Habitable Planet Syllabus (Corrected 1/13/2016)

EAS 1601 Spring 2016
Professor: Dr. Britney Schmidt
Email: britneys@eas.gatech.edu
Class: T/Th 12:00 1:30-pm in Clough 152
Office hours- Friday in ES&T 2236 (11 am-12 pm) or by appointment
Textbook – "How to Build a Habitable Planet" (2nd Ed.), by Charles Langmuir and Wallace Broecker

We live in an exciting time, when the search for life beyond the Earth is reaching new heights. With better and better spacecraft, we are searching our own solar system, and with better and better telescopes we are searching our galactic neighborhood. So what are we looking for, and how will we know when we find it? This course will explore the history of the solar system and the Earth as the one example of a habitable planet—one that can support living organisms—that we know now. We will consider how the planets formed, the important planetary processes that brought about the Earth as it was when life arose and the planet we live on today. This course is geared at undergraduate students. The course will draw upon lectures and readings, as well as laboratory exercises to enrich those lessons.

Grading

There will be weekly reading assignments to support the lectures. There will be two midterms and one final exam (equally weighted). There will be graded laboratory assignments, performed each week in your section. All work will be due at the beginning of class. Missing laboratory will result in a score of zero, unless exceptional circumstances are demonstrated. Your lowest laboratory score will be dropped. While you are both allowed and encouraged to work together on the laboratory assignments, you must turn in your own original work, and you will be responsible for individually understanding the material. Weekly readings from the textbooks and other sources will be assigned. The goal for this course is to have context for the cutting edge of current research in a vibrant field, so reading will be a critical component of the course.

Course materials including assignments and notes are not to be archived anywhere online, distributed or provided to persons outside of class. Materials are presented for your benefit and

evaluation. Such actions are dishonest and break the code of conduct. Any person in breach of this policy will face disciplinary action.

Grades will be determined as follows:

2 Midterm Exams (equally weighted):	40%
Final:	20%
Labs:	30%
Writing Assignments:	10%

Approximate Course Schedule (*Lecture topics may shift or change):

Date	*Lecture*	*Reading*
12-Jan	Intro & Natural Systems	L&B Ch. 1
14-Jan	Big Bang	L&B Ch. 2
19-Jan	Element Synthesis 1	L&B Ch. 3
21-Jan	Element Synthesis 2	
26-Jan	Formation of Molecules	L&B Ch. 4
28-Jan	Formation of Planets	L&B Ch. 5
2-Feb	Formation of Planets	
4-Feb	Radiometric Dating 1	L&B Ch. 6
9-Feb	***Radiometric Dating 2 & Q&A Session***	
11-Feb	***Midterm Exam 1***	
16-Feb	Structure of the Earth	L&B pg. 171-188
18-Feb	Plate Tectonics 1	L&B Ch. 10
23-Feb	Plate Tectonics 2	
1-Mar	Formation of Earth's Crust	L&B pg. 188-204
3-Mar	Origin of the Atmosphere & Oceans	L&B pg. 251-265
8-Mar	Planetary Energy Balance	L&B pg. 265-271
10-Mar	Earth's Thermostat	L&B pg. 271-276
15-Mar	***Q&A Session***	
17-Mar	***Midterm Exam 2***	
22-Mar	Spring break	L&B Ch. 18
29-Mar	Climate System 1: Greenhouse/Icehouse Worlds	
5-Apr	Climate System 2: Snowball Earth	L&B Ch. 13
7-Apr	History of Life and Metabolism	L&B Ch. 16
12-Apr	Evolution	L&B Ch. 14
14-Apr	Extinction	L&B Ch. 19
19-Apr	Earth's Future	
21-Apr	Habitability in the Universe *Planets & Exoplanets*	L&B Ch. 21
26-Apr	Habitability in the Universe *Oxygen*	
28-Apr	***Q&A Session***	
29-Apr	***LAST DAY OF CLASSES***	