

Human Genome And Its Impact

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Course Description

This course will address the principles of genetics with an emphasis on the genetic code of the human genome. Through independent studies and interactions and exchanges with the online class, you will learn:

- How the genome is stored
- How the genetic code is interpreted
- How the genes are passed from one generation to the next
- How the genome is evolving
- The consequences of genetic code errors
- The medical, technological, legal, and ethical issues associated with the human genome

Course Learning Goals

After completing this course, you will be able to:

- Increase your ability to understand and critique scientific data.
- Increase your awareness of what is inherited and what is environmental.
- Learn more about the medical, technological, legal and ethical aspects of genetics.
- Realize the importance of diversity and evolution.

Course Competencies

In this course, you will develop one or two of the following competences as they relate to genetics:

Competence	Competence Statement and Criteria
S1E	Can analyze inventions or technologies and can understand their underlying scientific principles

S2A	Can describe, differentiate, and explain form, function, and variation within biological systems
S3D	Can use scientific knowledge to understand varying perspectives on a policy issue
S4	Can describe and explain connections among diverse aspects of nature

Course Resources

To buy your books, go to <http://www.mbsdirect.net>.

Hint: type DePaul for name of the school.

[Click here for help buying your books](#)

Required Reading:

Ridley M, *Genome*, Perennial, 2000.

Recommended reading (not required):

Davies K, *Cracking the Genome: Inside the race to unlock Human DNA*, 2001.

Frank-Kamenetski MD, *Unraveling DNA: The Most Important Molecule of Life*, 1997.

Dawkins R, *River out of Eden*, Weidefeld and Nicholson, 1995.

Major Web Site Sources

<http://www.nhgri.nih.gov/>

<http://www.genome.gov/glossary.cfm>

<http://www.ncbi.nlm.nih.gov/disease/>

<http://www.ornl.gov/hgmis/>

http://www.ornl.gov/TechResources/Human_Genome/

http://www.ornl.gov/sci/techresources/Human_Genome/home.shtml

<http://bioinformatics.weizmann.ac.il/cards>

<http://www.nature.com/genomics/human/papers/articles.html>

Course Grading Scale

A = 93% or above	A- = 90% - 92%	B+ = 87% - 89%
B = 83% - 86%	B- = 80% - 82%	C+ = 77% - 79% = C +
C = 73% - 76%	C- = 70% - 72%	D+ = 67% - 69%

D = 60% - 66%

F = Less than 60%

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Please note: Grades lower than a C- do not earn credit or competence in the School for New Learning.

Course Structure

The course is composed of nine modules and each module contains reading tasks and questions. Reading tasks include module text and book readings, viewing of specified web site links, and independent searching. Answers to questions (paragraph to a page each) should be e-mailed to your instructor. Questions must be answered within 10 days. Lessons are usually given formally on Wednesdays and answers are expected by Saturday of the following week. Grades on unexcused overdue assignments may be penalized up to 10%. You should answer all the questions, if you are registered for 2 competences, and you should pay particular attention to the questions most relevant to your competences. If you are registered for only one competence, you should answer questions 1, 3 and 5 in five questions assignments and questions 1 and 3 in four questions assignments.

Discussion topics will be posted in the Discussion Board section of the SNL Online site. The Discussion Board will provide you with the opportunity to exchange ideas with your virtual classmates. You should participate in a timely fashion in each discussion forum (except for Course Q&A and Emails), at least 4 times if you are registered for 2 competences and at least twice if you are only registered for one.

The grading considerations are described in the Course Grading section below. If you have any question, please do not hesitate to contact your instructor.

To see course due dates, click on the Checklist link on the top navigation bar. This page contains module-specific checklists and due dates for the work due in the course.

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Assessment

Percentage distribution of Assessments

The grade for the class will be based on the answers to the questions (81%) and on participation in the discussions (19%). Each assignment contributes 9% of the final grade.

Grading Policies and Practices

To complete the course, you must complete each of the assignments as described in the course and submit them to your instructor by the assigned deadline. In addition, you must participate in the course discussion forum by responding to all instructor requests and by interacting with fellow classmates as necessary.

Points are deducted for late work.

Required readings include the specified chapters from the textbook: **Genome** by Matt Ridley (Perennial, 2000), and the specified web sites. It is also highly recommended that students search on their own for additional information on each of the topics covered. Student should explore video, audio and animation sub-links within the viewed web sites, when available. There is no need to install foreign languages modules (foreign languages sites can be viewed after answering "No"). Acrobat Reader from Adobe is

needed for reading and printing pdf files (it is available free of charge at <http://www.adobe.com/products/acrobat/readstep2.html>). Students are expected to participate in discussion of genome and genetics related topics in the Discussion Boards.

Assignments are due within 10 days. Lessons are usually given formally on Wednesdays and assignments are expected by Saturday of the following week. Grades on unexcused overdue assignments may be penalized up to 10%. You should answer all the questions, if you are registered for 2 competences, and you should pay particular attention the questions most relevant to your competences. If you are registered for only one competence, you should answer questions 1, 3 and 5 in five questions assignments and questions 1 and 3 in four questions assignments.

Answers should provide simple explanations with examples and arguments when applicable (a paragraph to a page for each answer). The students can ignore the chemical structure and other fine details but they should try to focus on the principles involved and their relation to their competences. For example, there is no need to know the chemical structure of adenine or thymine but it is important to understand that base pairing (A-T and C-G) is the underlying force that hold together DNA strands and allow replication of DNA, transcription of DNA to RNA and translation of RNA to protein.

Sample of a Good Answer

Following is an example of a question and a good answer:

Why is the quantity of nuclear DNA the same in every cell and that of mitochondrial DNA varies?

Cells usually contain a single nucleus but they contain multiple mitochondria. The number of mitochondria per cell is different depending on the tissue (skin, muscle, etc.) or organ (brain, heart, etc.) that the cells belong to, and depending on the cell age. Mitochondria multiply like cells, by division, but their divisions are not "in sync" with that of the cell they reside in. When cells divide, about half of the mitochondria, present at that time, go into each of the daughter cells.

The exceptions to constant quantity of nuclear DNA per cell are egg and sperm cells that contain only one set of chromosomes (instead of 2) and cells with several nuclei (instead of a single nucleus). Another exception is the mature red blood cell that contains no nucleus and no mitochondria either.

General Assessment Criteria for All Writing Assignments

All writing assignments are expected to conform to basic college-level standards of mechanics and presentation.

Consider visiting the Writing Center to discuss your assignments for this course or any others. You may schedule appointments (30 or 50 minutes) on an as-needed or weekly basis, scheduling up to 3 hours worth of appointments per week. Online services include Feedback-by-Email and IM conferencing (with or without a webcam). All writing center services are free.

Writing Center tutors are specially selected and trained graduate and undergraduate students who can help you at almost any stage of your writing. They will not do your work for you, but they can help you focus and develop your ideas, review your drafts, and polish your writing. They can answer questions about grammar, mechanics, different kinds of writing styles, and documentation formats. They also can answer questions and provide feedback online, through IM/webcam chats and email.

Obviously, the tutors won't necessarily be familiar with every class or subject, but they

are able to provide valuable help from the perspective of an interested and careful reader as well as a serious and experienced student-writer.

Schedule your appointments with enough time to think about and use the feedback you'll receive. To schedule a Face-to-Face, Written Feedback by Email, or Online Appointment, visit www.depaul.edu/writing.

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Discussion Forums

Discussion Forums are an important component of your online experience. This course contains discussion forums related to the topics you are studying each week. For requirements on your participation in the Discussion Forums, please see "Course Expectations" in the syllabus.

A Course Q & A discussion forum has also been established to manage necessary, ongoing social and administrative activities. This is where the management and administrative tasks of the course are conducted, and where you can ask 'process' questions and receive answers throughout the course. Please feel free to answer any question if you feel you know the answer; this sharing of information is valuable to other students.

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Policies

Academic Integrity

DePaul University is a learning community that fosters the pursuit of knowledge and the transmission of ideas within a context that emphasizes a sense of responsibility for oneself, for others and for society at large. Violations of academic integrity, in any of their forms, are, therefore, detrimental to the values of DePaul, to the students' own development as responsible members of society, and to the pursuit of knowledge and the transmission of ideas.

Violations include but are not limited to the following categories: cheating; plagiarism; fabrication; falsification or sabotage of research data; destruction or misuse of the university's academic resources; alteration or falsification of academic records; and academic misconduct. Conduct that is punishable under the Academic Integrity Policy could result in additional disciplinary actions by other university officials and possible civil or criminal prosecution. Please refer to your Student Handbook or visit <http://sr.depaul.edu/catalog/catalogfiles/Current/Undergraduate%20Student%20Handbook/index.html> for further details.

Plagiarism:

Plagiarism is a major form of academic dishonesty involving the presentation of the work of another as one's own. Plagiarism includes but is not limited to the following:

- The direct copying of any source, such as written and verbal material, computer files, audio disks, video programs or musical scores, whether published or unpublished, in whole or part, without proper acknowledgement that it is someone else's.
- Copying of any source in whole or part with only minor changes in wording or syntax, even with acknowledgement.
- Submitting as one's own work a report, examination paper, computer file, lab

report or other assignment that has been prepared by someone else. This includes research papers purchased from any other person or agency.

- Resubmitting one's own previous work from a different course or college, without permission from the current instructor.
- The paraphrasing of another's work or ideas without proper acknowledgement.

Plagiarism, like other forms of academic dishonesty, is always a serious matter. If a instructor finds that a student has plagiarized, the appropriate penalty is at the instructor's discretion.

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For Students Who Need Accommodations Based on the Impact of a Disability

Students who feel they may need an accommodation based on the impact of a disability should contact the instructor privately to discuss their specific needs. All discussion will remain confidential. To ensure that you receive the most reasonable accommodation based on your needs, contact your instructor as early as possible in the quarter (preferably within the first week or two of the course). Please be sure to contact the following office for support and additional services:

Center for Students with Disabilities (CSD)
#370, Student Center, LPC, 773.325.1677

Description of Pass/Fail Grading Options

Students have the option of taking all SNL undergraduate courses as Pass/Fail even if a class is initially structured for a letter grade assessment. In these cases a Pass is awarded when competence is demonstrated at a level that would otherwise earn a grade of C- or higher.

In deciding to select Pass/Fail grading students should be aware that competencies assessed in a course as Pass will earn credit hours toward degree completion but *will not* be included in computing grade point averages. Attempted competence demonstration assessed within a class as Fail will not only be recorded as credit hours attempted but *will* also be included in computing a student's grade point average.

For SNL students, competencies awarded for Independent Learning Pursuits and in the Lifelong Learning Domain do not count toward the university's specification that only twenty credit hours may be earned through the Pass/Fail assessment option.

Please note: *There are four SNL courses within the BA curriculum that are always assessed on a Pass/Fail basis: Learning Assessment Seminar (course number LL 102; competence L-1), Foundations of Adult Learning (course number LL 250; competences L-2 and L-3), Advanced Project (course number FA 303; competences F-11 and F-12) and Summit Seminar (course number LL 390; competence L-12). These classes may not be taken for a letter grade assessment. Therefore, work that might otherwise be assessed at grades A through C- will earn a Pass in these classes.*

There are an additional four SNL courses within the Lifelong Learning Area of the BA curriculum for which instructors regularly use a Pass/Fail grading system which may, instead, be taken for a letter grade assessment if this is a student's preference. These classes are: Academic Writing for Adults (course number LL 150; competence L-4), Critical Thinking (course number LL 155; competence L-5), Research Seminar (course number LL 300; competences L-8 and L-9) and Externship (course number LL 302; competences L-10 and L-11). In addition, SNL's undergraduate Writing Workshop

(course number LL 140; competence H-3-J) regularly uses Pass/Fail although students may request a letter grade assessment. In these instances SNL offers undergraduate students the opportunity to request a letter grade assessment from their instructor. Students who need a letter grade for tuition reimbursement may wish to consider this option, as well as those who wish to raise their GPA. Students planning to attend graduate school may also prefer letter grades to Pass/Fail assessments.

If a student wishes to switch the method of assessment, either to or from the Pass/Fail option, this must be requested from the instructor in writing during the first two weeks of the quarter. The assessment style may not be changed after this period, with no exceptions.

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Protection of Human Subjects

For more information see: <http://research.depaul.edu/>

Demonstrating the acquisition of competencies in this course can involve "interactions"—interviewing and or observing other people—discussing those interviews or observations with other class members and writing them up in one or more final report(s). As such, these activities qualify as "research" with "human subjects" and are subject to University and Federal guidelines. Because it takes place in the context of this course, your research is exempt from approval by the School for New Learning's Local Review Board only under the following conditions:

- The information you collect is EXCLUSIVELY for the purpose of classroom discussion and will NOT be used after the term is over. If there is any possibility that you will EVER use it in further research or for publication, you must obtain approval from the Local Review Board before you begin.
- You assess and ensure that no "harm"—physical, mental, or social—does or could result from either your interviews and/or observations or your discussion and/or reports.
- The privacy and confidentiality of those that you interview or observe must be protected. Unless you receive specific permission, in writing, from the person(s) you interview or observe, please change their names, and make sure that their identity cannot be readily ascertained from the information you provide.
- If you want to use real names and relationships, they must sign an "informed consent" document. For information on creating an "informed consent document" see, for example, <http://www.research.umn.edu/consent>

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Course Expectations

Time Management and Attendance

SNL's online courses are not self-paced and require a regular time commitment EACH week throughout the quarter.

You are required to log in to your course at least four times a week so that you can participate in the ongoing course discussions.

Online courses are no less time consuming than "face to face" courses. You will have to dedicate some time every day or at least every second day to your studies. A typical four credit hour "face to face" course at SNL involves three hours of classroom meeting

per week, plus at least three to six hours of study and homework per week.

This course will require at least the same time commitment, but your learning activities will be spread out through the week. If you have any problems with your technology, or if you need to improve your reading or writing skills, it may take even longer.

The instructor should be notified if your life events do not allow you to participate in the course and the online discussions for more than one week. This is particularly important when there are group discussions or you are working as part of a team.

If you find yourself getting behind, please contact the instructor immediately.

Your Instructor's Role

Your instructor's role in this course is that of a discussion facilitator and learning advisor. It is not their responsibility to make sure you log in regularly and submit your assignments. As instructor, s/he will read all postings to the general discussion forums on a daily basis but may not choose to respond to each posting. You will receive feedback to assignments.

The instructor may choose to designate "office hours" when s/he will be online and available and will immediately respond to questions. Depending on the instructor, this response may be by e-mail, instant messenger or telephone. Otherwise, you will generally receive a response to emailed or posted queries within 48 hours.

Your Role as a Student

As an online student, you will be taking a proactive approach to your learning. As the course instructor's role is that of a learning guide, your role is that of the leader in your own learning.

You will be managing your own time so that you can complete the readings, activities and assignments for the course, and you will also be expected to take a more active role in peer learning.

Credits

This course was designed and produced by Dr. Yoav Ben-Yoseph and staff at SNL Online of the School for New Learning of DePaul University.

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