

## Human Genetics (MBioS 423) Fall '0 3 Credits

Time and Place: Tues./Thurs. 10:35 - 11:50am, Fulmer 150

Instructor: Dr. Norah R. McCabe:  
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Office Hours: Tuesday 1-3pm, Abelson 424.

Homepage: Webct

Students with Disabilities: Reasonable accommodations are available for students with a documented disability. If you have a disability and may need accommodations to fully participate in this class, please visit the Disability Resource Center (DRC). All accommodations **MUST** be approved through the DRC (Admin Annex Bldg, Room 205). Please stop by or call 509-335-3417 to make an appointment with a disability specialist.

### **Expectations and Goals of the Class**

The requirements for the class are a good basic knowledge of Genetics--(Biol/MBios 301). We will however review certain basic concepts as we go through the course, and you are encouraged to review any concepts you are particularly rusty on. In this course we will concentrate on various aspects of the human genome an area in which research is very active, and knowledge is increasing. The course material will be topical and current, and you are encouraged to contribute to the class, by asking questions and sharing any new development in human genetics that is relevant to the course material. The class is divided into four sections, with an exam at the end of each section. The first section will study in-depth, the human genome, chromosomes, DNA specific sequences, gene mapping, mutation and repair. Understanding of the material in this section is essential for the remainder of the course. The second part will deal with specific monogenic disorders and we will discuss each one in detail including the mode of inheritance, incidence rate and treatment. The third part will deal with the multigenetic disorder of Cancer, and we will discuss both hereditary and non-hereditary forms. The final part will cover Population Genetics and how these principles are applied to Forensics. We will then proceed to Quantitative Genetics, and finally we will move on to discuss the subject of Human Evolution. We hope to have a visit from a Genetic Counselor, and we will learn how Human Genetics is used to enable individuals/families make informed decisions. The exact timing of this visit will depend on her schedule.

### **Grading and Exams:**

Attendance at class is essential as the optional textbook does not cover all the lecture material. The point values of exams increase with time, as each exam will cover more material. The final exam will be semi-comprehensive. Please note the dates of exams and avoid missing exams. If you are unable to make an exam, due to unforeseen circumstances, you must inform me as soon as possible. All exam questions will require short answers. There will be no curving with the class grades.

### **Letter Grades**

90+ A, 85-89 A-, 81-84 B+, 76-81 B, 71-75 B-, 66-70 C+, 61-65 C, 56-60 C-, 51-55 D+, 46-50 D, < 45 FAIL.

### **Web CT site:**

You will find the web page useful for practice exams and announcements. You will also find some practice exams, but remember I change the course material every year, so only some questions will be relevant.

### **Missed Class and Extra Reading:**

As there is no required textbook, you are required to attend every class. If you miss a class for any reason, it is your responsibility to obtain the notes from a class mate--- so you may want to acquaint yourself with at least one class member. If you are still unclear of the material covered, please come and see me during office hours. It is assumed that we will have a spirit of collegiality in this senior class and that students will share notes and help each other with the course work if asked. This class will cover the latest research in particular topics, and as such I will have the latest research articles or references on many of these topics. These research articles are available to you for extra- additional reading. Some students find they have an intense interest in a particular area of study and this provides them with a more in depth coverage.

## SYLLABUS

Optional Text: Human Molecular Genetics by Jack J. Pasternak.

Lecture 1	8/26	Introduction GOALS/GRADING Human Genome.
Lecture 2	8/28	Human Genome/ Chromosome/Sequences/SNP/VNTR.
Lecture 3	9/2	Gene Mapping I/Modes of inheritance
Lecture 4	9/4	Gene Mapping II/Genetic Mapping
Lecture 5	9/9	Gene Mapping III/Physical Mapping
Lecture 6	9/11	Gene Mapping IV /Physical Mapping
Lecture 7	9/16	Gene / Chromosome mutation/ DNA Repair
*****	<b>9/18</b>	<b>FIRST TEST -----200pts</b>
Lecture 8	9/23	TEST REVIEW Metabolic Disease Gene Therapy I
Lecture 9	9/25	Gene Therapy II/ Stem Cells
Lecture 10	9/30	Cystic Fibrosis
Lecture 11	10/2	The X chromosome
Lecture 12	10/7	X-linked Genes
Lecture 13	10/9	Muscular Dystrophy (DMD)
Lecture 14	10/14	The Y Chromosome / Ylinked genes/ evolution
		<b>ALSO SPECIAL SMB SEMINAR by DR JANET ROWLEY</b>
		<b>CUE 202 – 12:10-1:00pm</b>
*****	<b>10/16</b>	<b>SECOND TEST-----250pts</b>
Lecture 15	10/21	Genetic Counselor from Spokane
Lecture 16	10/23	TEST REVIEW Cancer Genetics/Viruses (12)
Lecture 17	10/28	Oncogenes
Lecture 18	10/30	TumorSuppressor Genes (12)
Lecture 19	11/4	Solid Tumors/ Breast Cancer
Lecture 20	11/6	The Immune System/ Leukemia
*****	<b>11/11</b>	<b>VETERAN'S DAY</b>
Lecture 21	11/13	Cancer Treatment/Cancer Stem Cells
*****	<b>11/18</b>	<b>THIRD TEST----- 200pts</b>
Lecture 22	11/20	TEST REVIEW Population Genetics
*****		<b>THANKSGIVING</b>
Lecture 23	12/2	Population Genetics in Forensics
Lecture 24	12/4	Population Genetics in Forensics
Lecture 25	12/9	Quantitative Genetics
Lecture 26	12/11	Human Evolution/ Mitochondrial DNA
*****	<b>12/15</b>	<b>FINAL EXAM semi-comprehensive (350pts) (10:10 AM)</b>

