TENTATIVE SYLLABUS

BIOMEDICAL SCIENCES 4590.006

Special Topics: Humans and Their Genomes
(2 Credits)

January-mester 2015

Class Schedule: Room # EN 107
Jan 5 – Jan 16 M 3:00 – 5:20
T 3:00 – 5:20
W 3:00 – 5:20
R 3:00 – 5:20
Jan 16: FINAL EXAM (F 3:00 – 5:00)

Instructor: Kirk Cammarata
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Lab: CS 127
Phone: 825-2468 (Office)
825-xxxx (Lab)
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Office Hours: [Subject to change pending advance notice]
M 1:00 – 2:00
T 1:00 – 2:00
W 1:00 – 2:00
R 1:00 – 2:00

Please note that you are welcome to come by my office or lab at anytime, though you may wish to call first. I will be glad to help you if I am not busy.

Prerequisites: Genetics, plus any two of the following courses (or equivalents): Cell Biology, Molecular Biology, Biochemistry I,II, Human Genetics, Genomics, Population Genetics, Population Genomics, Medical Microbiology, Virology, OR permission of instructor.
Brief Course Description: This course will focus on recent developments in our understanding of the human genome and its expression, through exploration of project ENCODE (http://www.nature.com/encode/#/threads/), as well as the influences from our microbiomes (http://genome.wustl.edu/projects/detail/human-microbiome-project/) and trans-genome exposures. Class will be based primarily upon journal article reading and peer-led group discussions of interpretation and significance. Participants will learn applications of genomics techniques to study how genomes function, regulate and respond to environment or disease. Topics will be informative to students interested in medicine, biomedical research or genomics-based research in non-model organisms.

Tentative Topic List for Readings:
- Intro to the human genome
- Hu genome structure and genome evolutionary patterns in general
- Next Gen DNA sequencing and applications
- Project ENCODE; Databases and visualizing incomprehensible stores of information
- How does a complex organism emerge from a genome? Maximizing genotypic and phenotypic diversity from each gene and combinatorial properties from regulation of gene expression
- What is a gene anyway?
- What are all of those RNA molecules doing? 50 Shades of RNA
- How do we find alleles associated with disease? Genome-Wide Association Studies
- Where Do Humans Go From Here? Recent evolutionary patterns
- Chromatin Structure, Modification and Epigenetics
- The Human Microbiome Project: We Are Fa-mi-ly
- Microbiome-Host Interactions: Kind of a Big Deal
- ARE We What We Eat? Controversy over trans-genome effects crossing biological boundaries

Course Goals: The goals of this class are to explore the model literature of major projects focused on the human genome and human microbiomes to: 1) learn applications of “Next Gen” DNA sequencing and associated techniques as tools to characterize genomes, their expression, and their variation in the context of disease and environmental influences; 2) learn how microbiomes influence their human host; and 3) nurture journal article interpretation skills and provide opportunities for peer-led scientific discussions and critical thinking.

Learning Objectives: Upon successful completion of this course, students should be able to:
• Read, assimilate, and critique scientific literature
• Present a published scientific study to peers and guide a group discussion to emphasize the interpretation of data, accomplishments, weaknesses and significance of that work
• Describe the current understanding of the human genome and how it gives rise to the emergent properties of human phenotype
• Describe how advanced DNA sequencing technologies can be applied to study different aspects of genomes, their expression, and their regulation
• Describe how modern genomic technologies can be used to study and characterize dysfunction or disease in humans
• Describe the characteristics of the human microbiome and how it both influences human phenotype and varies with environmental conditions
• Explain the strengths and weaknesses of the arguments on both sides of a controversial scientific issue

Tentative Evaluation: Your final grade will be based on the percentage you earn out of the total possible points, weighted approximately as specified below. A 10-point grading scale will be used:

A = 90 - 100 %
B = 80 - 89.9 %
C = 70 - 79.9 %
D = 60 - 69.9 %
F = 0 - 59.9 %

Final essay-based exam (Jan 16) = 30%
Paper critique summaries = 20%
Paper discussion leadership = 20%
Paper discussion participation = 30%

TOTAL Points = 100 %

For Paper Discussion Leadership, undergraduates will work in teams of 2.

The time and point schedule may require adjustment. Additional assignments may or may not be provided at the Instructor’s discretion. Such assignments might include homeworks, group projects, reading assignments, quizzes, etc. Every attempt will be made to follow the time and evaluation schedules shown here. It is the student’s duty to attend each class session, to participate in reading and discussion and to be aware of all assignments, deadlines, etc.

Required Texts: None

Readings will be assigned from appropriate journals and multimedia sources accessed via open source, BlackBoard, and from materials placed on library reserve. However, a recent text from your Genetics or Molecular Biology course is recommended for reference purposes.

Access to and utilization of BlackBoard will be REQUIRED. Please see below for more details.
Other Course Requirements:
1. All students must access BlackBoard on a regular basis.

   For help with access to BlackBoard, email or internet, please contact the IT Helpdesk by phone (825-2692) or electronically (computer.helpline@tamucc.edu; http://it.tamucc.edu/selfservice/index.html)

2. Class attendance, preparedness and participation in all learning activities is required and counts towards your participation points. Assignments cannot be made up later if absent without a recognized excuse (see below).

Explanation of Assignments:
   The Final Exam (essay-based) will be held on Friday January 16 from 3:00 – 5:00 PM.

   Journal article readings, media viewing, tutorials and web-based readings will be assigned and accessed via BlackBoard, internet URL, or via reserve at the library. Paper Critique Summaries will comprise short answer questions related to each journal article. Such assignments must be turned in individually and be written in your own words, NOT COPIED from someone else (unless specified as a group assignment). Students will select and present one journal article to the class and lead the group discussion of that paper. All students are required to participate in each journal article discussion, in a substantive and professional manner.

All assignments and examination answers must be legible to the Instructor. Illegible answers will receive a “0”.

Attendance Policy:
Attendance is the student’s responsibility. You are responsible for the material covered in every lecture or online activity, regardless of your (lack of) attendance or participation. Nothing missed during an unexcused absence can be made up. An excused absence allows us to make alternative arrangements to complete an assignment. Only unavoidable absences are excused. Routine events (non-emergency medical visits, parent-teacher conferences, household or auto repairs) should be scheduled to avoid conflicts with class. Plane tickets booked to conflict with class do NOT constitute an excusable absence. An acceptable excuse must be:
• from an appropriate source (doctor, dentist, funeral director) who states the nature and dates of the event
• In writing, on official letterhead, and signed (it will not be returned)
• presented prior to, or within 3 days of, the absence

There are No make-up examinations: For some scheduled events, you may arrange to take a lecture exam before, but not after, its scheduled time.
Expectations:

You are responsible for your own education. Take notes in class and when reading journal articles. Be diligent and thorough when reading articles and preparing written critiques. The instructor will provide some guidance to assist your understanding of journal articles. Also be aware of university-imposed deadlines (ie drop dates).

Cell Phone/Electronic Device Usage Policy on Disruptive Behavior:

As adult university students, you are expected to act with courtesy and common sense. Disruptive, disrespectful, or abusive language/behavior towards anyone in class (student, staff, faculty) will not be tolerated and could result in permanent removal from class. This includes tardiness to class, talking in class, insubordination, and electronic disturbances (cell phones, ipods, etc). **Turn it off unless specifically being used for class.**

Academic Integrity/Plagiarism*

University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, falsification, forgery, complicity or plagiarism. (Plagiarism is the presentation of the work of another as one’s own work.) In this class, academic misconduct or complicity in an act of academic misconduct on an assignment or test will result in appropriate action at the discretion of the instructor, including failure of the course. Everything should be **in your own words**.

Dropping a Class*

Be aware of the last day to drop a class with an automatic grade of “W” this term. I hope that you never find it necessary to drop this or any other class. However, events can sometimes occur that make dropping a course necessary or wise. Please consult with me before you decide to drop to be sure it is the best thing to do. Should dropping the course be the best course of action, you must initiate the process to drop the course by going to the Student Services Center and filling out a course drop form. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. **Friday November 7** is the last day to drop a class with an automatic grade of “W” this term.

Preferred methods of scholarly citations  *(Format from J. Experimental Marine Biology and Ecology)*

**Statement of Civility and Classroom/professional behavior**

Texas A&M University-Corpus Christi has a diverse student population that represents the population of the state. Our goal is to provide you with a high quality educational experience that is free from repression. You are responsible for following the rules of the University, city, state and federal government. We expect that you will behave in a manner that is dignified, respectful and courteous to all people, regardless of sex, ethnic/racial origin, religious background, sexual orientation or disability. Behaviors that infringe on the rights of another individual will not be tolerated.

Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor’s ability to conduct the class or (b) the ability of other students to profit from the instructional program may be considered a breach of the peace and is subject to disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. This prohibition applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.

**Grade Appeals (College of Science and Engineering Version)***

As stated in University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules website at [http://www.tamucc.edu/provost/university_rules/index.html](http://www.tamucc.edu/provost/university_rules/index.html), and the College of Science and Engineering Grade Appeals webpage ([http://sci.tamucc.edu/students/GradeAppeal.html](http://sci.tamucc.edu/students/GradeAppeal.html)). For assistance and/or guidance in the grade appeal process, students may contact the chair or director of the appropriate department or school, the Office of the College of Science and Engineering Dean, or the Office of the Provost.

**Disabilities Accommodations***

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call or visit Disability Services at (361) 825-5816 in Corpus Christi Hall 116.
If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816.

**Statement of Academic Continuity***

In the event of an unforeseen adverse event, such as a major hurricane and classes could not be held on the campus of Texas A&M University–Corpus Christi; this course would continue through the use of Blackboard and/or email. In addition, the syllabus and class activities may be modified to allow continuation of the course. Ideally, University facilities (i.e., emails, web sites, and Blackboard) will be operational within two days of the closing of the physical campus. However, students need to make certain that the course instructor has a primary and a secondary means of contacting each student