

# Course Syllabus

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## Course description:

Astro 101 explores how data from NASA probes and other telescopes are used to understand the formation of our solar system, explain the features of our planets and their moons, and search for evidence of life off-Earth. The course begins with a short history of astronomy dating back to ancient civilizations through the age of enlightenment. It then introduces the basic principals of light and gravity which are needed to explore distant worlds. The course then enters on a tour of the inner and outer solar system with an emphasis on the search for liquid water, possibly leading to a future discovery of life on Mars or the icy-moons of Saturn and Jupiter. Astro 101 concludes with a study of distant solar systems and includes a discussion of the possibility of life beyond Earth, perhaps on a distant super-Earth outside the Solar System. The learning objectives may be found [here](#).

## Credit exclusions:

Note that you cannot get credit for this class if you have already taken Astro 115. Please consider taking Astro 102, 104, 105, 107, 142, 127, or 201 instead.

## Locations and times:

The lecture sections are held in Room 182 in Weiser Hall (500 Church Street). Two lectures are held on Mondays, Wednesdays, and Fridays, at 12:00-12:50pm and 1:00-1:50pm. Students can attend either lecture section.

The discussion sections are held in 5180B Angell Hall (AH; 435 State Street). Every student has a discussion section and can only attend their assigned time. (The discussion sections do not meet during the first or last partial weeks of classes).

## Textbook:

The Cosmic Perspective: The Solar System; by Bennett, Donahue, Schneider, and Voit; Students can use any version later than v7.

## Professors:

John Monnier, Room 303B West Hall; [monnier@umich.edu](mailto:monnier@umich.edu) (<mailto:monnier@umich.edu>); 734-763-5822

Office hours:

Wednesday 2:30-3:30pm in West Hall 300D (Aquila Room)

Thursday 10:00am-12pm in West Hall 300D (Aquila Room)

Ian Roederer, Room 306H West Hall; [iur@umich.edu](mailto:iur@umich.edu) (<mailto:iur@umich.edu>); 734-615-7374

Office hours:

Wednesday 2:30-3:30pm in West Hall 300D (Aquila Room)

Thursday 10:00am-12pm in West Hall 300D (Aquila Room)

Dr. Roederer is a member of the Lecturers' Employee Organization, AFT Michigan Local 6244, AFL-CIO.

### Graduate student instructors (GSIs):

Hayley Beltz, [hbeltz@umich.edu](mailto:hbeltz@umich.edu) (<mailto:hbeltz@umich.edu>); office hours Mondays 8:30am-10:00am in West Hall 401 (Grus)

Felipe Alarcon Pena; [falarcon@umich.edu](mailto:falarcon@umich.edu) (<mailto:falarcon@umich.edu>); office hours Tuesdays 9:30am-11:00am in West Hall 401 (Grus)

The GSI mailboxes can be found at this [map](#)

(<https://docs.google.com/document/d/1Q3ux9KN0eFqDVoiqUPVaXk9uYNH5Mdbp-D8H87xL6M0/edit>).

The Astronomy Department main office can be reached by calling 734-764-3440. West Hall is located at 1085 S. University Ave.

### Grading:

We use high standards to evaluate your work in this course. We do so because we believe that each of you is capable of meeting these standards. This is a four-credit course, and we expect a commensurate level of out-of-class effort (i.e., ~8 hours per week) on your part. Grades will be tabulated in Canvas, and they are determined as follows:

1. 3 Exams for a total of 30% (equally weighted).
2. In-Lecture Clicker Questions: 10% total. Requires attendance and reading the material before coming to class. You can miss up to 5 classes without penalty.
3. 10 Weekly Homeworks: 30% total, requires a written component, a graphical component, and a math component. We will drop your lowest score (no makeups).
4. 1 Observing Project: 5%. Requires a [report and attendance](#) at one observing nights on the roof of Angell Hall or at some other University sponsored astronomy observing opportunity.
5. 11 Labs: 25% total. Conducted during the Discussion Sections. We will drop your lowest score (no makeups).

Professors will assign letter grades at the end of the semester based on the total points you earned. The letter grade assignments will be adjusted depending upon the overall performance of the class.

Generally speaking, we expect to follow the following scale: 97-100 A+; 93-97 A; 90-93 A-; 87-90 B+; 83-87 B; 80-83 B-; 77-80 C+; 73-77 C; 70-73 C-; 67-70 D+; 63-67 D; 60-63 D-; <60 E

If you wish to contest a score on an assignment or exam (for example, you think something was graded incorrectly), let one of the professors know of your intent to contest this score within 1 week of the assignment being returned to you. We can later find a mutually-convenient time to discuss the matter.

*Seniors taking Astronomy 101 in their final term in order to satisfy QR2, please be advised: the "Pass/Fail" option requires a "C-" to Pass while one can still get credit with a "D" if taking for a letter*

*grade. Please discuss with your academic advisor whether to take the course Pass/Fail or for a letter grade.*

### **Important dates:**

Jan 9, Wednesday: first lecture.

Jan 9-11: no discussion section meetings during the first partial week.

Jan 21, Monday: no class (MLK day); Last day to ADD the class.

Mar 4-8: no class (spring break).

Apr 22, Monday: final lecture.

Apr 23: no discussion section meetings during the last partial week.

### **Exams:**

The exam format is multiple choice. The first two exams take place during lecture, and the last exam has two dates during the Final Exam period: All exams are in the lecture hall, 182 Weiser. No calculators are allowed (or needed) on the exams.

If you are registered for the 12:00pm lecture, your final exam is Monday April 29 at 1:30pm-3:30pm.

If you are registered for the 1:00pm lecture, your final exam is Wednesday May 1 at 1:30pm-3:30pm.

### **In-lecture clicker questions:**

This course requires the i>clicker student response device for use in lectures. These are available at the UM Computer Showcase, which has temporarily located to the first floor of Shapiro Library, for \$39 (used \$29). **SAVE YOUR RECEIPT.** Your receipt is required if you decide to sell back your device at the end of this course. See <http://computershowcase.umich.edu/remotes/> (<http://computershowcase.umich.edu/remotes/>). We will not use wifi enabled devices, so you do not need to purchase the access card for this course. **YOU MUST REGISTER YOUR CLICKER THROUGH THE ASTRONOMY 101 CANVAS SITE BY Wednesday, January 23.**

We will do practice iClicker questions on January 11 and 14 to check out the technology, confirm functionality, and validate gradebook synchronization. iClicker scores will start to be used for grading on January 16. We allow you to miss up to 5 classes for any reason (including illness, job interviews, funerals, weddings, vacations, religious observances, etc.) without penalty, and we will not grant excuses for general personal emergencies or iClicker technical problems since they factor into your five allowed absences. Medical visits and official sporting events with official documentation will be excused in addition to these five free absences.

Each iclicker answer is worth 1 point for participation and 1 additional point for a correct answer (when applicable).

## Weekly homeworks:

Homework assignments will be posted to the Canvas calendar. These projects must conform to high standards, because we believe that you are capable of meeting those standards. Paper torn from spiral notebooks is unacceptable. Calculation exercises must show the steps involved to derive the final answer and include physical units throughout. Graphs must be drawn carefully using a ruler or a computer program, and the axes must be labeled with values and units. Written exercises must conform to the standards of an English class for grammar and punctuation. Answers must be sourced from proper publications and outlets (e.g. Nature, National Geographic, Discover Magazine, etc.; not Wikipedia, and not blogs), be cited properly, and be written using a computer (e.g., not handwritten). Please remember to include your name and section number; assignments without these components may not be graded. Weekly homeworks are due at the beginning of class on Fridays. Late homework assignments may be turned in by the beginning of Monday's class for half-credit, and no credit will be given for later submissions.

## Observing projects:

Astronomers' main laboratory is the sky, so an important component of this course is to observe the sky through a telescope. Bring the [observing form](#) with you when you go to observe. Note that Michigan skies tend to be cloudy during the winter term, so you should plan to go observing as early in the semester as possible. These projects can be turned in to your GSI any time, but no later than Friday, April 19.

## Lab projects / discussion sections:

Labs are designed to be completed within the weekly discussion sections. *Students should read the lab activity and information before coming to the lab hour, have the relevant forms printed, and arrive ready to get to work.* The lab activities are due at the end of the lab hour. Material and exercises conducted within the labs are fair game for the exams. There are no makeup labs. Labs that are missed for approved absences will simply be discounted from the grade calculation. The lab schedule and additional information is available in a separate document. There are 11 lab opportunities, and we will count only the highest 10 scores.

## Policies for Late Enrolled Students

January 21 is the last day we will accept late adds to the course. Any missed graded iClicker scores and labs will not be made-up but will be counted against your normal allowance of dropped lowest scores (see above). If you missed the first homework assignment, you can make it up, but it must be turned in by February 1.

## Free tutoring available:

The Student Astronomical Society ([SAS](https://sites.google.com/a/umich.edu/sas/) [\(https://sites.google.com/a/umich.edu/sas/\)](https://sites.google.com/a/umich.edu/sas/)) offers free tutoring for 100- and 200-level classes. See their website for times and locations.

<https://sites.google.com/a/umich.edu/sas/> [\(https://sites.google.com/a/umich.edu/sas/\)](https://sites.google.com/a/umich.edu/sas/)

## **Class discussion on Piazza:**

This term we will be using Piazza for class discussion. The system is highly catered to getting you help fast and efficiently from classmates, GSIs, and the professors. Rather than emailing questions to the instructors, we encourage you to post your questions on Piazza.

Find our class page at: <https://piazza.com/umich/winter2019/astro1061>  
(<https://piazza.com/umich/fall2018/astro106>)

## **Mobile devices in class:**

Class lecture and discussion sections are intended to be structured environments that maximize the potential for learning. To help you and your classmates reach this potential, cell phone usage is not allowed during class. Please take important voice or text conversations in the hallway. Laptops are allowed for note taking during the lecture sections, but only in the “laptop section” (far left section as you walk in) to minimize distraction to other students.

## **Other contact notes:**

Office hours are a time that we reserve for you. Please feel free to stop by, ask questions about the classes, course materials, homework assignments, etc., or anything else of interest. If you cannot attend the posted hours (maybe because you have another class then), send an email, and we'll schedule a meeting that works for each of us. We have other responsibilities in our schedules, so we may not always be present in the office at other times of the day.

The phone numbers listed are associated with desk phones that cannot receive text messages, and they are generally only answered during normal business hours. As a matter of policy, we decline social media networking requests (e.g., LinkedIn or facebook) from students. We are happy to discuss course material or other matters with you during office hours, before or after class, via email, or at other times by appointment.

## **Academic integrity:**

The College of LSA is a community in which personal responsibility, honesty, fairness, respect, and mutual trust are maintained. You are expected to practice the highest possible standards of academic integrity. Any deviation from this expectation will result in a minimum academic penalty of your failing the assignment, and will result in additional disciplinary measures. This includes, but not limited to, cheating, using unauthorized material during exams, using or copying another student's work, and any other form of academic misrepresentation. For a list of actions that constitute misconduct, and possible sanctions for those actions, please see the Code of Conduct at <http://www.lsa.umich.edu/academicintegrity/> (<https://lsa.umich.edu/lsa/academics/academic-integrity.html>). A useful collection of resources on Academic Integrity at the University of Michigan can be found at:

<http://www.lsa.umich.edu/academicintegrity/examples.html>  
(<https://lsa.umich.edu/lsa/academics/academic-integrity/academic-misconduct.html>) .  
(<https://lsa.umich.edu/lsa/academics/academic-integrity/academic-misconduct.html>)

Note that plagiarism is more than just copy/paste. See these links for 10 types of plagiarism.

[http://www.turnitin.com/assets/en\\_us/media/plagiarism\\_spectrum.php](http://www.turnitin.com/assets/en_us/media/plagiarism_spectrum.php)

([http://www.turnitin.com/assets/en\\_us/media/plagiarism\\_spectrum.php](http://www.turnitin.com/assets/en_us/media/plagiarism_spectrum.php)) Here is more information on one type called “Find-Replace” or “Patch-writing” <http://content.easybib.com/students/research-guide/paraphrasing-patchwriting-direct-quotes/d-patchwriting/>

(<http://content.easybib.com/students/research-guide/paraphrasing-patchwriting-direct-quotes/d-patchwriting/>)

and <https://www.poynter.org/reporting-editing/2012/patchwriting-is-more-common-than-plagiarism-just-as-dishonest/>

(<https://www.poynter.org/reporting-editing/2012/patchwriting-is-more-common-than-plagiarism-just-as-dishonest/>)

### **Accommodations for students with disabilities:**

If you think you need an accommodation for a disability, please let us know at your earliest convenience. Some aspects of this course, the assignments, the in-class activities, and the way the course is usually taught may be modified to facilitate your participation and progress. As soon as you make us aware of your needs, we can work with the Services for Students with Disabilities (SSD) office to help us determine appropriate academic accommodations. SSD ([734-763-3000](tel:734-763-3000); <http://ssd.umich.edu> (<http://ssd.umich.edu/>)) typically recommends accommodations through a Verified Individualized Services and Accommodations (VISA) form. Any information you provide is private and confidential and will be treated as such.

### **Commitment to equal opportunity:**

The University of Michigan is committed to a policy of equal opportunity for all persons and does not discriminate on the basis of race, color, national origin, age, marital status, sex, sexual orientation, gender identity, gender expression, disability, religion, height, weight, or veteran status.

### **Student mental health and well-being:**

University of Michigan is committed to advancing the mental health and wellbeing of its students. If you or someone you know is feeling overwhelmed, depressed, and/or in need of support, services are available. For help, contact Counseling and Psychological Services (CAPS) at (734) 764-8312 and <https://caps.umich.edu/> (<https://caps.umich.edu/>) during and after hours, on weekends and holidays, or through its counselors physically located in schools on both North and Central Campus. You may also consult University Health Service (UHS) at (734) 764-8320 and <https://www.uhs.umich.edu/mentalhealthsvcs> (<https://www.uhs.umich.edu/mentalhealthsvcs>), or for alcohol or drug concerns, see [www.uhs.umich.edu/aodresources](http://www.uhs.umich.edu/aodresources) (<http://www.uhs.umich.edu/aodresources>).













For a listing of other mental health resources available on and off campus, visit:

<http://umich.edu/~mhealth/> (<http://umich.edu/~mhealth/>).

## **Approximate Schedule**

## Approximate schedule

# Course Summary:

Date	Details	
Fri Jan 11, 2019	 <a href="#">Read Chapter 1</a> ( <a href="https://umich.instructure.com/courses/296154/assignments/648011">https://umich.instructure.com/courses/296154/assignments/648011</a> )	due by 12pm
Wed Jan 16, 2019	 <a href="#">Read Chapter 2</a> ( <a href="https://umich.instructure.com/courses/296154/assignments/648017">https://umich.instructure.com/courses/296154/assignments/648017</a> )	due by 12pm
Fri Jan 18, 2019	 <a href="#">HW 1</a> ( <a href="https://umich.instructure.com/courses/296154/assignments/648001">https://umich.instructure.com/courses/296154/assignments/648001</a> )	due by 12pm
Wed Jan 23, 2019	 <a href="#">Read Chapter 3</a> ( <a href="https://umich.instructure.com/courses/296154/assignments/648019">https://umich.instructure.com/courses/296154/assignments/648019</a> )	due by 12pm
Fri Jan 25, 2019	 <a href="#">HW 2</a> ( <a href="https://umich.instructure.com/courses/296154/assignments/648010">https://umich.instructure.com/courses/296154/assignments/648010</a> )	due by 12pm
Mon Jan 28, 2019	 <a href="#">Read Chapter 4</a> ( <a href="https://umich.instructure.com/courses/296154/assignments/648020">https://umich.instructure.com/courses/296154/assignments/648020</a> )	due by 12pm
Fri Feb 1, 2019	 <a href="#">HW 3</a> ( <a href="https://umich.instructure.com/courses/296154/assignments/648002">https://umich.instructure.com/courses/296154/assignments/648002</a> )	due by 12pm
Mon Feb 4, 2019	 <a href="#">Read Chapter 5</a> ( <a href="https://umich.instructure.com/courses/296154/assignments/648021">https://umich.instructure.com/courses/296154/assignments/648021</a> )	due by 12pm
Fri Feb 8, 2019	 <a href="#">HW 4</a> ( <a href="https://umich.instructure.com/courses/296154/assignments/648003">https://umich.instructure.com/courses/296154/assignments/648003</a> )	due by 12pm
Wed Feb 13, 2019	 <a href="#">Read Chapter 6</a> ( <a href="https://umich.instructure.com/courses/296154/assignments/648022">https://umich.instructure.com/courses/296154/assignments/648022</a> )	due by 12pm
Fri Feb 15, 2019	 <a href="#">Exam 1</a> ( <a href="https://umich.instructure.com/courses/296154/assignments/647997">https://umich.instructure.com/courses/296154/assignments/647997</a> )	due by 12pm
Fri Feb 22, 2019	 <a href="#">HW 5</a> ( <a href="https://umich.instructure.com/courses/296154/assignments/648004">https://umich.instructure.com/courses/296154/assignments/648004</a> )	due by 12pm
	<a href="#">Read Chapter 14</a>	





<https://umich.instructure.com/courses/296154/assignments/648016>

due by 12pm

Wed Feb 27, 2019



**Read Chapter 7**

<https://umich.instructure.com/courses/296154/assignments/648023>

due by 12pm

Fri Mar 1, 2019



**HW 6**

<https://umich.instructure.com/courses/296154/assignments/648005>

due by 12pm

Mon Mar 11, 2019



**Read Chapter 8**

<https://umich.instructure.com/courses/296154/assignments/648024>

due by 12pm

Fri Mar 15, 2019



**HW 7**

<https://umich.instructure.com/courses/296154/assignments/648006>

due by 12pm



**Read Chapter 9**

<https://umich.instructure.com/courses/296154/assignments/648025>

due by 12pm

Fri Mar 22, 2019



**HW 8**

<https://umich.instructure.com/courses/296154/assignments/648007>

due by 12pm

Mon Mar 25, 2019



**Review Topics**

<https://umich.instructure.com/courses/296154/assignments/738514>

due by 11:59pm



**Review Topics Copy**

<https://umich.instructure.com/courses/296154/assignments/751102>

due by 11:59pm

Thu Mar 28, 2019



**Read Chapter 10**

<https://umich.instructure.com/courses/296154/assignments/648012>

due by 12pm

Fri Mar 29, 2019



**Exam 2**

<https://umich.instructure.com/courses/296154/assignments/647998>

due by 12pm

Mon Apr 1, 2019



**Read Chapter 11**

<https://umich.instructure.com/courses/296154/assignments/648013>

due by 12pm

Fri Apr 5, 2019



**HW 9**

<https://umich.instructure.com/courses/296154/assignments/648008>

due by 12pm



**Read Chapter 12**

<https://umich.instructure.com/courses/296154/assignments/648014>

due by 12pm

Wed Apr 10, 2019



**Read Chapter 13**

<https://umich.instructure.com/courses/296154/assignments/648015>

due by 12pm

Fri Apr 12, 2019



**HW 10**

<https://umich.instructure.com/courses/296154/assignments/648000>

due by 12pm



Mon Apr 15, 2019



**Read Chapter 24**

<https://umich.instructure.com/courses/296154/assignments/648018>

due by 12pm

Mon Apr 22, 2019



**Observing Project**

<https://umich.instructure.com/courses/296154/assignments/648009>

due by 12pm



**Extra Credit Assignment**

<https://umich.instructure.com/courses/296154/assignments/745810>

due by 11:59pm



**01 Planets on the Ecliptic - MEET IN 3118AH**

<https://umich.instructure.com/courses/296154/assignments/647966>



**02 Phases of Venus - MEET IN AH 5180B**

<https://umich.instructure.com/courses/296154/assignments/647967>



**03 Kepler's Third Law & Moons of Jupiter - MEET IN AH 5180A COMPUTER LAB**

<https://umich.instructure.com/courses/296154/assignments/647968>



**04 Spectroscopy - MEET IN AH 5180B**

<https://umich.instructure.com/courses/296154/assignments/647969>



**05 Detroit Observatory - MEET AT THE DETROIT OBSERVATORY IN ANN ARBOR**

<https://umich.instructure.com/courses/296154/assignments/647970>



**06 The Sun - MEET IN AH 5180A**

<https://umich.instructure.com/courses/296154/assignments/647971>



**07 Half Life - MEET IN AH 5180B**

<https://umich.instructure.com/courses/296154/assignments/647972>



**08 Craters - MEET IN AH 5180B**

<https://umich.instructure.com/courses/296154/assignments/647973>



**09 Comets - MEET IN AH 5180B**

<https://umich.instructure.com/courses/296154/assignments/647974>



**10 Characterizing Extrasolar Planets Pt 1 - MEET IN AH 5180B**

<https://umich.instructure.com/courses/296154/assignments/647982>



**11 Characterizing Extrasolar Planets Pt 2 - MEET IN AH 5180B**

<https://umich.instructure.com/courses/296154/assignments/647989>



**2019Apr01** <https://umich.instructure.com/courses/296154/assignments/743653>



**2019Apr03** <https://umich.instructure.com/courses/296154/assignments/744030>



**2019Apr05** <https://umich.instructure.com/courses/296154/assignments/744951>




**2019Apr08** <https://umich.instructure.com/courses/296154/assignments/745826>




**2019Apr10** <https://umich.instructure.com/courses/296154/assignments/747010>




**2019Apr12** <https://umich.instructure.com/courses/296154/assignments/748072>

-  [2019Apr15 \(https://umich.instructure.com/courses/296154/assignments/749181\)](https://umich.instructure.com/courses/296154/assignments/749181)


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-  [2019Apr17 \(https://umich.instructure.com/courses/296154/assignments/750340\)](https://umich.instructure.com/courses/296154/assignments/750340)


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-  [2019Apr19 \(https://umich.instructure.com/courses/296154/assignments/752500\)](https://umich.instructure.com/courses/296154/assignments/752500)


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-  [2019Apr22 \(https://umich.instructure.com/courses/296154/assignments/753532\)](https://umich.instructure.com/courses/296154/assignments/753532)


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-  [2019Mar11 \(https://umich.instructure.com/courses/296154/assignments/732831\)](https://umich.instructure.com/courses/296154/assignments/732831)


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
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
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
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
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-  [2019Mar22 \(https://umich.instructure.com/courses/296154/assignments/738733\)](https://umich.instructure.com/courses/296154/assignments/738733)


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-  [2019Mar25 \(https://umich.instructure.com/courses/296154/assignments/739625\)](https://umich.instructure.com/courses/296154/assignments/739625)


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-  [2019Mar27 \(https://umich.instructure.com/courses/296154/assignments/740707\)](https://umich.instructure.com/courses/296154/assignments/740707)


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-  [Class 1-16-19 \(https://umich.instructure.com/courses/296154/assignments/706852\)](https://umich.instructure.com/courses/296154/assignments/706852)


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-  [Class 1-18-19 \(https://umich.instructure.com/courses/296154/assignments/707430\)](https://umich.instructure.com/courses/296154/assignments/707430)


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-  [Class 1-25-19 \(https://umich.instructure.com/courses/296154/assignments/711456\)](https://umich.instructure.com/courses/296154/assignments/711456)


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-  [Class 1-28-19 \(https://umich.instructure.com/courses/296154/assignments/712754\)](https://umich.instructure.com/courses/296154/assignments/712754)


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-  [Class 2-1-19 \(https://umich.instructure.com/courses/296154/assignments/714518\)](https://umich.instructure.com/courses/296154/assignments/714518)


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-  [Class 2-11-19 \(https://umich.instructure.com/courses/296154/assignments/718935\)](https://umich.instructure.com/courses/296154/assignments/718935)

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-  [Class 2-13-19 \(https://umich.instructure.com/courses/296154/assignments/720789\)](https://umich.instructure.com/courses/296154/assignments/720789)

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-  [Class 2-18-19 \(https://umich.instructure.com/courses/296154/assignments/722884\)](https://umich.instructure.com/courses/296154/assignments/722884)


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-  [Class 2-22-19 \(https://umich.instructure.com/courses/296154/assignments/725820\)](https://umich.instructure.com/courses/296154/assignments/725820)


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-  [Class 2-25-19 \(https://umich.instructure.com/courses/296154/assignments/726932\)](https://umich.instructure.com/courses/296154/assignments/726932)


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-  [Class 2-27-19 \(https://umich.instructure.com/courses/296154/assignments/727994\)](https://umich.instructure.com/courses/296154/assignments/727994)


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-  [Class 2-4-19 \(https://umich.instructure.com/courses/296154/assignments/715504\)](https://umich.instructure.com/courses/296154/assignments/715504)


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-  [Class 2-6-19 \(https://umich.instructure.com/courses/296154/assignments/716763\)](https://umich.instructure.com/courses/296154/assignments/716763)


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-  [Class 2-8-19 \(https://umich.instructure.com/courses/296154/assignments/717952\)](https://umich.instructure.com/courses/296154/assignments/717952)

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-  [Class 3-1-19 \(https://umich.instructure.com/courses/296154/assignments/729014\)](https://umich.instructure.com/courses/296154/assignments/729014)

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-  [Exam 3 \(https://umich.instructure.com/courses/296154/assignments/647999\)](https://umich.instructure.com/courses/296154/assignments/647999)

