



## Physics 205: Origin of the Universe Fall 2018.

### Welcome!

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**Instructor:** Raymond Zich  
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**Office Hours:** Monday & Wednesday 1:00 pm (before class)

### Course Meeting Times:

Lecture: M, W, F Moulton Hall Room 210, 2:00 - 2:50 pm

**Texts:** *Your Cosmic Context*, Todd Duncan & Craig Tyler, required  
*Learning Astronomy by Doing Astronomy*, Stacey Palen & Ana Larson, required

**Needed for class:** scientific calculator, Turning Point Response Card (clicker)

## Course Description

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### Introduction

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Welcome to Physics 205, Origin of the Universe! In this course, we will look at the creation and evolution of the universe. We will examine historical views of the nature of the universe, discuss some of the concepts of mathematics and physics that grew out of attempts to understand the workings of the universe, and conclude with the modern views of space and time, the Big Bang, and the fate of the universe. Topics will include observational and theoretical basis of cosmology, the Big Bang Theory, relativity, the early universe, and the connection between cosmology and subatomic particles

There will be occasional hands-on activity in the course, designed to give you the opportunity to explore the concepts you have encountered in lecture and integrate your knowledge into a more global understanding of theory and practice.

**Also there will be open office hours every week to give you one-on-one assistance if you need more help; do not be bashful about taking advantage of these!**

In order to succeed in Physics 205, you must not fall behind! This course covers a large amount of new material, and the understanding of new topics usually requires mastery of previous material. The best way of absorbing the material is to read about each topic before we discuss it in class, and review it after we have gone over it. There will be homework assignments and quizzes will be given in class, either with clickers or on paper.

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### **Lectures:**

The primary focus of the lecture will to convey the basics of each chapter or topic, work on example problems, and practice simple concept and mathematical problems, testing our understanding and pointing out areas of each topic that can be tricky for students.

In order to provide an environment more conducive to participation and interaction, each student will have a clicker with which to answer various questions during lecture. You will receive points based on the correctness of your answers *and* points based on your participation in each lecture.

During times when you are working on a clicker question or we are solving problems together, students should work with those around them to discuss their ideas.

This format allows the instructor and the students to pinpoint problems in understanding and deal with them before moving on. The purpose is to help your understanding, and your participation is critical.

### **Clickers**

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We will be using clickers in every lecture. If you have not already done so, please register your clicker by visiting Reggienet. **Answering with another student's clicker, or having another student answer questions using your clicker, is a serious academic violation!**

### **Homework:**

Regular sets of homework problems will be assigned. These problems will help you to learn the material and prepare you for doing well on the quizzes and tests. Inability to do these problems usually leads to poor exam and quiz scores. Start your homework assignments early, and come see me if you have difficulty.

### **Hour Exams and Final Exam:**

Three 50 minute multiple-format exams and a Final exam will be given. (See the schedule for the dates.)

No exam scores will be dropped. Scores will be posted in the gradebook as soon as possible following the exam.

The final exam is comprehensive.

***Any conflicts with exams must be discussed with the instructor prior to the exam.***

Make up exams will be scheduled at the instructor's discretion. In cases of illness or similar last minute, unavoidable conflicts, arrangements will be made only for those with appropriate documentation (e.g. a doctor's note indicating that the student could not attend due to illness). Because of the lowest exam score being dropped, make up exams will be given only for extreme situations.

### **Quizzes:**

Most weeks there will be a quiz about material covered in the previous week's material. The quizzes will either be reading quizzes, on the text material for that week, or content quizzes, on material we have covered. Some quizzes will be clicker-based, and some will be on paper.

### **Gradebook**

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You will be able to view your grades on all components of the course using the course gradebook through Reggienet. During the semester, you should check that your exam, homework, and quiz scores are correctly entered in the Reggienet gradebook; any problems here should be brought to the attention of your instructor immediately. Changes to the Gradebook will not be made the last week of class.

### **Grading**

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Your final grade for Physics 102 will be based upon your total score on all the components of the course. The weighting is broken down as follows:

Course Component	Percentage
Exams	40%
Homework	20%
Clickers and Quizzes	20%
Final	20%

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The breakdown of total points versus course letter grade will be:  
**A (90%), B (80%), C (70%), D (60%), and F(< 60%).**

## **Academic Integrity**

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All activities in this course are subject to the Academic Integrity rules. Infractions include, but are not limited to: cheating, plagiarism, fabrication, academic interference, computer-related infractions, unauthorized use of university resources, sale of class materials or notes, and facilitating infractions of academic integrity. Violations of any of these rules will be prosecuted and reported to the home college of the student. All aspects of the course are covered by these rules, including quizzes, clickers, exams and labs.

## 205 Weekly Schedule (Subject to Change!)

Week	Date	Topic	Exam	Read (YCC)
1	8/20/2018	Science Early universe		1.1, 1.2
2	8/27/2018	Visual Astronomy Light & Spectra		1.3 – 2.4
3	9/4/2018	Radiation, starlight Distance measures		2.5 – 3.3
4	9/10/2018	Gravitation Motions		4.1, 4.2
5	9/17/2018	Dark Matter Hubble's Law		4.3-5.2
6	9/24/2018	CMB Spacetime Olber's Paradox	Exam 1 Ch 1 to 5 9/25/2018	5.3-6.1
7	10/1/2018	Relativity Black Holes		6.2-6.5
8	10/8/2018	Cosmic Expansion Friedmann Eq.		6.6-7.2
9	10/15/2018	Redshift Dark energy		7.3-7.5
10	10/22/2018	Light & Matter  More CMB	Exam 2 Ch 5 to 7 10/27/2018	8.1-9.4
11	10/29/2018	Exotic particles Big Bang Theory		9.5-10.3
12	11/5/2018	Density of Univ. History of Univ		10.4-11.2
13	11/12/2018	Thanksgiving		
14	11/19/2018	Fate of Universe Structure		11.3-12.3
15	11/26/2018	Inflation Life	Exam 3 Ch 8 to 12 11/28/2018	12.4-13.1
16	12/3/2018	Extrasolar Planets Drake Equation		13.2-14.4

Final		MLT 210		
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