Instructor: Dr. Steven Gorsich
Office: Brooks Hall, 230a
Phone: 774-1865
Email: gorsi1sw@cmich.edu (the best way to reach me)
Office Hours: Online and/or by appointment

Course Description
Inheritance in humans, including genetic mechanisms, human populations, medical syndromes, eugenics, and genetic counseling. Does not count toward biology major.

Course Goals and Objectives
The beginning of the 21st century is an exciting time in human history to be studying genetics. The advances in molecular biology and computer science have created a synergy that is allowing geneticists to investigate fascinating questions that we would not have thought possible just a few decades ago. The ability to sequence entire genomes and to handle this large amount of data rapidly has allowed the scientific community to discover the complete genomic sequences of organisms ranging from bacteria to humans. These discoveries are helping us determine the function of genes that direct how we as humans develop and function. Moreover, these studies are helping to identify genes that when mutated cause disease. We are also learning about how life has evolved, and the genetic differences that separate one species from another. These discoveries are having incredible social, medical, economical, and political impacts that we all will have to consider at some point. Thus- it is an exciting time to become a geneticist – even if only for one semester

The objective of this course is to explore the mechanisms of human heredity and how our understanding of them is revealed by scientific experimentation. The location, transmission, structure and function of genes encoding specific traits are discussed. The effect of mutations, genes implicated in human genetic disease, and population genetics are dealt with, as well as how issues such as recombinant DNA technology, gene therapy, genetically modified foods, AIDS and cancer impact our society. The course is designed to give students an appreciation of this fast moving field and an understanding of the potential impact genetics will have on our society.

Required texts and software

Prerequisites
There are no prerequisites. This course does NOT count toward the biology major at Central Michigan University.

Strongly Recommended Courses
Introductory Biology course(s), such as Bio 101 or high school advanced biology. Introductory Chemistry course or high school chemistry. Mathematics: Familiarity with algebraic concepts and basic statistical concepts.

Blackboard Site: https://blackboard.cmich.edu/webapps/login/
You will need your global ID and password. This being an online course blackboard will be used extensively. I will post lectures, voice over recordings, homework, exams, and discussion activities.
In addition, you will want to check blackboard regularly for announcements and grades as well as to communicate with your classmates and myself.

**Special Requirements of the Course**
Students taking this online course must have a computer with email and Internet capabilities. Faculty and students will interact over the Internet using Blackboard and Wimba Live Classroom technologies. Tests and quizzes will be taken electronically using Blackboard test options that will have an enforced time limit and questions will be varied using a test-question bank. This course is designed for self-disciplined and self-motivated students. Students will be provided technical support from CMU Online staff.

**General Methodology Used in Conducting the Course**
The course will use Blackboard, which will be used as an interactive computer-mediated learning environment.

Students are required to be familiar with Blackboard and its many learning tools. The instructor will assist as needed. Learning tools that will be provided to the students include: PowerPoint presentations of lectures, narrated lectures (audio and visual), discussion on chapter topics as well as how genetics influences our society, study guides (that include key words and topics, and additional questions), quizzes, and homework, and other material from the textbook’s publisher. Blackboard’s on-line grade book will allow students to keep up with their grades and receive feedback.

Interactions between students and instructors will include the use of email, chat, discussion boards, and virtual office hours with the use of Wimba Live Classroom.

**Tentative Point Description**

<table>
<thead>
<tr>
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<th>Points</th>
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<tbody>
<tr>
<td>Midterm Exam</td>
<td>136</td>
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<tr>
<td>Final Exam</td>
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</tr>
<tr>
<td>Weekly Quizzes</td>
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<tr>
<td>Syllabus Quiz</td>
<td>2</td>
</tr>
<tr>
<td>Discussion Board Postings</td>
<td>82</td>
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<tr>
<td>Wimba Discussions (must attend 3 out of 8)</td>
<td>12</td>
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<tr>
<td>Portfolio Assignment</td>
<td>50</td>
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<tr>
<td><strong>Total Points</strong></td>
<td>493</td>
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**Grading**

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<th>Points</th>
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<tr>
<td>90-93.9</td>
<td>A-</td>
</tr>
<tr>
<td>88-89.9</td>
<td>B+</td>
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<tr>
<td>83-87.9</td>
<td>B</td>
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<td>B-</td>
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<tr>
<td>78-79.9</td>
<td>C+</td>
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<tr>
<td>&lt;60</td>
<td>E</td>
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**Exams**
There are two exams in this course: A Midterm and Final Exam. Each exam will have two independent sections. The first section will be a multiple choice/true false section of 40 questions. The second exam section is a short answer section of approximately 8 questions. These exams are 100% online. Each exam and its sections must be completed by the Wednesday after it is assigned (11:59 pm on Wednesday).
You have **ONE hour and ONE attempt** to complete each exam section (total of 2 hours for each complete exam)! Do not open the exam unless you are ready to take it! Once an exam is opened, you must finish it within the given time. **You will lose one point for per minute passing the limited time.** You must work on the test independently and individually! NO makeup exam will be given unless it is pre-approved by the course instructor (with evidence & documents).

**Quizzes**
There are 8 quizzes in this course (1 each week). These quizzes are 100% online and contain 20 multiple choice and true false questions. They will be posted on every Friday at 8am and will be due on Sunday at 11:59 pm).

Unlike Exams, you will have 5 attempts and your highest grade will be recorded. In addition, with quizzes only, you can use notes, textbooks, and work with classmates, but once you open the quiz on blackboard it must be completed.

**Discussion Board Postings**
One of the best ways to learn is by discussing ideas with peers. There will be weekly discussion board topics that you will be required to participate in. Up to 5 points can be earned for each substantive response to the main discussion topic and up to 5 points will be earned for your response to another post. The maximum you can receive for any discussion board topic is 10 points. Though you will only earn points for one reply, I encourage you to keep an ongoing dialogue about the discussion topic. The purpose of the discussion forum is to generate conversation about relevant topics. Post your response to each discussion question no later than Thursday of each week, and respond to at least one other class member’s posting by the Sunday of the week. Please feel free to respond to more than two other postings. This is an excellent way to learn from each other. Note that no points will be earned for discussion responses posted after the week ends.

**Wimba Participation**
Students must participate in at least 3 of the first 7 weekly Wimba sessions. For each attendance students will receive 4 points (maximum is 12 points).

**Portfolio Assignment**
The portfolio assignment is designed to get you to think about a specific genetic disease or trait and the issues surrounding the disease. I encourage you to pick a topic that you have a personal interest in. Maybe there is a disease or trait that you always wanted to learn more about. This is your opportunity. This is not a traditional research paper. The portfolio assignment will contain an introduction section, two websites, 4 article summaries, and a conclusion. All topics need to be approved by me. The grade for this project is divided into 3 parts: 5 points for turning the topic in on time, 30 points for the portfolio itself, and 15 points for a brief presentation of the portfolio topic.

**Reading Assignments**
Reading assignments in the text are either listed on the tentative lecture schedule or will be announced. Readings and lectures will complement each other. This being an online course you will need to take a large responsibility of reading the material. We will not cover every detail in lecture and I will expect you to obtain certain information from reading the text rather than from lecture. Don't fall behind. Try to read the assignment before each class, but at the very latest read it on the same day as the class.

**Attendance**
Since this is not a face-to-face class there is no attendance points. However, when we meet online for discussion assignments and Wimba chats you will be expected to attend. These cannot be made up. In addition, all quizzes and exams have specific due dates that students must follow. Students with extended absences due to illness or other excused reason should contact me about making up required coursework. Make-up assignments/quizzes and exams will be given only under extreme personal circumstances (illness, death in the family), extramural athletic participation, required field trips in other courses, or employment obligations, and must be approved in advance (if possible). A note from the appropriate authority must be provided.

**Late assignments**
Late assignments (if accepted) will have 20% deducted from the grade per day late.

**Expectations for Students**
It takes great effort to be a successful online student. You have to be self-motivated and self-disciplined to keep yourself on schedule with reading, assignments, projects, etc. You do have to devote time from your busy family and work schedule to work on the course so you will not fall behind. To be successful an open communication channel between us is important. It is very important that we keep connected and interact with one another. If you have questions, please feel free to use email, discussion board, chat, or phone to contact me, or your classmates. Learning takes place in a community. Below are specific expectations I have for students.

1. Students are expected to check their e-mail and read the Announcements on Blackboard daily.
2. Students are expected to communicate with me when problems, difficulties, or confusion arise.
3. Students are expected to submit their assignments online through Blackboard by the due date.
4. Students are expected to participate in weekly discussions.
5. Students are expected to participate in at least two of the Wimba sessions.

**Expectation for the Instructor**
Just as we have my expectations for you, the following is what I will do (as a minimum) to ensure efficient online teaching and learning.

1. I will check my email daily.
2. I will respond to course related questions within 24 hours.
3. If I find those questions relevant and important to others, I will communicate them to the entire class via email or on the Announcement page.
4. I will post announcements or email reminders as needed.
5. I will give feedback on submitted assignments within a week.

**Policy on Academic Integrity**
In May 2001, the Central Michigan University Academic Senate approved the *Policy on Academic Integrity*, which applies to all university students. Copies are available on the CMU web site at http://academicsenate.cmich.edu/noncurric.htm, and in the Academic Senate Office in room 108 of Bovee University Center. All academic work is expected to be in compliance with this policy. See also Plagiarism: a brief overview at http://www.cst.cmich.edu/users/alm1ew/Plagiarism.html if you have questions. Any plagiarized work or other act of dishonesty will receive a Zero and the Office of Student Life will be notified. **You are responsible** for understanding what constitutes plagiarism.

**Classroom Civility**
Each CMU student is encouraged to help create an environment during class that promotes learning, dignity, and mutual respect for everyone. Students who speak at inappropriate times, sleep in class,
display inattention, take frequent breaks, interrupt the class by coming to class late, engage in loud or distracting behaviors, use cell phone or pagers in class, use inappropriate language, are verbally abusive, display defiance or disrespect to others, or behave aggressively toward others could be asked to leave the class and subjected to disciplinary action under the Code of Student Rights, Responsibilities and Disciplinary Procedures.

**Requests for Accommodation:** CMU provides students with disabilities reasonable accommodation to participate in educational programs, activities or services. Students with disabilities requiring accommodation to participate in class activities or meet course requirements should first register with the office of Student Disability Services (250 Foust Hall, telephone #989-774-3018, TDD #2568), and then contact me as soon as possible.

### Course Outline/Schedule

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<thead>
<tr>
<th>Week</th>
<th>Lecture Topic</th>
<th>Reading Assignment and Due Dates</th>
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</table>
| Week 1 | Lecture: Sex and Development  
Lecture: Assisted Reproductive Technology  
Discussion 1  
Portfolio Topic Due  
Quiz 1 (Chapters 1-2) | Chapter 1  
Chapter 2  
Thursday and Sunday Friday by 6:00 PM  
Sunday at midnight |
| Week 2 | Lecture: Changes in Chromosome Number  
Lecture: How are Genes Transmitted  
Discussion 2  
Quiz 2 (Chapters 3-4) | Chapter 3  
Chapter 4  
Thursday and Sunday  
Sunday at midnight |
| Week 3 | Lecture: Genes as DNA that encode Proteins  
Lecture: Biotechnology  
Discussion 3  
Quiz 3 (Chapters 5-6) | Chapter 5  
Chapter 6  
Thursday and Sunday  
Sunday at midnight |
| Week 4 | Lecture: Genetic Testing and Prenatal Diagnosis  
Lecture: DNA Forensics  
Discussion 4  
Quiz 4 (Chapters 7-8)  
Midterm Exam (chapters 1-8) | Chapter 7  
Chapter 8  
Thursday and Sunday  
Sunday at midnight  
Next Friday (1 week to complete) |
| Week 5 | Lecture: The Human Genome Project  
Lecture: Polygenic and Multifactorial Inheritance  
Discussion 5  
Quiz 5 (Chapters 9-10) | Chapter 9  
Chapter 10  
Thursday and Sunday  
Sunday at midnight |
| Week 6 | Lecture: Cancer and Cell Cycle  
Lecture: The Genetics of Behavior  
Discussion 6  
Quiz 6 (Chapters 11-12) | Chapter 11  
Chapter 12  
Thursday and Sunday  
Sunday at midnight |
| Week 7 | Lecture: Blood Types, Organ Transplants, and HIV  
Lecture: Genetics and Populations  
Portfolio Due  
Discussion 7  
Quiz 7 (Chapters 13-14) | Chapter 13  
Chapter 14  
Friday  
Thursday and Sunday  
Sunday at midnight |
<p>| Week 8 | Lecture: A Different World | Chapter 15 |</p>
<table>
<thead>
<tr>
<th>Portfolio Presentation</th>
<th>To be determined Thursday and Sunday</th>
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<tbody>
<tr>
<td>Discussion 8</td>
<td>Sunday at midnight</td>
</tr>
<tr>
<td>Quiz 8 (Chapter 15)</td>
<td>Wednesday of next week at midnight</td>
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<tr>
<td>Final Exam (Chapters 9-15)</td>
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