MSE 2101: LIFE IN THE UNIVERSE   **Fall 2015 Syllabus**

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OFFICE HOURS

Mon   2pm – 4pm
Tue   10am – 4pm
Wed   2pm – 4pm
other times by appointment

Course homepage: http://clusty.ast.villanova.edu/aprsa/?q=litu

Course textbook: J. Bennett and S. Shostak: *Life in the Universe, 3ʳᵈ Edition*

Please refer to this web page for most up-to-date information on the course. Test dates, past tests and quizzes in pdf form and all other information will be made there available in due time.

This course satisfies one semester of the 2-semester Natural Science requirement for students in the College of Liberal Arts and Sciences, under the provisions of the Mendel Science Experience (MSE). Students must also be enrolled in the concurrent laboratory course *Astronomy Laboratory*.

Course content in a nutshell:

Are we alone? This simple question has profound implications on our view of both ourselves and of the whole Universe. At this time, there is exactly one place in the Universe where we know biological life has developed – here on Earth. However, modern astronomy has shown that there is an uncountable number of places in the Universe where physical conditions may well be similar to our own. We will begin with a review of history of science – how the ancient Greeks made it big for everyone. Then we will review the formation of our Solar System in general and Earth in particular, from the geology point of view. We will continue with discussing life on Earth, describing the properties which distinguish the living from the non-living, the environmental requirements of life as we know it, and the evolution of terrestrial life. With this background, we will then investigate the possibilities of life in our own astronomical neighborhood − the Solar System – focusing on the most likely locations, including Mars and the moons of Jupiter. Next, we will look at the bigger picture and consider the possibilities of life among the stars. Our Milky Way galaxy contains over 200 billion stars, a large fraction of which are now believed to have planetary systems, and the observable Universe contains billions of galaxies. Could there (not) be life out there somewhere? We will examine the general stellar and galactic conditions that lead to planetary habitability and discuss the ways in which life outside the Solar System might be detected. We will also discuss the search for intelligent life and the possibilities of life migrating from one stellar system to another.

Course work and grading:

Your final grade will reflect the scores you earn on **quizzes**, **tests** and **the final**. **Grammar** will also play a role, so be mindful of capital letters and contractions!

- Every week (Monday – but that's up for discussion) there will be an in-class quiz. Every quiz has 10 questions, with additional two questions for extra credit. Each quiz question is worth 5 points, 50 points total + 10 points for extra credit;

- there will be three 45-min essay-type tests during the semester. These tests will have 5 questions, with an additional question for extra credit. Each question is worth 50 points, 250 points total + 50 points for extra credit;
- at the end of the semester there will be a **cumulative** final. The final will have 5 questions, with an additional question for extra credit. Each question is worth 100 points, 500 points total + 100 points for extra credit;
- occasionally there may be other opportunities given for extra credit, such as an in-depth presentation of research topics and homeworks. Please see me to find out more about these opportunities.

If you do the math, you'll see that quizzes carry 32% of the grade, tests carry 41% of the grade, and the final carries 27% of the grade. The grading will be done according to the following breakdown:

0-56%	F	68-72%	C-	84-88%	B
56-60%	D-	72-76%	C	88-92%	B+
60-64%	D	76-80%	C+	92-96%	A-
64-68%	D+	80-84%	B-	96-100%	A

Attendance:

Regular attendance is essential for uninterrupted understanding of course material. Since this course covers a significant amount of content in a not-so-significant amount of time, each missed class will hurt. Really hurt. The topics are not trivial and continuous work is required to remain on top of things.

Please do not miss quizzes and tests. If you <u>must</u> miss a quiz or a test, you <u>must</u> inform me of that in advance, and you <u>must</u> have a written notice excusing your absence. <u>Health center visits and subsequent "call us and we'll confirm that he/she was here" do not count as a valid excuse.</u> Provided that you follow these rules, I will excuse you from a missed quiz (i.e. there are no makeups for the quizzes), and I will provide you with a makeup opportunity for the test. As for the final: whatever you do, do not miss it.

The etiquette for using laptops and cell phones in class:

The use of notebook computers or cell phones in class is strictly prohibited. You will be publicly flogged if caught using cell phones in class for texting, facebooking or web surfing.

Academic integrity and Special needs:

Finally, here goes the standard fineprint: any violation of the Code of ethics will be grounds for failing the course. Any cheating, copying, duplication of work, etc, will get you into trouble. If you have any concerns, come talk to me and we will figure it all out.

It is the policy of Villanova University to make reasonable academic accommodations for qualified individuals with special needs. If you are a person with a special need please contact me after class or during office hours and make arrangements to register with the Learning Support Office by contacting 610-519-5636 or at nancy.mott@villanova.edu as soon as possible. Services for students with physical disabilities are provided by the Division of Student Life (http://www.villanova.edu/studentlife).