

A study of the role of science in modern society through investigation of the question: Does life exist elsewhere in the universe? Topics include a review of the astronomical and biological settings; the origin of life on the earth and possibly elsewhere; the evolution of life and the development of intelligence and technology. Also discussed are the ramifications of the development of life and intelligence for the atmosphere and the biosphere. *Prerequisite:* One D.E.C. category E course. 3 credits.

Instructor: Prof. Alan Calder T.A.: Mr. Yiyang Jia  
alan.calder@stonybrook.edu yiyang.jia@stonybrook.edu  
ESS 438 ESS 431

Meeting: Tuesday and Thursday 1:00 PM – 2:20 PM, Javits 102.

Office Hours: Calder: Mon. 10:30–12:00 AM, Wed. 1:00–2:30 PM, and by appointment.  
Jia: Tue., Th. 3:00 - 4:30 PM and questions by email.

Text: *Life in the Universe* (4th edition) by Bennett and Shostak.

Evaluation: 40% Hour exams, 30% Homework, and 30% Final exam. Grades will be posted on Blackboard. The instructor will discuss grades during office hours but for privacy reasons will not report or discuss grades via email.

Homework: Homework will be assigned most weeks and will be due the following week. Late homework will not be accepted without prior permission.

Exams: Two hour exams and one final exam. The final exam will be held Dec. 19 from 5:30 – 8:00 PM as scheduled by the Registrar. Missed exams may not be made up! With advance notice and/or careful documentation of extenuating circumstances, an exam may be excused or accommodations made.

**Academic Integrity:** Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another persons work as your own is always wrong. Any suspected instance of academic dishonesty will be reported to the Academic Judiciary. For more comprehensive information on academic integrity, including categories of academic dishonesty, please refer to the academic judiciary website at <http://www.stonybrook.edu/uaa/academicjudiciary/>

**Critical Incident Management:** Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the University Police and the Office of University Community Standards any serious disruptive behavior that interrupts teaching, compromises the safety of the learning environment, and/or inhibits students ability to learn. See more here: <http://www.stonybrook.edu/sb/behavior.shtml>

**Electronic Communication:** Email to University email accounts is an important way of communicating for this course. For most students the email address is firstname.lastname@stonybrook.edu, and the account can be accessed here: <http://www.stonybrook.edu/mycloud>. \*It is your responsibility to read your email received at this account.\* For instructions about how to verify a University email address see this: <http://it.stonybrook.edu/help/kb/checking-or-changing-your-mail-forwarding-address-in-the-epo>. You can set up email forwarding using instructions here: <http://it.stonybrook.edu/help/kb/setting-up-mail-forwarding-in-google-mail>. If you choose to forward your University email to another account, the University is not responsible for any undeliverable messages.

**Religious Observances:** See the policy statement regarding religious holidays at <http://www.stonybrook.edu/registrar/forms/RelHolPol%20081612%20cr.pdf>. Students are expected to notify the course professors by email of their intention to take time out for religious observance. This should be done as soon as possible but definitely before the end of the add/drop period. At that time they can discuss with the instructor(s) how they will be able to make up the work covered.

**Disabilities:** If you have a physical, psychiatric/emotional, medical or learning disability that may impact on your ability to carry out assigned course work, you should contact the staff in the Disability Support Services office [DSS], 632-6748/9. DSS will review your concerns and determine, with you, what accommodations are necessary and appropriate. All information and documentation of disability is confidential.

Students who require assistance during emergency evacuation are encouraged to discuss their needs with their professors and Disability Support Services. For procedures and information go to the website <http://www.sunysb.edu/ehs/fire/disabilities.shtml>.

Note that the lecture topics are subject to some change depending on progress of the class. Exam dates will not change.

class #	month	day	chapter <sup>a</sup>	topic
1	Aug.	30	1, 3 pp. 50-60, 80-86	Introduction I (Solar System, Astronomy)
2	Sept.	1	1, 3	Introduction II (Life in the Universe)
–	Sept.	6	–	no class
3	Sept.	8	2	Ancients
4	Sept.	13	2	Greats of Astronomy
5	Sept.	15	3	Nature of the Universe
6	Sept.	20	3	Matter and Energy
7	Sept.	22	4	Geologic History of Earth
8	Sept.	27	4	Geology and Habitability
9	Sept.	29	5	Life on Earth
10	Oct.	4	1–4	<b>Exam # 1</b>
11	Oct.	6	5	Extremophiles
12	Oct.	11	6	Origin of Life on Earth
13	Oct.	13	6	Evolution of Life on Earth
14	Oct.	18	7	Environmental Requirements of Life
15	Oct.	20	7	Biological Tour of Solar System
16	Oct.	25	8	Mars I
17	Oct.	27	8	Mars II
18	Nov.	1	9	Jovian Moons I
19	Nov.	3	9	Jovian Moons II
20	Nov.	8	5–9	<b>Exam # 2</b>
21	Nov.	10	10	Habitability
22	Nov.	15	10	Evolution of Habitability
23	Nov.	17	11	Stars
24	Nov.	22	11	Extrasolar Planets
–	Nov.	24	–	Thanksgiving
25	Nov.	29	12	Drake Equation
26	Dec.	1	12	SETI
27	Dec.	6	13	Interstellar Travel
28	Dec.	8	13	Fermi's Paradox
Final	Dec.	19 <sup>b</sup>	1-13	<b>Final exam 5:30 – 8:00 PM</b>

<sup>a</sup>Be sure to read the assigned reading before each class!

<sup>b</sup>Nota Bene: The ultimate authority on the date and time of the final is the Registrar. Students should monitor the exam schedule on the Registrar's web page (<http://www.stonybrook.edu/registrar/finals.shtml>) during the semester as changes have happened in past semesters. Please also note the student responsibility statement on the Registrar's exam schedule page.