

ASTRONOMY 121: HELPFUL HINTS FOR FINAL EXAM

Coverage & Emphasis: The final is not comprehensive. It will concentrate on the second half of the course. It will emphasize, in order of importance:

1. Material since the second midterm: *War of the Worlds*, Jupiter, Saturn, and the outer planets; interplanetary matter & impacts on Earth; life in the universe. That is, lectures from April 9 through the end of the course; Study Guides 18 through 23; the novel *War of the Worlds*; and Chapters 23-26 in the *Seeds* textbook.
2. Subjects covered on the second midterm, though with less specificity.
3. The most important topics from the first midterm.

The emphasis will be *more on the lectures* than the reading. (Note that the lectures went considerably beyond the coverage in the book on some topics.) Any topic which was given prominence in both the reading and the lectures is a good candidate for one or more exam questions.

Note: The final exam will be worth only **225** points—i.e. only 25 points more than a midterm. You should adjust the effort you plan for this course with respect to your effort in other courses accordingly. You will have *two hours* to complete the exam (i.e. it will be held **2–4 PM, Friday, May 9 in CLK 107**).

Style: The final will be very similar to the midterm exams: mainly objective (true/false, multiple choice, fill-in), with a few brief answer (few sentences) questions. You must answer objective parts of the exam on a scantron (bubble) sheet. **Be sure to bring a #2 pencil with you.**

Review: There will be a question-answer session concerning the exam, on **Wednesday, May 7 at 5 pm in CLK 107**. Please come prepared with questions.

Things to Study:

All the *lecture notes & study guides*, with emphasis on the second half of the course.

All the *reading assignments*. You should especially review the material not covered on the earlier tests. Pay attention to the sections at the end of each chapter titled “*Summary*,” “*New Terms*,” “*Review Questions*,” & “*Discussion Questions*.” For earlier material, a review of the “*Summary*” and “*Review Questions*” should suffice.

The two *midterm exams*; topics, and even questions, could well be repeated.

Key topics listed on the reverse of this sheet.

Things to Ignore:

Numerical values of detailed quantities such as masses of the planets, their orbital radii, and so forth. However, you should be familiar with the *relative scales* of quantities we have discussed in class. You should know how to put the material into *quantitative perspective*.

Specific historical *dates*, except to be able to place the progress of scientific thought into context.

Historical *names* unless the individual’s contributions were emphasized in class.

Character development, literary qualities in *War of the Worlds*.

Details of the various spacecraft sent to each planet. But you should know what the more important missions (Apollo, Voyager, Viking, Cassini, etc.) contributed to our astrophysical understanding of the solar system.

Names of features on the various planets (e.g. the A, B, and F rings of Saturn), names of specific comets/asteroids other than Halley and Hale-Bopp, names of terrestrial impact craters, and so forth.

KEY TOPICS

POSSIBLE LIFE ON MARS & CULTURAL IMPACT

P. LOWELL & "CANALS" EFFECT ON POPULAR CULTURE
H.G. WELLS & "WAR OF WORLDS": SCIENTIFIC AND TECHNICAL CONTENT (NOT LITERARY)
UFO'S: AS EXAMPLE OF ANOMALISTIC SCIENCE SCIENTIFIC EVALUATION

TERRESTRIAL PLANETS COMPARED

COMPARISON OF ATMOSPHERES & SURFACES TECTONIC ACTIVITY VS. SIZE
ORIGIN & EVOLUTION OF ATMOSPHERES WATER TRAPPING/LOSS
CARBONATE CYCLE GREENHOUSE EFFECT

JUPITER

DISTINCTIONS BETWEEN JOVIAN & TERRESTRIAL PLANETS
COMMON FEATURES OF JOVIAN PLANETS VOYAGER, GALILEO MISSIONS
INTERIOR STRUCTURE METALLIC HYDROGEN MAGNETOSPHERE
ATMOSPHERE: CLOUD LAYERS CIRCULATION
RED SPOT IMPACT OF COMET SHOEMAKER-LEVY 9
GALILEAN SATELLITES (4): NAMES & SIZES DIVERSITY
CO-FORMED VS. CAPTURED SATELLITES
VOLCANOS ON IO: TIDAL FLEXING ORIGIN
ICE LAYERS & OCEANS ON EUROPA ICY CRUSTS: FLOWING

SATURN

SIMILARITIES TO JUPITER ORIGIN OF RINGS BY TIDAL DESTRUCTION
RINGS: THINNESS, STRUCTURE RINGLETS INDEPENDENT REVOLUTION
GRAVITATIONAL RESONANCE (CASSINI'S DIVISION)
TITAN: UNIQUENESS OF ATMOSPHERE NITROGEN/HYDROCARBONS
CASSINI MISSION/HUYGENS LANDER

THE OUTER PLANETS

DISCOVERY OF URANUS NEPTUNE AS TEST OF NEWTONIAN THEORY
MIRANDA: SURFACE UNIQUENESS & VIOLENT HISTORY TRITON: GEYSERS
PLUTO: DISTINCTIONS FROM JOVIAN PLANETS & DEMOTION TO 'DWARF' PLANET
KUIPER BELT OBJECTS

INTERPLANETARY MATTER

TYPES, TOTAL MASS ORIGIN AS REMNANTS OF PROTOPLANETARY NEBULA
ASTEROIDS: DISCOVERY NUMBER ORBIT TYPES
ASTEROIDS: PHYSICAL PROPERTIES (SIZE & COMPOSITION) NEAR MISSION
COMETS: "DIRTY SNOWBALLS" OORT CLOUD ORBITS
COMETS: EVOLUTION & APPEARANCE ALONG ORBIT TAILS
HALLEY'S COMET: AS PERIODIC TYPE HISTORY & 1986 "ARMADA"
DEEP IMPACT MISSION NATURE OF COMET NUCLEI
METEORIODS: TYPES METEOR SHOWERS VALUE OF METEORITES
IMPACTS ON EARTH: EVIDENCE FOR
IMPACT ENERGY: DEPENDENCE ON VELOCITY AND RADIUS
IMPACT EFFECTS & FREQUENCIES GLOBAL CATASTROPHES

LIFE IN THE UNIVERSE

LIFE ON EARTH: HISTORY ORIGIN
BIOCHEMICAL BASIS DNA FUNCTION
BIOSPHERES IN SOLAR SYSTEM: MARS, JUPITER, EUROPA, TITAN
LIKELIHOOD OF INTELLIGENT LIFE IN GALAXY: METHOD & RESULTS
NEW DEVELOPMENTS: LIFE ON MARS? & EXTRA-SOLAR PLANETS
SETI UFO'S & ARTIFACTS THE "RECOGNITION CHASM"