## *Welcome to Astronomy 141!*

Prof. Richard Pogge
Winter Quarter 2012

Prof. Richard Pogge

Education:

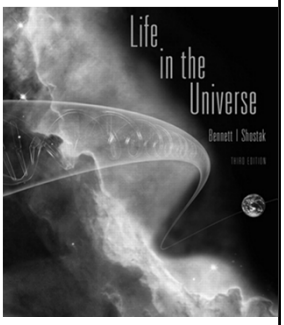
- B.Sc. in Physics, Caltech (1983)
- Ph.D. in Astrophysics
  UC Santa Cruz (1988)
- Postdoc at UT Austin & OSU
- OSU Professor since 1992

Research:

- Design & build advanced astronomical instrumentation
- Searches for planetary systems around other stars
- Active galaxies & supermassive black holes

Textbook: *Life in the Universe*

Jeffrey Bennett & Seth Shostak
3rd Edition
(Pearson/Addison Wesley)




Kindle edition available

Readings will be assigned
to supplement the lectures.

Recommended but it is not
required.

In-Class Quizzes

4 in-class quizzes:
- cover material since the last exam
- closed-book, closed-notes
- multiple choice, machine graded
- graded on a C+ curve
- drop the lowest score of the 4

Worth 45% of the course grade.

Make up tests by advanced notice

Homework Assignments


5 Homework Assignments:
- Each 4 to 5 short-answer questions
- Open-book, open-notes, open-discussion
- Make up 25% of the course grade (5% each).

No late homework accepted.

Meant to encourage discussion and active thought about course material.

Final Exam

Tuesday, March 13
11:30am – 1:18pm
0020 Page Hall

Comprehensive, closed-book, closed-notes, multiple choice exam worth 30% of final course grade.

***No Makeups or Early Finals***

Professor & TA Office Hours

Prof. Pogge

- 4059 McPherson Lab
- Tues & Wed 3–4pm, Thurs 2–3pm
- Other times by appointment.

TA: Carl Coker

- 4000 McPherson Lab
- Monday & Wednesday 2–3 pm
- Other times by appointment

www.astronomy.ohio-state.edu/~pogge/Ast141

- Lecture Notes
- Lecture Podcasts
- Syllabus & Course Calendar
- Homework & Exam Stats
- Links for Further Exploration

Also putting materials on Carmen (carmen.osu.edu)

Classroom Etiquette

- Cell phones OFF at all times.
- No laptops, tablets, smart phones, or other networked devices (exception for assistive technologies by prior arrangement)
- If you come in late or have to leave early, please sit near the exits.
- Don't start packing up until class is over.
- No conversing in class.

Electronic Q&A

Email questions to:

pogge.1@osu.edu


Guaranteed prompt answers to all questions big or small, usually within 24 hours.

For grade or other personal information inquiries, you must use your official OSU name.# address.

## *Are we Alone?*

The question of life on other worlds is an old one in Astronomy.

Is there life on other planets in our Solar System?

Are there planetary systems around other stars?

Are such planetary systems like ours or different?

Are any of the planets like the Earth?

Has life arisen on any of these planets?

In science, we prefer questions we can answer quantitatively to idle speculation.

How do we go about answering these questions *scientifically*?

What do we need to know?

How do we structure our scientific inquiry?

What are the various pieces of the puzzle we need to understand to make progress?

*Science is not so much about what we know, but how we have learned to confront what we do not know.*

Provides a framework within which to ask questions and evaluate answers.

Relies on the use of *verifiable data* & *quantitative measurements.*

The practice of critical examination of the validity of interpretations drawn from data.

Are there extraterrestrial civilizations out there that we might come in contact with?

What are the requirements for life?

Where can life exist?

What is required for communication?

What is required for intelligence?

How long does it take for life to develop?

How long do intelligent civilizations last?

This course will explore the scientific progress toward answering that fundamental human question: *Are we alone?*

What is the cultural and historical background of this question; how does it inform (or bias) our inquiry?

What is the nature of Life on Earth?

Is there life elsewhere in the Solar System?

Is there life elsewhere in the Universe?

What is the future of life on Earth and in the Universe?

What is the historical and cultural background of the question of life in the Universe?

The Copernican Revolution

The Chemical Revolution

The Biological Revolution

The Geological Revolution

The Cosmological Revolution

What is the nature and origin of life on Earth?

The History of the Earth

Geology, Climate, & Habitability

The Nature of Life on Earth

The Origin of Life on Earth

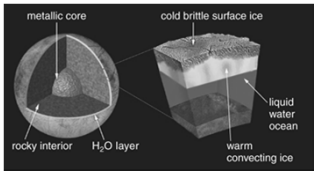
The Future of Life on Earth

## Is there life elsewhere in the Solar System?

What are the requirements for life?

Where else in the Solar System are they satisfied?

Four Worlds:
- Mars
- Europa
- Titan,
- Enceladus




Why is Earth habitable but Mars and Venus not?

## Is there life elsewhere in the Universe?

Are there planets around other stars?

Is there life on the those planets?

How can we ever hope to detect life on them?

Will we ever contact other sentient beings?

What is the long-term future of life on Earth and elsewhere in the Universe?