MCB 4934: Introduction to Genetics and Genomics in Health Care
Section 08C6
Spring 2013
2 Credits

Instructor
Dr. Jennifer Drew
Microbiology & Cell Science Department
Email: Through Sakai (or jdrew@ufl.edu)
Skype username: jennifercdrew
I am located off-campus so the best way to contact me is email.

Pre-requisites
Admission to the BSN Program--University of Florida College of Nursing

Course Description
This course is intended for University of Florida nursing majors. The field of genetics and genomics is moving at a fast pace and soon it will be affordable to obtain the sequence of an individual's own genome. Genetic information will play a greater role in future health care as nearly every disease has a genetic component. Therefore, a sound knowledge of genetics and genomics is essential for health care providers in evaluating needs of patients and delivering of care to patients and families. The course will prepare nursing students by reinforcing the basic principles of genetics while exploring new advances and discussing how these advances will affect health care. The course material will address many of the core competencies identified in the Essentials of Genetic and Genomic Nursing: Competencies, Curricula Guidelines, and Outcome Indicators, 2nd Edition (2009).

The course will be entirely web-based, and all lectures will be delivered online. The reading assignments, course lecture materials and online activities will be posted each week. There will be a quiz each week over the week’s material. All exams will be taken in person, on campus and proctored.

Course Objectives
By the end of the course, the students will be able to:
1. To utilize terminology such as gene, genotype, phenotype, variant, traits, multifactorial disease, SNP, genetic test, genome scan, pharmacogenomics, etc.
2. To describe how DNA determines traits.
3. To interpret family pedigrees and explain how genes are inherited.
4. To differentiate between the major categories of genetic disease and describe characteristics of each type.
5. To explain and predict genetic risk for different types of genetic disease.
6. To outline genetic screening, diagnosis, testing.

List of Topics
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<th>Week</th>
<th>Dates</th>
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<th>Reading</th>
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<tr>
<td>1</td>
<td>Jan 7 - 16</td>
<td>Introduction to course</td>
<td>Chapter 1</td>
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<td>Overview of Genetics</td>
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<td>DNA structure and replication</td>
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<td>2</td>
<td>Jan 17 - 23</td>
<td>Gene Action: From DNA to trait</td>
<td>Chapter 10</td>
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<td>Gene expression control</td>
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<td>Jan 31 – Feb 6</td>
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<td>Single gene inheritance</td>
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<td>Pedigree analysis</td>
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<td>Feb 14 - 20</td>
<td>Beyond Mendel’s Laws</td>
<td>Chapter 5</td>
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<td>7</td>
<td>Feb 21 - 27</td>
<td>Sex-linked inheritance</td>
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<td>Epigenetics</td>
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<td>8*</td>
<td>Feb 28 – Mar 13</td>
<td>Chromosomal abnormalities</td>
<td>Chapter 13</td>
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<td>9</td>
<td>Mar 14 - 20</td>
<td>Genetic technology</td>
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<td>10</td>
<td>Mar 21 - 27</td>
<td>Human Genome Project</td>
<td>Chapter 22</td>
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<td>Genetic Variation</td>
<td>handout</td>
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<td>11</td>
<td>Mar 28 – Apr 3</td>
<td>Genetics of common diseases I</td>
<td>Chapter 7, 8</td>
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<td>Apr 4 - 10</td>
<td>Cancer</td>
<td>Chapter 18</td>
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<td>13</td>
<td>Apr 11 - 17</td>
<td>Genetic testing and treatment</td>
<td>Chapter 20</td>
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<tr>
<td>14</td>
<td>Apr 18 - 24</td>
<td>Personal genomics</td>
<td>Chapter 22</td>
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<td>Pharmacogenetics</td>
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*Week 8 includes spring break
Reading Assignment refers to chapters in the textbook by Rikki Lewis. For some topics, outside reading handouts will be posted.

**Required Textbook**

**Office Hours**
Since this is a web-based course and I am off-campus, my office hours will be online. The office hours will be conducted via Skype. We can choose a different method for office hours if needed. I will announce office hour times during the first week of class. I am always available to answer questions by email or to set up an individual phone or Skype conversation.

**Email and Announcements**
All email communication regarding this course will be done through the mail function of Sakai. This mail system is private and secure. Please check your Sakai Mail and Announcements frequently to stay updated on the course. As the instructor, I will
respond to your questions and emails promptly. By maintaining all email communication through Sakai instead of other email domains, it reduces the chances that discussions will get lost among outside mail accounts. When sending an email through Sakai, you have the option to also forward the email to the recipient’s ufl account. Please use this option if you have an urgent message to send. If you receive a course email (from Sakai) to your ufl account, please note that you cannot simply hit “reply” to the email. You must login to Sakai to respond through the mail function.

**E-learning system**
The course will be managed entirely through the e-learning Sakai system (https://lss.at.ufl.edu/). If you are not familiar with this system, you need to become acquainted with it for this course. The LSS homepage contains tips and tutorials for students as well as computer requirements. It is your responsibility to become familiar with Sakai and to ensure that you have the appropriate browsers, settings, internet speed, etc. For any technical questions regarding the E-learning system, please visit the LSS site (https://lss.at.ufl.edu/help/Student_Faq) and/or the UF Help desk (http://helpdesk.ufl.edu/). They can address technical issues such as not being able to view course materials, not being able to access the quizzes, not being able to send mail, etc. **All technical issues/questions/comments should go to the Help Desk first (352-392-HELP).** They are the experts. The Help Desk suggests that if you encounter any problem (error messages, etc.) that you take a screen shot of the problem and save it. This will help the Help Desk in fixing your problem.

If you encounter a problem that the HELP DESK cannot fix, please send a help request to the Technical Support Center of the Microbiology & Cell Science Department. Please fill out your request at http://microcell.ufl.edu/support/index.php. The form will ask for your name, number, email and location. In the location field, please indicate “online course.”

**Assessments**
Three proctored exams will be administered throughout the semester. Two exams will be given during the evening and exam #3 will be administered as the final exam during finals week, it will be non-cumulative exam. Each exam is worth 25% of your grade. All exams will be taken on campus and proctored. Specific details regarding the exams will be given closer to the exam dates.

**Tentative exam date/times:**
| Exam 1  | Monday, Feb 18 | 7:00 PM  | Covers weeks 1-5 |
| Exam 2  | Monday, Apr 1  | 7:00 PM  | Covers weeks 6 - 10 |
| Exam 3  | Saturday, April 27 | 10:00 AM | Covers weeks 11 – 14 |

Brief weekly quizzes will be given that cover each week’s material. These short quizzes need to be completed by **Wednesday evening BY 9 PM** of each week. You will be given an average of one minute per question to answer each question (ie, 10 minutes to take a 10 question quiz). Following the lectures and taking the quizzes ensures timely participation and progress in the course. Your quiz average will count for **25% of your**
final grade. There will be a total of 15 quizzes (one for each week of material plus a “” quiz at the beginning of the semester). Only the 12 highest quiz grades will count – you can drop your 3 lowest quiz grades. Your dropped quiz grades will include any quizzes you miss because of minor illness, travel, meetings, technical problems etc. Rarely, technical issues may occur while you are taking the timed quiz, and quizzes affected by technical problems will be among the three dropped quizzes. (Having a slow Internet connection may affect timed quizzes, but it is your responsibility to use a connection at the speed suggested in the LSS homepage.)

Plan to take each quiz and save up your dropped quizzes for unexpected events like illness or technical problems. Only quizzes that have been submitted by students can be accessed for studying for exams. Therefore, even if you elect to use a week as a drop and do not study, try to take the quiz anyway by the deadline so you can still access the quiz questions at later date. If you do not take a quiz during the open quiz window, then you are shut out of the quiz, and it cannot be reopened for you.

More detailed information about the exams and quizzes will be given in class.

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<tr>
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<th>% of Final grade</th>
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<tbody>
<tr>
<td>Exam 1</td>
<td>25</td>
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<td>Exam 2</td>
<td>25</td>
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<tr>
<td>Exam 3</td>
<td>25</td>
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<tr>
<td>Quiz grade*</td>
<td>25/100</td>
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*12 quizzes will count towards quiz grade. All quizzes will be averaged together.

**Grading Scale**

- A 95-100 (4.0)
- A- 93-94 (3.67)
- B+ 91-92 (3.33)
- B 84-90 (3.0)
- B- 82-83 (2.67)
- C+ 80-81 (2.33)
- C 74-79 (2.0)
- C- 72-73 (1.67)
- D+ 70-71 (1.33)
- D 64-69 (1.0)
- D- 62-63 (0.67)
- E 61 or below (0.0)

**Make up and attendance policy**

Please contact the instructor directly regarding any serious illnesses or prolonged absences that result in missed work. Any absences may require verification and permission from the College of Nursing. Since the course is online and the material can be accessed at your convenience, missed weekly quizzes and exams will only be made-up
in rare circumstances and written verification from doctors, etc. may be required. In most situations, quizzes missed due to minor illness will count among the 3 dropped quiz grades. As a student, it is your choice to take all quizzes and exams, if you choose to not take a quiz or exam because you are doing another activity (work, social engagement, etc), then you will get a zero for the grade.

**Course structure**
The course is structured as 14 Lessons – one each full week of the semester. Each week will cover a different topic. The topics build on each other so in order to understand a topic in week six, for example, it is necessary that you understand the material from week one.

Each week begins on Thursday morning. Start by navigating to the Lessons page. Then, click on the appropriate week. For each week’s lesson, there will be several items to complete. Click on the link for each item. The first item will be the **learning objectives** for the week. Keep the learning objectives in mind as you learn the week’s material. If you meet the learning objectives, you should do very well on the quiz and the exams. After reading the learning objectives, please go through the week’s material in the order presented. The next item in the list will usually be the reading assignment, followed by the lectures, and links to any online tutorials or modules. After you go through the material in the order presented, you are always free to return and visit any of the content. The introductory lecture will give an example of the types of course content and how it will be presented.

Each week ends at **9PM on Wednesday night**, which is the deadline for taking that week’s quiz. The content of the week will remain open and available to you for the remainder of the semester, but the quiz window will **close at 9 PM on Wednesday night** each week.

**Academic Honesty**
The University of Florida requires all members of its community to be honest in all endeavors. Cheating, plagiarism, and other acts diminish the process of learning. When students enroll at UF they commit themselves to honesty and integrity. Your instructor fully expects you to adhere to the academic honesty guidelines you signed when you were admitted to UF.

As a result of completing the registration form at the University of Florida, every student has signed the following statement:

“I understand the University of Florida expects it students to be honest in all their academic work. I agree to adhere to this commitment to academic honesty and understand that my failure to comply with this commitment may result in disciplinary action up to and including expulsion from the University.” Furthermore, on work submitted for credit by UF students, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.”
**Additional comments regarding academic integrity:**
Students are encouraged to discuss material with each other from the course, help each other understand concepts, study together, and even discuss assessment questions with each other once the quiz window is closed. However, the following is considered academic dishonesty, and I expect that no student will ever do any of the following:

- Have another person complete a quiz in this course
- Copy another student’s quiz in this course
- Collaborate with anyone during a quiz in this course
- Discuss the questions and answers of a quiz with other students while the quiz window is still open
- Manipulate and/or distribute any materials provided in this course for any purpose
- Use materials provided by a previous student in the course for any purpose

**Software Use**
All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate.

**Campus Helping Resources**
Students experiencing crisis or personal problems that interfere with their general well-being are encouraged to utilize the university’s counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

- **University Counseling & Wellness Center**, 3190 Radio Road, 352-392-1575, [www.counseling.ufl.edu/cwc/](http://www.counseling.ufl.edu/cwc/)
  - Counseling Services
  - Groups and Workshops
  - Outreach and Consultation
  - Self-Help Library
  - Training Programs
  - Community Provider Database

- **Career Resource Center**, First Floor JWRU, 392-1601, [www.crc.ufl.edu/](http://www.crc.ufl.edu/)

**Students with Disabilities**
The Disability Resource Center coordinates the needed accommodations of students with
disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues. 0001 Reid Hall, 352-392-8565, www.dso.ufl.edu/drc/