

# **SCI2208 From Dust to DNA**

## **Course Syllabus**

### **COURSE REQUIREMENTS**

From Dust to DNA is a basic science course. All students are eligible to enroll.

### **COURSE DESCRIPTION**

Everything, from complex machines to tall buildings, requires detailed plans in order to take basic components and turn them into a finished product. Living things are no exception. This course will discuss the role of DNA in taking the building blocks of life and transforming them into cells and complex organisms.

The student will learn how living organisms pass on genetic traits and repair themselves when damaged. They will investigate the details of one of the most intricately designed pieces of code. This will enhance the student's appreciation for the complexity of life.

### **LEARNING OBJECTIVES**

From Dust to DNA will explore how the smallest of mechanisms, DNA, is used to create complex living organisms. The student will identify the basic components of DNA strands and explore the complex code that makes up life. By the end of this course all students should learn:

- The building blocks of DNA
- DNA structure
- DNA Replication
- How hereditary traits are passed on
- The relationship between RNA and DNA
- How mutations affect the genetic code
- DNA repair mechanisms
- The role of genetics in health care

### **ATTENDANCE**

Attendance is mandatory for all students. Excellent attendance is imperative for mastery and application of the information dispensed. Whether you are sitting at a desk in a classroom or attending via Skype, your attendance is vital to your success. Late arrivals are distracting and disrespectful. Please refrain from being tardy. Grades will be affected by absences and tardiness. Participation in class is a prerequisite. You learn from lectures, discussions and presentations.

### **CLASSROOM BEHAVIOR**

Students are expected to treat all persons with respect. We should all conduct ourselves in a courteous and responsible manner. Be considerate, you can disagree, don't insult.

Please set all your electronic devices to silent during class so as not to be a disturbance to others in the class.

## **TUTORIAL ASSISTANCE**

We maintain an open-door policy for our students. We are absolutely willing to discuss any matter that may arise during the course. If you have any questions, problems, or need help with the course material, we urge you to reach out as soon as the issue arises. If you want to contest a grade, you must do so within 48 hours and put it in writing. Please ask your student advocate for help. If you do not have a student advocate send an email to: [tutordept@usilacs.org](mailto:tutordept@usilacs.org).

## **NON-DISCRIMINATORY STATEMENT**

All students regardless of age, race, gender, religion, physical disability, class, etc., shall have equal opportunity without harassment in this course. Any problems with or questions about harassment can be discussed confidentially via email at: [hr@usilacs.org](mailto:hr@usilacs.org).

## **DRESS CODE**

For students enrolled who are attending in a classroom or via Skype, please be sure you are dressed modestly and respectfully. Please refer to [www.merriam-webster.com/dictionary/business%20casual](http://www.merriam-webster.com/dictionary/business%20casual). NO short shorts or skirts. Avoid low-cut tops. We want to present ourselves in a dignified manner at all times.

## **NETIQUETTE**

- Always read through all the comments of the class before responding. This will avoid duplicating comments or questions asked.
- Avoid language that could be offensive. All profanity is strictly prohibited. Remember that using all caps when replying online signifies shouting. This would be rude and combative.
- Be sensitive to the fact that there will be fellow students from all parts of the world with many differing backgrounds and languages. Remember that slang and idioms will most likely be misconceived and/or misinterpreted. These should be avoided.
- Respect others views or opinions.
- Be thoughtful of the privacy of others. Ask permission before sharing email addresses or other personal information.
- Do not forward inappropriate material such as: virus warnings, chain letters, jokes, etc. The sharing of pornographic material is strictly prohibited.
- Use good spelling and grammar. Avoid using texting shortcuts.
- Strive to compose your comments in a positive, supportive and constructive manner at all times.

Any of these offenses will be dealt with by the school disciplinary committee.

## **ADA ACCOMMODATIONS**

All reasonable accommodations will be provided for students with disabilities. Any student attending USILACS who needs an accommodation due to a chronic challenge (i.e. blindness, deaf or hard of hearing, mobility issues, psychological, or learning disability), register with:

USILACS Registrar's Office  
1221 Brickell Ave.  
Miami, FL 33131  
1-305-330-2202  
[registraroffice@usilacs.org](mailto:registraroffice@usilacs.org)

## **ACADEMIC DISHONESTY/CHEATING**

We encourage collaborating with others, either in person or online, to study and learn. When you complete your assignments or your exams, however, the wording has to be your own.

Plagiarism is the theft of someone else's work and ideas. You are permitted to cite or even quote someone else, however you must properly cite them. There are two accepted ways of doing this. They are known as Modern Language Association (MLA) or American Psychological Association (APA). You can visit [www.citationmachine.net](http://www.citationmachine.net) for help in correctly citing information.

As a school that strives to maintain high moral standards, we strongly caution our students to be ethical and honest. Endeavor to be honest in conducting yourself in regard to any coursework you accomplish or exams you may take. Cheating is a dishonest practice.

## **REFERENCE MATERIALS**

The vast majority of textbooks are outdated by the time they are published. USILACS education programs are not based upon outdated printed textbooks. USILACS programs are based on the most accurate and reliable knowledge available; specifically, up-to-date vetted internet-based information.

For those who would like some reference or Internet search recommendations, we would recommend the following:

(2018) Biology 2e. Chapters 14-17. OpenStax, Rice University

(2015) What happens when your DNA is damaged? - Monica Menesini by TED-Ed

## **MINIMUM REQUIRED SUPPLIES**

All students will need all of the following:

- Computer with camera, microphone, and speakers.
- Skype installed on the computer with an active Skype account.
- Internet
- Printer

- Notebook paper
- Pens/pencils

If the student does not have a computer or internet, there will be some available for use at the school in the computer lab.

## **GRADING SYSTEM**

There will be three tests throughout the course. Each test will count for 33.3% of the final grade.

Grade	Percentage	Grade Point
A+	99	4.0
A	97	3.8
A-	94	3.7
B+	89	3.3
B	85	3.0
B-	81	2.7
C+	77	2.3
C	73	2.0
C-	69	1.7
D	66	1.0
F	59	0.0

All students must earn at least a “D” in order to pass the class.

## **ASSIGNMENTS**

*Diagram DNA structure and components -*

Create a diagram that illustrates how base proteins make up the genetic code.

*Punnett squares -*

Use Punnett squares to calculate how genetic traits will be passed down to offspring.

*Essay -*

Write a 3-page essay on how the map of the human genome is being used in modern health care.

## **WEEKLY ASSIGNMENTS**

<b>Week 1</b>	Overview of course and coursework Basic Building Blocks of DNA
<b>Week 2</b>	DNA Structure
<b>Week 3</b>	Amino Acids and Proteins
<b>Week 4</b>	DNA and Reproduction <i>DNA Diagram Due</i>
<b>Week 5</b>	<i>Video review and Exam</i>
<b>Week 6</b>	DNA and RNA
<b>Week 7</b>	Gregor Mendel and the History of Heredity

<b>Week 8</b>	Dominant and Recessive Genes <i>Punnett Squares Due</i>
<b>Week 9</b>	<i>Video review and Exam</i>
<b>Week 10</b>	Mutations and DNA
<b>Week 11</b>	DNA Repair Mechanisms
<b>Week 12</b>	Modern Health Care and the Human Genome Project <i>Essay Due</i>
<b>Week 13</b>	<i>Video review and Final exam</i>