Astronomy 101U – Spring 1994 Syllabus

Instructor: Doug Ingram, B329 PAB, 543-9039

Astronomy Office: C335 PAB, 543-2888 (for messages when I can't be reached)

Lectures: MW 7:00 – 9:20 P.M. in PHY 314

Office Hours: To be arranged (but informal appointments are always encouraged)

Required Texts:

"Essentials of the Dynamic Universe" (4th ed) by Theodore P. Snow,

Astronomy 101 reading packet from Rams Copy Center (on the Ave)

Prerequisites: None. High school level math is needed for some work, but not exams.

Course Overview: A general survey of the Universe, from the everyday observations we make of the sky (and what these observations mean) to our ideas about the planets, stars, galaxies and overall characteristics of the Universe. An overriding theme of the course will be the process and philosophy of science, with several examples taken from current research problems. Lectures and problem- solving/discussion workshops will be mixed on as many days as possible rather than just straight lecturing.

Grading:

40% – Four homework assignments (10% each)

20% – Skylab or Term paper

10% – In-class labs and participation

30% – Mid-Term and Comprehensive Final Exam (15% each).

The term paper assignment is described in the readings packet as the last of the skylabs.

As you can see by the large weight given to classwork, this course will heavily emphasize the material from lectures and discussion, at the "cost" of minimizing the impact of the two exams on your grade. All of your classwork plus your term paper is worth **more than twice** what the exams are worth combined. The book is intended to be supplemental and helpful for the course, and you should find that keeping up with the reading will help you to understand the material much better. Unless otherwise stated, you will only be held responsible for the material in lectures (including your classwork). In fact, you'll find that around half the material for exams is drawn directly from homework and labs, so if you do well on your classwork, you should have no problem with the exams.

This course will **not** be graded on a curve. This means I can give as many grades of 4.0 as I feel are deserved, and with any luck, several will be. The former is also true for grades of 0.0. I will discuss during the first class the absolute scale I plan to use.

In the end, the effort in this course comes from both sides. It is my hope that I will be able to make the course material interesting enough that you will be motivated to attend class and do all the work. If I'm not doing this, tell me how to do my job better! My door is always open for students who come by with problems, questions or suggestions.

My advice to you is that if you're going to miss 3 or more classes during the quarter, you should seriously consider taking a different class. Your grade will simply suffer too much if you fail to turn in assignments or miss class.

The Gory Details

Experience has led me to realize that the best and fairest way to treat the sticky issues is to state how I'll deal with them in the very beginning, be crystal clear, and don't change the policy during the quarter, so here goes:

Absence for an exam will result in zero credit. In the event of an unavoidable and documented medical or legal reason for missing an exam, I will consider the issue on an individual basis. Usually, make-up exams will be oral, given by me as close to the exam date as possible (either before or after). Please check the dates given below for the exams and inform me as soon as possible if you must miss one.

Absence for an in-class graded lab will result in half credit provided the work is made up. I will again be lenient in the same cases I would be for a missed exam. Make-ups for in-class labs must be completed within two weeks of the day when the lab is given. Other miscellaneous (and missed) in-class activities that may contribute to your participation grades will be dealt with on an individual basis... usually just forgotten in medical/legal cases.

Homeworks and lab assignments are due at the beginning of class on the given due date. Late work will be accepted with a penalty of **25% per lecture** that it is late. Turning it in at the end of class is considered "late." The idea is that I want you to pay attention in class, not work on assignments that should be completed beforehand. Given this rationale, if you come into class more than 20 minutes late, your assignment will be considered late if it is due that day...don't skip class to finish assignments. Turn the assignment the day before if you plan to miss class or be unavoidably late! The maximum late penalty is 50%; thus, if you miss an assignment, you may turn it in at any point in the quarter up to Friday, June 3 and still receive at most half credit.

Cheating. By cheating, you are being unfair to yourself and your classmates. You'll probably find that the effort it takes to successfully cheat will be greater than the effort it takes to actually learn the material. Cheating is defined as not doing your own work on class assignments or on exams. I expect many of you to work together on labs and homework, and that's great. Ask each other questions...help each other out! You're not competing with one another since there is no curve; you are only competing to achieve your full potential. In the end, the work you do must be substantially your own. This means no verbatim (or mostly verbatim, in my judgement) copying on class assignments or exams. I will not hesitate to forward cases of academic dishonesty to the dean.

Important dates during the quarter:

Wednesday, April 27 – Mid-Term

Monday, April 25 – Concept paper due (for term paper assignment)

Friday, May 27 – Skylab or term paper due at noon

Friday, June 3 – Late work not accepted after this time.

Monday, June 6 – Final Exam

Course Outline:

We will be following the same pattern of material used by the text during the quarter, with some rearrangements. I will give you a more precise schedule of topics at the end of the syllabus. This does **not** mean that the lectures will be derived from the text! In most cases, I will be emphasizing different points than the book and often extensively discussing issues only hinted at by the text. In other words, I really mean it when I say that the reading is intended to be supplemental and helpful, but not a substitute for attending class.

Reading from the text will be assigned prior to the appropriate lecture when possible. Again, I realize that we'll be covering the entire textbook during the quarter and that reading all 22 chapters would be very difficult for most. I encourage you to read as much as you can, taking care to familiarize yourself before lecture with the particularly confusing or interesting points in the relevant chapters. I'm always happy to answer questions sparked by your reading during lecture.

In general, the more time you invest in preparation for the lecture by reading the assigned chapters, the more you'll get out of the course. So, as usual, I'm torn by the necessity to encourage you to read the text and the unfairness of asking you to read the whole thing. In the end, of course, it's your call. I will trust you to strike a balance that will enable you to get the most out of this course while not putting unreasonable demands on your time.

Calendar

Mon, March 28 – Course goals, assignments, size scales, coordinates
Wed, March 30 – Readings discussion, reference lines, solar/lunar motion
Mon, April 4 – Phases of the moon, eclipses, orbits, tides
Wed, April 6 – Light, spectra, spectral lines
Mon, April 11 – More on spectra. Workshop on HW #1 and #2
Wed, April 13 – Origin of the solar system, volatiles, accretion
Mon, April 18 – Terrestrials vs Jovians, water in the solar system
Wed, April 20 – Earth/Venus/Mars, TOPS, "Prospecting for Planets" Video
Mon, April 25 – Workshop on skylabs/term papers, review
Wed, April 27 – Mid-Term
Mon, May 2 – Sun, nuclear energy, stellar observations
Wed, May 4 – H-R Diagram workshop, stellar evolution
Mon, May 9 – Stellar remnants, workshop on HW #3
Wed, May 11 – The Milky Way, metallicity in the galaxy
Mon, May 16 – Spirals vs Ellipticals, chemical evolution, quasars
Wed, May 18 – Expansion of the Universe, Microwave Background
Mon, May 23 – Big Bang, nucleosynthesis, observational cosmology
Wed, May 25 – SETI, workshop on cosmology, HW #4
Mon, May 30 – Memorial Day holiday
Wed, June 1 – Catch up, course review, "Window to Creation" video
Mon, June 6 – Final Exam