

ASTRONOMY 005, EXPLORING THE COSMOS – Spring ‘23

John Perry; Innovation 203

Office hours: 1 hour before and after each class

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3 credits. Course materials will be posted on UVM Blackboard (Bb) throughout the semester.

Brief Course Outline: Math is limited to basic arithmetic, appropriate for most non-science majors. But scientific logic is important, and some students may find the material challenging. Help sessions and office hours are available, and everyone is urged to use them. Class slides are posted on Bb the day after each class.

| <u># classes</u> | <u>Subjects</u> |
|------------------|--|
| 1 | Course Introduction |
| 1 | Definitions of basic terms in physics |
| 2 | Optical and radio telescopes |
| 1 | Gravity and orbits |
| 2 | Earth motions, time, calendar, seasons and celestial Coordinates |
| 2 | Moon motions, eclipses, tides, surface and formation |
| 1 | Light and atomic structure, basic spectroscopy |
| 3 | Planets and their moons |
| 1 | Comets, meteors, solar wind, northern lights, solar system formation |
| 1 | Relativity and space-time |
| 2 | Stellar measurements, distance, magnitudes, H-R diagram |
| 1 | Stellar models and evolution: birth and prime of life |
| 2 | Death of low mass stars: white dwarfs and pulsars |
| 2 | Death of the high mass stars: stellar, galactic and cosmic black holes |
| 1 | Galaxies, spiral structure and Hubble's law; quasars |
| 3 | Cosmology: the Big Bang, dark matter, dark energy; exobiology |

Recommended text (not required): Neil F. Comins, Discovering the Essential Universe, Edition 5 or 6. Sections are noted on the extended outline. There are no assigned readings or problems drawn from the text. It is **only recommended** for those who feel they need more backup material. Any edition within the last 6 years is ok.

Grade Structure:

10 weekly assignments worth 5% each, plus **four 40-minute exams**, worth 12.5% each. Approximate **letter grades** for each assignment and exam will be **derived from curves** and posted on Bb the day after each due date. All numerical scores will be added together and a curve applied to the totals for the whole class to determine final course letter grades. Everyone's lowest assignment score will be dropped (not including the exams) to account for absences. There will be **no makeup** assignments or exams.

You can work with others on assignments if you want. But if you simply copy the answers, you will do poorly on the exams. Anyone seen copying their neighbor's papers on exams will be reported, which usually results in automatic failure of the course.