirement for a *lab* natural science course. To satisfy the requirement for a *non-lab* natural science course, you might wish to consider ASTR100. Note that **you cannot get credit for both ASTR100 and ASTR101**. Please be sure that you have chosen the correct course.

Campus Observatory Open House:

The astronomy department hosts an open house on the 5th and 20th of each month at the university observatory which is located just off campus on Metzert Road. Each open house consists of a speaker talking about some aspect of astronomy followed by public viewing with the observatory's telescopes (weather permitting). Dress warmly as you will be outside when using the telescopes! A list of scheduled speakers and topics is available at <http://www.astro.umd.edu/openhouse/>. While not required for this course, take advantage of a unique opportunity to see the stars with your own eyes.

ASTR101 LECTURE SCHEDULE

Lecture Date	Lecture Topic	Reading/Assignment Due
Tue. Jan 26	Introduction, The Scale of the Universe	Chapter 1
Thu. Jan 28	Scientific Discovery	Chapter 1
Tue. Feb 2	Seasons and the Changing Sky	Chapter 2
Thu. Feb 4	Lunar Phases and Eclipses	Chapter 2
Tue. Feb 9	Competing Cosmologies	Chapter 3 Homework #1 Due
Thu. Feb 11	Kepler's Laws	Chapter 3
Tue. Feb 16	Laws of Motion	Chapter 3
Thu. Feb 18	Gravity	Chapter 3
Tue. Feb 23	Properties of Light	Chapter 5 Homework #2 Due
Thu. Feb 25	Spectra and Telescopes	Chapter 5
Tue. Mar 1	Exam #1	Chapter 1-3, 5 Extra Credit #1
Thu. Mar 3	Terrestrial Planets: Surfaces	Chapters 4, 5
Tue. Mar 8	Terrestrial Planets: Atmospheres	Chapter 5
Thu. Mar 10	The Jovian Planets	Chapter 6
	Spring Break March 13 – 20	
Tue. Mar 22	Moons, Asteroids, and Comets	Chapter 4, 6
Thu. Mar 24	Planetary Systems and their Formation	Chapter 4, 7
Tue. Mar 29	The Sun	Chapter 8 Homework #3 Due
Thu. Mar 31	The Properties of Stars	Chapter 8
Tue. Apr 5	Powering the Stars	Chapter 9
Thu. Apr 7	Stellar Lifetimes	Chapter 9
Tue. Apr 12	Exam #2	Chapter 4-9 Extra Credit #2
Thu. Apr 14	Stellar Evolution	Chapter 9
Tue. Apr 19	White Dwarfs, Neutron Stars and BH	Chapter 10 Homework #4 Due
Thu. Apr 21	The Milky Way	Chapters 11
Tue. Apr 26	Galaxies and Expansion of Universe	Chapter 11, 12
Thu. Apr 28	The Big Bang	Chapter 13
Tue. May 3	Dark Matter and Dark Energy	Chapter 14
Thu. May 5	Life in the Universe	Chapter 15 Homework #5 Due
Tue: May 10	The Big Picture and Final Overview	All
Thu. May 12	Final Exam (8 am-10am)	All material Extra Credit #3 Due

ASTR101 Discussion and Lab Schedule

Date	Discussion	Lab
Jan 25-29	First Week of Class!	No Lab or Discussion this week
Feb 1-5	Introduction and Seasons	Mathematical Tools
Feb 8-12	All about the Moon	Lunar Phases
Feb 15-19	Motions on the Sky	The Celestial Sphere
Feb 22-26	Kepler, Newton	Review for Midterm #1
Feb 29-Mar 4	Light and Spectra	The Night Sky
Mar 7-11	Terrestrial Planets	Spectroscopy
Mar 14-18	Spring Break	Spring Break
Mar 21-25	Terrestrial and Jovian Planets	Lunar and Martial Surface Features
Mar 28-Apr 1	Small Bodes and Solar Systems	The Moons of Jupiter
Apr 5-8	Sun and Other Stars	Review for Midterm #2
Apr 11-15	Powering Stars	Stellar Spectra
Apr 18-22	Stellar Evolution	The Interstellar Medium
Apr 25-29	Galaxies	Galaxies
May 2-6	Cosmology	The Expansion of the Universe
May 9-10	No Lab or Discussion	Makeup Lab (TA Permission Required)