**Cell and Microbiology: The Fun Basics! MIDDLE SCHOOL SYLLABUS**

MIT HSSP Summer 2013

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***Lectures:***

Day: Sundays (July 7 – August 18, 2013)

Section 1 (HSSP-MIT 7.301) Room: 5-217 Times: 3:05pm-3:55pm

***Office Hours:***

-Sundays 9:00am-10:00am (MIT) -Mondays 3:00pm-6:00pm (Emmanuel)

\**Feel free to email the professor to arrange any office hours appointments.*

***Course Overview:***

This section is designed for students in middle school (rising 7th graders to rising 9th graders). This course will introduce students to the microscopic biological systems, including cells. Bacteria, and viruses. The general flow of the course is at a minimal pace that allows for students to gradually build upon old materials. Appropriate and pertinent studies on health and illness of the human body will be discussed throughout the entire unit. Lab demos and modules will be introduced throughout the entire course to get the students thinking about biology at a more realistic and relatable concept.

***Course Expectations:***

Students are expected to participate and ask questions when appropriate. Participation is the key to a successful learning environment.

***Important Information and Course Breakdown***

-Class Participation (Ask questions!) 40%

-Post-lecture Activities (Simple 2 Questions) 10%

-Lab demo participation (Activities Sheet) 20%

-Reflection Assignment (End of Summer) 20%

-Mid-summer Quiz (mini-quiz) 10%

\*This simply outlines the amount of class time that will devote to activities.

***Grades:*** Even though no formal grades will impact the student’s academic profile, constant progress reports may be asked for. Teacher will provide any feedback, comments, or answer questions when requested.

***Materials:***

\*Reading materials will be scanned and posted on the main portal. Students DO NOT have to buy books, but if they would like a copy the information below is the editions we will use.

-Essential Cell Biology 3rd Edition, Garland Science. Alberts Bruce, Dennis Bray, Karen Hopkins, Alexander Johnson, Julian Lewis, Martin Raff, Keith Roberts.

-Biology 8th Edition, Pearson. Neil Campbell, Jane Reece, Lisa Urry, Michael Cain, Steven Wasserman, Peter Minorsky, Robert Jackson.

***Lectures and Homework***

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| ***Week Number*** | ***Lecture Topics*** | ***Homework/Assignment*** |
| 1.  CELL BIOLOGY | Introduction to class! Biology, What is Cell Biology? What is Microbiology? Cell Structures, Organelles, Prokaryotes, Eukaryotes, Bacteria, Viruses, Plants, Yeast. | Color in the Cell and Bacteria worksheet. |
| 2.  CELL BIOLOGY | DNA, the Central Dogma, Genetics, Mendelian Genetics, Cell Nucleus | DNA Worksheet |
| 3.  CELL BIOLOGY | Proteins, Ribosomes, Golgi Apparatus, Cell Wall, Cell Membrane. | Kitchen scavenger hunt sheet. |
| 4.  CELL BIOLOGY | **\*\*Lab Day!!** Strawberry DNA Extraction\*\* | Lab worksheet titled “Strawberry DNA extraction” |
| 5.  MICRO  BIOLOGY | Bacteria, Viruses, Bacteriophage, Bacterial replication, Viral replication, Bacterial structures, Viral structures. | Bacteriophage worksheet. |
| 6.  MICRO  BIOLOGY | Bacterial infections, Viral infections, Fungi, Prions, Parasites, Antibiotics, Medicine. | Read article for next week lab, about yeast as organisms. |
| 7.  MICRO  BIOLOGY | **\*\*Lab Day!!** Yeast, are they alive? | None. |