Course Description and Objectives:

Scientific findings have dramatic impact on every aspect of our life, sometimes conflicting with cultural and religious believes. This course will train students how to conduct research in a breadth of scientific and humanistic fields. Scholars from Emory and Georgia Tech will use their own research discoveries and findings as templates to understanding the scientific method. Students enrolled in this class will observe primate behaviors in a semi-naturalistic environment, decode ancient Jewish and Muslim legends, learn what fetal kicking tells us about personality, manipulate single DNA molecules using state-of-the-art instrumentations and learn about mending broken hearts using stem cells. These research topics will be the starting point for open discussion about science and human spirit. Students moreover will participate in various out-of-the-classroom activities, including movie screenings, trips to various laboratories around campus and to the Yerkes National Primate Center. As a final project for the class, students will prepare an application for a federally funded research grant.

Instructors:

Office hours are by appointment only. Appointments can be scheduled in advance via email. Replies to requests will generally be answered within 24 – 48 hours Monday through Friday.

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**CHEM 468**

*Translating Life: Bridging the Languages of Science and Human Spirit*

**Modules Description**

**“Terror of Tolerance: Muslims, Jews and Christians of Imperial Spain”**

Imperial Spain was the “melting pot” of the 16th Century world. Muslims, Jews and Christians shared the same space, producing many extravagant phenomena in literature and architecture. This research focuses on decoding these phenomena. Students will explore Muslim legends and Jewish short stories that were written in a very “weird” way using the Spanish language with Arabic and Hebrew characters. They will see how the buildings of Andalusia portray a mix of three different religions and cultures, unveiling a Spain full of diversity and transit, of rivalry and exchange that might inform the understanding of today’s controversies and the continuous terror of real tolerance.

Maria Rosa-Rodríguez  
Jan 22 – Feb 5

**“Wiring the Brain: How Brain Creates Mind”**

Philosophers, scientists, theologians, and laypeople have wondered for centuries how the conscious mind comes to be. How does what we call mind emerge from the organic matter that we call the brain. In this module we will investigate how differences in the development of our brain can alter our perception of the world. Also we will discuss the inherent conflict of studying the mind using the very instrument being investigated.

Jenn Wilhelm  
Feb 12 – Feb 26

**“Single Molecule Manipulation: Giving DNA a New Twist”**

Most of the current biological knowledge is based on experiments performed on a large ensemble of molecules, where the individual behavior can not be distinguished, and only average characteristics can be measured. Groundbreaking techniques introduced in the last 10 years allow us to take a closer look to many biological processes, resolving what takes place on a SINGLE molecule scale. Using this approach, we will learn how we can manipulate, twist or stretch a single DNA molecule and how we can directly observe the modifications induced on the DNA by proteins and enzymes in order to regulate cellular functions.

Carlo Manzo  
Feb 28 – Mar 20

**“Surviving in a society: Perspectives from non-human primates”**

Have you ever wondered why humans are “social beings” when interacting with others is unpredictable and sometimes dangerous? How has living in a social world influenced our cognitive abilities? Step into the world of some of our living ancestors to find out. Learn how non-human primates come to recognize and understand group members as intentional agents, communicate about the environment and their emotions, learn from one another, and display unique behavioral traditions. Find out ultimately how these abilities have changed the definition of what is human.

Jennifer Fugate  
Mar 25 – Apr 8

**“Mending a Broken Heart”**

Have you ever had a broken heart? Now you may have experienced the pain associated with heartbreak, but chances are you’ve never had heart failure or have personally experienced a heart attack. “Broken” hearts, however, are the leading cause of death in the United States. Currently approaches are being undertaken which utilize tissue engineering and stem cell technology. A foundation has been set and it’s up to us to uncover the possibilities and limitations for such an approach.

David Simpson  
Apr 10 – Apr 24