

# SETI: The Search for Extraterrestrial Intelligence

HON Sophomore Summer Seminar -- 3 credit hours

Course Instructor: Dail Mullins

University of Alabama at Birmingham

Ada Long, Director

---

**General Description:** As the third millennium begins, humankind has finally achieved the technical means to address a question that is both old and profound: are we alone in the universe? Despite the fact that alien beings regularly infest movies and television shows, there is still no compelling evidence for any living creatures beyond Earth. But there are highly suggestive reasons to believe that the star fields of the cosmos are teeming with life, some of it perhaps intelligent. In this course, we consider what science can tell us about the possibility of intelligent life in space, how we might find it, and what it could mean for our social, political, scientific and religious institutions if we did.

## Texts:

There is one assigned textbook for this class: Carl Sagan's novel, *Contact*. We will discuss this book, as indicated in the Course Outline, and view director Robert Zemeckis' film *Contact* during the following class period.

All other readings (journal and magazine articles, book chapters, website materials, etc.), as well as all handouts used in class, will either be photocopied and provided to you in class or made available on the course website.

## Syllabus

Date	Topic
Class 1	Introduction -- Explanation of Course Content and Requirements PBS Documentary - <i>The Search for Alien Worlds</i> (60 min)
Class 2	An Historical Overview of Interest in Extraterrestrial Life and Intelligence
Class 3	Flying Saucers, Alien Abductions, and Government Cover-ups: What SETI is Not About!  Videotaped Lecture - <i>Why UFOs are Bunk</i> (Seth Shostak, chief astronomer, SETI Institute) (30 min)
Class 4	The Cocconi-Morrison Paper of 1959, Project Ozma, the Greenbank Meeting, and the Drake Equation
Class 5	$R^*$ - the Average Rate of Star Formation in the Milky Way Galaxy
Class 6	$f_p$ - the Fraction of Stars with Planetary Systems
Class 7	$n_e$ - the Number of Planets in Each System Which Have an Environment Suitable for the Origin and Evolution of Life
Class 8	$f_l$ - the Fraction of Such Planets Which Might be Expected to Give Rise to Living Organisms PBS Documentary - <i>Life Beyond Earth (Part I): Are We Alone?</i> (60 min)
Class 9	Midterm Exam
Class 10	$f_j$ - the Fraction of Life-Bearing Planets Which Might be Expected to Give Rise to Intelligent Lifeforms $f_c$ - the Fraction of Planets with Intelligent Lifeforms Which Might be Expected to Give Rise to a Technological Civilization
Class 11	$L$ - the Average Lifetime of Such Technological Civilizations

Class 12	Proposed "Solutions" to the Drake Equation – From Frank Drake to Ernst Mayer <i>Student "Solution" Assignments Due</i>
Class 13	Searches and Search Strategies: From Project Ozma to SETI@Home PBS Documentary--Life Beyond Earth (Part II): Is Anybody Listening? (60 min)
Class 14	Holiday
Class 15	Possible Consequences of Contact
Class 16	Discussion of Carl Sagan's Contact
Class 17	<i>Contact</i> – the Movie (2 hrs, 30 min)
Class 18	The Weird Gets Weirder: Timothy Ferris and the Interstellar Exchange of Virtual Reality Programs
Class 19	Final Exam

**Course Requirements:**

**Accessing the Blackboard® Course Website:**

This course is "web-enhanced," which means that between-class announcements, some readings and assignments, interesting websites, and many of the course documents you receive in class will be available on-line through the School of Education's Blackboard® server. In addition, you can use the site to set up your own personal web page, calendar, address book, task list, etc., although these functions seem somewhat impractical for a short summer term course. Of more importance, however, is the fact that the course website will allow you to communicate with me and other members of the class via email or a chat room, and post course-relevant documents for others to see. The Blackboard® system also has a resource site available which may be helpful to you during the course.

**Course Requirements:**

Students will be expected to attend class regularly and to participate in class discussions.

The dates for the **Midterm Exam** and **Final Exam** (Comprehensive) are indicated above.

On the day of the twelfth class period, at the beginning of class, students will turn in their personal "solutions" to the Drake Equation, to include estimated values for each variable as well as a final value for N. Brief explanatory paragraphs should accompany each variable estimate, explaining your reasoning for arriving at the values you did. These will be collated in class and compared to similar estimates made by scientists and/or professional societies in the physical and life sciences. You will not be graded on the numerical values of the variables, or N, but rather on the reasoning you c