Office Hours:
Location, Telephone Number, Day and Time

Dickinson Hall – 4th Floor
Telephone Number: 201-692-2398

Office hours:
Monday, 3:00 to 4:00 PM in Robison Hall/Room 37 (by appointment)
Tuesday, 12:00 Noon to 1:00 PM in Dickinson Hall (4th floor), and by appointment
Wednesday, 4:30 to 6:00 PM in Dickinson Hall (4th floor), and by appointment


Course Description:
Solid foundation in human genetics and the relationship of genomics to biology. Translating human genome research discoveries into clinical practice. Genetic components of common diseases. Genetic testing and therapeutics. Genetic counseling. Philosophical, theological, cultural and ethical perspectives influencing the use of genetic information and services in medical genetics.

Course Objectives:
At the completion of this course, the student will:
1. describe and understand the structure of DNA and RNA, their "subunits" and how they differ.
2. describe how DNA is duplicated, how DNA is transcribed into RNA and how RNA is translated into proteins.
3. understand the Genetic Code and how to translate a nucleic acid sequence into an amino acid sequence.
4. understand the molecular structure of eukaryotic chromosomes and repetitive DNA.
5. explain the chromosomal basis of sex determination and apply that understanding to predict the sex of individuals with normal and abnormal complements of sex chromosomes.
6. define sex-linked characteristics and describe their transmission.
7. draw and use pedigrees to display and understand the pattern of single gene inheritance as well as predict relatedness.
8. understand and describe standard cytogenetic methods.
9. explain the causes and general pathology of most common chromosomal abnormalities.
10. explain the causes and general pathology of most common single-gene disorders.
11. understand the basic genetic and biochemical foundation of pathologies involved in many disorders (for example: metabolic and structural disorders, hemoglobinopathies, immunological and oncological).
12. understand the common molecular genetic techniques used in reproductive technology.
13. understand the connection between genetics and the development of medications and personalized medicine.

Suggested References:


<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Chapter in Textbook</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1 January 28</td>
<td>• Background and History&lt;br&gt;  o Introduction</td>
<td>1</td>
</tr>
<tr>
<td>Week 2 February 04</td>
<td>• The Cellular and Molecular Basis of Inheritance</td>
<td>2</td>
</tr>
<tr>
<td>Week 3 February 11</td>
<td>• Chromosomes and Cell Division</td>
<td>3</td>
</tr>
<tr>
<td>Week 4 February 18</td>
<td>• DNA Technology and Applications&lt;br&gt; • Mapping and Identifying Genes for Monogenic Disorders</td>
<td>4 and 5</td>
</tr>
<tr>
<td>Week 5 February 25</td>
<td>• Patterns of Inheritance&lt;br&gt; • Population Genetics&lt;br&gt; • Polygenic and Multifactorial Inheritance</td>
<td>7, 8 and 9</td>
</tr>
<tr>
<td>Week 6 March 04</td>
<td>Midterm Examination</td>
<td></td>
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<tr>
<td>Week 7 March 11</td>
<td>Spring Recess</td>
<td></td>
</tr>
<tr>
<td>Week 8 March 18</td>
<td>• Hemoglobin and Hemoglobinopathies&lt;br&gt; • Biochemical Genetics:&lt;br&gt;  o Disorders of Metabolism</td>
<td>10 and 11</td>
</tr>
</tbody>
</table>
### Course Requirements:

1. **Attendance at all classes is required.**
   1. Unexcused absences in excess of two (2) will result in one (1) letter grade reduction of your final grade.
      - Lateness: You must arrive for class on time.
      - Two (2) late arrivals count as one absence.
      - If you are more than 30 minutes late, you will be marked absent.
   2. Students with a documented, ongoing serious health issue—which may affect their attendance—must speak with their professor and provide written medical documentation.

2. Presentation of a summary of 2 current journal articles in Human Genetics during the semester.
   - Presentations will begin on Week 3, Monday, February 11, 2013.
   - The dates for the presentations will be assigned in class on Week 2, Monday, February 04, 2013.
   - Each student must submit:
     - A printed copy of the selected journal article to the Professor the week before their scheduled presentation.
     - A 3 page written review of the article posted to WebCampus on the night of the presentation.
     - Late submission of the article review will result in a 1 letter grade reduction
     - A one page summary of the journal article for each student in the class on the night of the article presentation.
3. Supplemental Reading and Written Assignment:

Each student must submit a 3 page written review of this book on Tuesday May 14, 2013.

- **The review must include:**
  1. Summary of the book
  2. Genetic and Clinical Aspects of Pompe Disease
  3. Concept of “Orphan” Drug
  4. Roles of Pharmaceutical Companies and FDA in Drug Development

The written book review must be posted in Webcampus prior to the beginning of class on Monday, April 29, 2013.

- **NO PAPER, EMAIL OR LATE SUBMISSION WILL BE ACCEPTED.**
- The written book review will account for 5.0% of the final grade.

2. The **Midterm Examination** must be taken on Monday, March 04, 2013.

- The Midterm Examination accounts for 25% of the final grade.
- No make-up Examination will be given.

3. **A Semester Project**, focusing on a current topic in Human Genetics will be written and presented orally in class.

- The selected topic for the paper will be agreed upon by both student and professor prior to beginning the project. This will avoid duplication of project topics.
- The topic of the semester project must be submitted in writing for approval by Week 3, Monday, February 11, 2013.
- Each student will also make an individual oral presentation of his/her topic in the class on Week 15, Monday, May 06, 2013.
  - The order of the oral paper presentations will be alphabetical using the student's last name.
  - No change in presentation date is allowed.
- The oral presentation of the project must include Powerpoint slides.
  - The project oral presentation will account for 10% of the final grade.
  - No make-up Presentations will be permitted.
- The written project paper must be 8 – 10 pages in length with at least 10 primary references (no website references).
- The semester project paper (hard copy) must be submitted to the professor prior to the oral presentation on Week 15, Monday, May 06, 2013.
  - The project paper will account for 10% of the final grade.
  - Late paper submissions will result in a 1 letter grade reduction.

5. The **Final Comprehensive Examination** must be taken on Week 16, Monday, May 13, 2013.

- The Final Comprehensive Examination accounts for 30% of the final grade.
- No make-up Examination will be given.

6. In order to maintain an environment conducive to learning, please turn off all cell phones during class.

- Use of cell phones during class is prohibited and will result in a letter grade reduction of your final grade.
• Text messaging is not permitted in class.
• Use of cell phones during an examination will result in a failure grade for that examination.
• Students are expected to maintain a professional demeanor at all times, speaking and acting respectfully to each other and to the instructor

7. GRADING

The following grading is in effect for all students in BIOL 6724_81_(97978) Human Genetics:

<table>
<thead>
<tr>
<th>Numerical Grade</th>
<th>Weighted Letters</th>
<th>Grade Points</th>
</tr>
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<tbody>
<tr>
<td>94-100</td>
<td>A</td>
<td>4.00</td>
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<tr>
<td>90-93</td>
<td>A-</td>
<td>3.67</td>
</tr>
<tr>
<td>87-89</td>
<td>B+</td>
<td>3.33</td>
</tr>
<tr>
<td>84-86</td>
<td>B</td>
<td>3.00</td>
</tr>
<tr>
<td>80-83</td>
<td>B-</td>
<td>2.67</td>
</tr>
<tr>
<td>77-79</td>
<td>C+</td>
<td>2.33</td>
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<tr>
<td>74-76</td>
<td>C</td>
<td>2.00</td>
</tr>
<tr>
<td>70-73</td>
<td>C-</td>
<td>1.67</td>
</tr>
<tr>
<td>65-69</td>
<td>D</td>
<td>1.00</td>
</tr>
<tr>
<td>Below 65</td>
<td>F</td>
<td>0</td>
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</tbody>
</table>

Final grades are rounded to the next whole number if they are at, or above, the 0.5 cutoff. For example: a grade of 76.5 is rounded to 77.0, a grade of 89.5 is rounded to 90.0.

Source: Addendum to FDU Student Handbook 2010-2012.

GUIDELINES:
I. Guidelines for Journal Article Presentations:
1. Select an experimental article in Human Genetics/Medical Human Genetics, published in the last 2 years.
2. Prepare a 5 – 10 minute Power Point presentation that summarizes the main ideas of the paper.
3. Please bring a laptop for the presentation.
4. Provide a printed copy of the selected journal article to the Professor one week before the scheduled presentation.
5. Submit a 3 page written review of the article on the day of the presentation.
6. Provide a 1 page summary of the article for each member of the class on the day of the presentation.
7. These papers will be included in the midterm and final examinations.

II. Guidelines for Semester Project:
1. Select a topic in Human Genetics/Medical Human Genetics and obtain 10 current journal articles, dealing with the topic.
2. Prepare a 10 page paper in APA style for submission on the assigned date.
3. Prepare a 5 – 10 minute Power Point presentation that summarizes the main ideas of the paper.
4. Please bring a laptop for the presentation.
5. Provide a 1 page summary of the project paper for each member of the class on the date of the presentation.
6. These papers will be included in the final examination.

Academic Integrity Policy

Students enrolled at Fairleigh Dickinson University are expected to maintain the highest standards of academic honesty. Students have the responsibility to each other to make known the existence of academic dishonesty to their course instructor, and then, if necessary, the department chair, or the academic dean of their College. Course instructors have the added responsibility to state in advance in their syllabuses any special policies and procedures concerning examinations and other academic exercises specific to their courses. Students should request this information if not distributed by the instructor.

Academic dishonesty includes, but is not necessarily limited to, the following:

1. Cheating—Giving or receiving unauthorized assistance in any academic exercise or examination. Using or attempting to use any unauthorized materials, information, or study aids in an examination or academic exercise.

2. Plagiarism—Representing the ideas or language of others as one's own. A more complete description is listed below in the section titled “Plagiarism Described.”

3. Falsification—Falsifying or inventing any information, data, or citation in an academic exercise.

4. Multiple Submission—Submitting substantial portions of any academic exercise more than once for credit without the prior authorization and approval of the current instructor.
Plagiarism can occur in the following ways:

- **Using text from another source (e.g., websites, books, journals, newspapers, etc.) without documenting the source.**
- **Paraphrasing or summarizing the ideas or text of another work without documenting the source.**
- **Using graphics, visual imagery, video or audio without permission of the author or acknowledgment of the source.**
- **Translating text from one language to another without citing the original work.**
- **Obtaining packaged information, foreign language translation or a completed paper from an online source and submitting it as one’s own work without acknowledgment of the source.**
- **Presenting the work of another student as one’s own.**

Fairleigh Dickinson students are responsible for authenticating any assignment submitted to an instructor should the instructor request it. Students must be able to produce proof that the assignment they submit is actually their own work. Therefore, students must engage in a verifiable work process on all assignments:

- **Keeping copies of all drafts of work.**
- **Making photocopies of research materials (including downloads from websites).**
- **Writing summaries of research materials.**
- **Keeping Writing Center receipts.**
- **Keeping logs or journals of their work on assignments and papers.**
- **Saving drafts or versions of assignments under individual file names on a computer, external drive or other source.**

In addition to requiring students to authenticate their work, Fairleigh Dickinson University instructors may employ various other means of ascertaining authenticity—such as using search engines to detect plagiarism, using external plagiarism detection services, creating quizzes based on student work, and requiring students to explain their work and/or process orally. The inability to authenticate work is sufficient grounds for a charge of plagiarism.

If subsequent evidence of plagiarism should be found after a grade has already been assigned, instructors have the right to lower the grade and/or apply one of the sanctions listed below:

**Sanctions:** Any student violating academic integrity will, for the first offense, receive one or a combination of the following penalties imposed by the faculty member:

1. **No credit (0) or Failure for the academic exercise.**
2. **Reduced grade for the course.**
3. **Failure in the course.**
4. **Recommendation for Academic Probation to the dean of the college in which the student is registered.**

The instructor shall file a notice of the penalty in the student’s file maintained in the campus Office of Enrollment Services.

In cases of interference and complicity, whether or not the student is registered in the affected course, the incident and penalty shall be recorded in the student’s file maintained in the campus Office of Enrollment Services.

For a subsequent violation of academic integrity, a student will be subject to any combination of the above sanctions, and, after due review by the academic dean according to the procedure below, one of the following:

1. **Suspension from the University for one year.** Re-admission will be contingent upon the approval of the academic dean.
2. **Dismissal from the University.**
3. **Dismissal from the University identified on the student’s academic transcript as a result of a violation of the Academic Integrity Policy.**

**Procedure:** When a faculty member believes that a student has violated the Academic Integrity Policy, the faculty member shall discuss the incident with the student as soon as possible. If after the conference, the faculty member determines that an act of academic dishonesty has occurred, the faculty member may impose the appropriate sanctions. Within five days of the faculty member’s action, the faculty member shall notify his or her department chair/school director in writing of the circumstances of the violation and the imposed sanctions. Within five days of the academic department/school shall notify the student via certified mail, return receipt of the sanctions and the appeals’ procedures. Copies of the notice shall be sent to the chair of the department or director of the school of the student’s major, the dean of the college in which the course is offered and the campus Office of Enrollment Services. The student may appeal the instructor’s decision as outlined below. Upon completion of the appeals process, the dean shall notify the student of the final disposition of the matter and the sanctions to be imposed, if any, via certified mail with copies to the faculty member, the department chair/school director and the campus director of enrollment services.

**Appeals Process:** A student who is charged with violating the Academic Integrity Policy by an instructor may appeal in writing to the chair of the department or the director of the school in which the alleged incident took place. The letter must state the specific grounds for the appeal. The student must submit a written appeal to the department chair or school director within 14 days of the receipt of the notice of the imposition of sanctions. Failure to make an appeal within this 14-day period shall constitute a waiver of the appeal right. Within 10 working days of the receipt of the student’s appeal, the chair/director will review the circumstances of the alleged violation with the student and the instructor and recommend upholding, modifying, or dismissing the sanctions imposed by the instructor. Within five working days, the chair/director shall notify the student in writing via certified mail of the outcome, with copies to the instructor, the chair/director of the student’s major, the academic dean of the college in which the course is taught and the campus director of enrollment services. The student may appeal the chair/director’s decision as outlined below. Upon completion of the appeals process, the dean shall notify the student of the final disposition of the matter and the sanctions to be imposed, if any, via certified mail with copies to the faculty member, the department chair/school director and the campus director of enrollment services.

Within 10 working days of the chair/director’s notification, the student may submit a written appeal to the dean of the college in which the alleged dishonesty took place. The letter must state the specific grounds for the appeal. Upon receipt of the appeal, the dean shall provide the faculty member and his or her chair/director with a copy of the student’s appeal. Within 10 working days the dean shall convene a five-person hearing committee consisting of a faculty member at large from the college in which the course is offered, the dean or his or her designee, the campus dean of students or his or her designee, a faculty member from the department or school of the student’s major, and a student, selected by the campus dean of students, from the college in which the alleged dishonesty took place. The hearing will be chaired by the college dean or his or her designee. The role of the appeals committee is to review the record of the matter and determine whether a finding of academic dishonesty is founded and whether a sanction is consistent with the terms of this policy. The committee shall base its decision upon a review of the record but may meet with the student and the faculty member to secure additional information to help it in making a determination about the merits of the appeal. The committee may uphold, modify or dismiss the sanction imposed by the instructor. In the event of dismissal, the college dean shall notify the student of the committee’s decision within five working days of the hearing. For a second offense of academic dishonesty, the academic dean can suspend or dismiss the student as indicated above.
For a sanction of suspension or dismissal imposed by the academic dean, the student may file a written appeal to the University Provost/Senior Vice President for Academic Affairs within 10 working days of receiving the notification of the dean's decision. The University Provost, or his or her designee, shall review the case within 10 working days of the receipt of the appeal. The University Provost shall make the final decision, using any appropriate resource to assist in deciding the appeal. The University Provost shall then notify all parties in writing of his or her final decision within five working days of his or her decision.

Reviewed: August 2011