



**BIOL 2416: GENETICS**  
**CRN 11146**  
**SPRING 2019**

**Dr. Partha Sen**  
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**CREDIT: 4 semester hours**

**Friday 8:00 AM – 10:50 AM in LHSB 315**

**Friday 11:00 PM – 1:50 PM in LHSB 307**

**COURSE DESCRIPTION:** Study of the principles of molecular and classical genetics and the function and transmission of hereditary material (DNA). Will include genetic engineering (manipulation of DNA in the lab to produce a useful product). May include population genetics (study of genetic variation within populations)

**REQUIRED TEXT:**

Genetics, A conceptual Approach (Sixth Edition) by Benjamin A. Pierce

ISBN-13: 978-1-319-05096-2

**INSTRUCTIONS TO JOIN CLASS AND HOMEWORK ETC.**

Go to

1. [www.saplinglearning.com/login](http://www.saplinglearning.com/login) to create an account. If you already have a Macmillan Learning account you can log in with your existing credentials and skip to step 3.
  - a. Create your password and set all three security questions.
  - b. Start typing in your institution to select from the options that appears in the Primary Institution or School name field. If your institution does not appear you can add it by typing in the full name.
  - c. Accept the terms of use and click "Sign Up".
  - d. Check your email for the confirmation link to complete your registration and return to the login page.
2. Set your institution by searching using your institution's full name and selecting the appropriate option from the menu that appears.
3. Under Enroll in a new course, you should see **Courses at Houston Community College**. Click to expand this list and see courses arranged by subject. Click on a subject (**Genetics**) to see the terms that courses are available.
4. Click on the term to expand the menu further (note that Semester 1 refers to the first course in a sequence and not necessarily the first term of the school year).
5. Once the menus are fully expanded, you'll see a link to a specific course. If this is indeed the course you'd like to register for, click the link.
6. To access your eBook click on the image of the cover on the right sidebar of your course site. Create an account or log in with an existing Macmillan Learning eBook account.
7. Review the [system requirements](#) and confirm that Flash is updated and enabled in your browser.
8. **Need Help?** Our technical support team can be reached by phone, chat, or by email via the Student Support Community. To contact support please open a service request by filling out the webform:

<https://macmillan.force.com/macmillanlearning/s/>.

The following link includes more detailed instructions on how to register for your course:

<https://macmillan.force.com/macmillanlearning/s/article/Sapling-Learning-Registering-for-courses>

**Learning Web:** Syllabus and other relevant course information may be posted on the Learning web found at the following link:

<http://learning.hccs.edu/faculty/>

**OFFICE HOURS:** By appointment

### **INSTRUCTOR GUIDELINES AND POLICIES**

1. Text book and Laboratory manual are required.
2. Class attendance is required. Four absences will result in administrative withdrawal.
3. You must read the lab safety rules before doing any of the lab exercises and follow them.
4. Lab reports: Although students will work in groups, individual active participation is expected. You are required to complete the lab reports.
5. No make up exams will be given. Should a student arrive after the first examinee has turned in the test materials, she/he will be considered as not having taken the examination.
6. No extra credit
7. No food or drink in the labs
8. **Cellular telephones to remain off while in the class. No text messaging. Phones should not be on the desk. Bags, purses etc. should be placed under the table.**
9. **No hoodies and Biobreaks on during exams**
10. **No Web browsing. Points from your test grade will be deducted if you don't obey the rules.**

### **ADDITIONAL INSTRUCTOR AND INSTITUTIONAL POLICIES**

#### **ACADEMIC INTEGRITY**

This instructor is committed to a high standard of academic integrity in the academic community. In becoming a part of the academic community, students are responsible for honesty and independent effort. Failure to uphold these standards includes, but is not limited to, the following: plagiarizing written work or projects, cheating on exams or assignments, collusion on an exam or project, and misrepresentation of credentials or prerequisites when registering for a course. Cheating includes looking at or copying from another student's exam, orally communicating or receiving answers during an exam, having another person take an exam or complete a project or assignment, using unauthorized notes, texts, or other materials for an exam, and obtaining or distributing an unauthorized copy of an exam or any part of an exam. Plagiarism means passing off as his/her own the ideas or writings of another (that is, without giving proper credit by documenting sources). Plagiarism includes submitting a paper, report, or project that someone else has prepared, in whole or in part. Collusion is inappropriately collaborating on assignments designed to be completed independently. These definitions are not exhaustive. When there is clear evidence of cheating, plagiarism, collusion, or misrepresentation, disciplinary action may include but is not limited to requiring you to retake or resubmit an exam or assignment, assigning a grade of zero or "F"

for an exam or assignment; or assigning a grade of "F" for the course. Additional sanctions including being withdrawn from the course, program or expelled from school may be imposed on a students who violate the standards of academic integrity.

### **Program Student Learning Outcomes (PSLOs) for the Biology Discipline**

1. Will display an understanding of biological systems and evolutionary processes spanning all ranges of biological complexity, including atoms, molecules, genes, cells, and organisms.
2. Will integrate factual and conceptual information into an understanding of scientific data by written, oral and/or visual communication. (This may include successful completion of a course-specific research project or a case study module).
3. Will demonstrate proficiency and safe practices in the use of laboratory equipment and basic laboratory techniques.
4. Will apply principles of the scientific method to problems in biology in the collection, recording, quantitative measurement, analysis and reporting of scientific data.

### **STUDENT LEARNING OUTCOMES:**

SLO1: Deduce information about genes, alleles, and gene functions from analysis of genetic crosses and patterns of inheritance.

SLO2: Describe the molecular anatomy of genes and genomes.

SLO3: Describe the mechanisms by which an organism's genome is passed on to the next generation.

SLO4: Describe the phenomenon of linkage and how it affects assortment of alleles during meiosis.

SLO5: Describe the processes that can affect the frequency of phenotypes in a population over time.

SLO6: Compare different types of mutations and describe how each can affect genes and the corresponding mRNAs and proteins.

SLO7: Apply the results of molecular genetic studies in model organisms to understanding aspects of human genetics and genetic diseases.

SLO8: Interpret results from molecular analyses to determine the inheritance patterns and identities of human genes that can mutate to cause disease.

SLO9: Describe the molecular basis of replication, transcription and translation in Eukaryotes and Prokaryotes.

**PREREQUISITE:** Students must have completed one of the following with a grade of C or higher: BIOL 1306 (or 1406), 1311 (or 1411), 1313 (or 1413), 2301 (or 2401), 2302 (or 2402), 2320 (or 2420), or 2321 (or 2421)

**WITHDRAWAL POLICY:** Students wishing to withdraw from the class **MUST DO SO BY 04/01/2019; 4:30 PM.** You are responsible for withdrawing yourself from the class. **I DO NOT WITHDRAW STUDENTS, EVEN IF STUDENTS HAVE STOPPED COMING TO CLASS. DO NOT ASSUME THAT YOU WILL BE AUTOMATICALLY WITHDRAWN FROM THE CLASS JUST BECAUSE YOU HAVE STOPPED COMING TO CLASS.** Unless withdrawn, grades are calculated as stipulated in this syllabus. Missed exams, assignments etc. will result in a grade of ZERO. Beware that, as mandated by the Texas State Legislature, students who repeat a course for a third or more times may soon face significant tuition and fee increases at HCC and other Texas public colleges and

universities. Please ask your Professor or Counselor about opportunities for tutoring or other possible assistance prior to considering course withdrawal or if you are not receiving passing grades.

Students must withdraw by the withdrawal deadline in order to receive a “W” on a transcript. Final withdrawal deadlines vary each semester and/or depending on class length, please visit the online Academic Calendar, any HCC Registration Office, or any HCC advisor to determine class withdrawal deadlines.

Be certain you understand HCC policies about dropping a course and consult with a counselor/advisor to determine if withdrawing is in your best interest. It is your responsibility to withdraw officially from a class and prevent an “F” from appearing on your transcript. Senate Bill 1231 limits the number of W’s a student can have to 6 classes over the course of their entire academic career. This policy is effective for students entering higher education for the first time in fall 2007 and subsequent terms. Withdrawals accumulated at any other Texas public higher education institution count toward the 6 course total. Withdrawals for certain circumstances beyond the students control may not be counted toward the 6-drop limit. In addition, withdrawing from a course may impact your financial aid award or eligibility. Contact the Financial Aid Office or website to learn more about the impact of withdrawing on financial aid.

### **Counseling Services**

Counseling services are available to students who are experiencing difficulty with academic issues, selection of college major, career planning, disability accommodations, or personal issues.

<http://learning.hccs.edu/programs/counseling>

### **REPEATING COURSES (THREE-PEAT RULE)**

As a result of recent Texas legislative changes, please be advised that HCC is charging additional tuition for students who enroll in the same class three or more times at HCC. While it is the hope of HCC that students will be successful in their first attempt at classes, we realize that life demands, academic struggles, and other issues may result in students needing to take the same class more than once. Speaking with an advisor will help you develop student success skills, improving your overall academic performance. If a student repeats a course in which a grade (A-F) has been received, the highest grade received at HCC is the permanent grade for the course and will be used in computing the GPA. All grades earned in a given course will be reflected on the transcript. Other colleges may compute the GPA differently than HCC.

**QUESTIONS/PROBLEMS:** Please make sure that if you have any questions or problems at any time, that you first contact me as soon as possible. The worst thing you can do is wait to contact me or to not take advantage of the resources available to you. By taking an active part in your education, you will make your academic experience much more rewarding and exciting!!

### **EGLS<sub>3</sub> (Evaluation for Greater Learning Student Survey System)**

At Houston Community College, professors believe that thoughtful student feedback is necessary to improve teaching and learning. During a designated time near the end of the term, you will be asked to answer a short online survey of research-based questions related to instruction. The anonymous results of the survey will be made available to your professors and department chairs for continual improvement of instruction. Go to [www.hccs.edu/egls3](http://www.hccs.edu/egls3) for more information. Please refer to **Student Handbook** for complete instructions and rules.

**LAB NOTEBOOK:** You must maintain your own bound lab notebook in accordance with industry rules. The notebook **MUST** be brought to every lab session.

**LAB REPORTS:** You will write a formal lab report for most lab exercises based on the raw data recorded in your lab notebook. Lab reports are due as shown on the tentative schedule). Beware lab exercises may take more than one lab session to complete. We will go over the lab report format in class. Although you may discuss data with your lab partner, each lab report must be an individual effort (NO copying) and must be turned in separately when due (NOT in the lab notebook). The lab reports plus other assignments will total 5% of the course grade.

**LAB SAFETY:** All lab safety rules must be followed (we will go over them). Absolutely no kids, smoking, eating, or **drinking (including water!)** in the classroom or lab.

**GENETIC DISORDER SEMINAR:** Students will be required to present a 10 minute presentation on a genetic disorder of their choice on May 03, 2019. To avoid duplication of topics, or topics that are too broad, you must submit (email) two potential seminar topics for review by 04/05/2019. A one page summary of your preparation for the presentation should be submitted by 04/12/2019. For full credit, you **must** include a minimum of five references from at least three different types of resources (book, popular magazine, scientific publication, newspaper, personal communication with an established scientist, or (reliable!) web source). The seminar will total 10% of the course grade. Further details about the presentation will be provided in class.

**EXAMS:** The use of cell phones in any way is prohibited. All materials other than a **SMALL GREEN SCANTRON**, pencil, eraser, the exam, and – if permitted – a calculator. Scratch paper is allowed after examination by the instructor. Students coming late will NOT be given extra time to complete the exam. **NO bathroom breaks during the exam** – use the bathroom BEFORE you start. Exams will total 60% of the course grade.

**STUDENT CONDUCT:** Appropriate student conduct is expected at all times (see student handbook). Students caught cheating will receive a grade of ZERO for the exam. Repeat cheaters will receive a letter grade of F for the course. Papers may be checked electronically for plagiarism. Plagiarized papers will be awarded a grade of ZERO.

#### **AMERICANS WITH DISABILITIES ACT STATEMENT**

HCCS is dedicated to providing the least restrictive environment for all students. We promote equity in academic access through the implementation of reasonable accommodations as required by the Vocational Rehabilitation Act of 1973, Title V, Section 504 and the Americans with Disabilities Act of 1990 (ADA) which will enable students with disabilities to participate in and benefit from all post-secondary educational activities.

If you require reasonable accommodations because of a physical, mental, or learning disability, please contact the Counseling Office to obtain the necessary information to request accommodations <http://www.hccs.edu/district/students/disability-services/ada-counselors/>.

Upon completion of this process, please notify your instructor as soon as possible and preferably before the end of the first two weeks of class to arrange for reasonable accommodations.

## **EQUAL OPPORTUNITY STATEMENT**

It is the policy of the HCCS to provide equal employment, admission and educational opportunities without regard to race, color, creed, national origin, gender, age, veteran's status, sexual orientation, or disability.

## **FERPA**

The academic, financial and non-directory information on your student account is confidential and protected by the Family Educational Rights & Privacy Act (FERPA). We cannot release certain information to another person without your written authorization. Further information regarding Student Records and FERPA can be found at; <http://www.hccs.edu/district/about-us/procedures/student-rights-policies--procedures/>

## **TITLE IX OF THE EDUCATION AMENDMENTS OF 1972, 20 U.S.C. A§ 1681 ET. SEQ.**

Title IX of the Education Amendments of 1972 requires that institutions have policies and procedures that protect students' rights with regard to sex/gender discrimination. Information regarding these rights are on the HCC website under Students-Anti-discrimination. Students who are pregnant and require accommodations should contact any of the ADA Counselors for assistance. It is important that every student understands and conforms to respectful behavior while at HCC. Sexual misconduct is not condoned and will be addressed promptly. Know your rights and how to avoid these difficult situations. Log in to: [www.edurisksolutions.org](http://www.edurisksolutions.org) . Sign in using your HCC student e-mail account, then go to the button at the top right that says **Login** and enter your student number.

## **HCC Policy Statement: Sexual Misconduct**

Houston Community College is committed to cultivating an environment free from inappropriate conduct of a sexual or gender-based nature including sex discrimination, sexual assault, sexual harassment, and sexual violence. Sex discrimination includes all forms of sexual and gender-based misconduct and violates an individual's fundamental rights and personal dignity. The Director of EEO/Compliance is designated as the Title IX Coordinator and Section 504 Coordinator. All inquiries concerning HCC policies, compliance with applicable laws, statutes, and regulations (such as Title VI, Title IX, and Section 504), and complaints may be directed to:  
David Cross

Director EEO/Compliance

Office of Institutional Equity & Diversity

3100 Main, Houston, TX 77266-7517 or [Institutional.Equity@hccs.edu](mailto:Institutional.Equity@hccs.edu)

At HCC the safety of our students, staff, and faculty is our first priority. As of August 1, 2017, /Houston Community College is subject to the Campus Carry Law (SB11 2015). For more information, visit the HCC Campus Carry web page at <http://www.hccs.edu/district/departments/police/campus-carry/>.

## **FINAL EXAMINATIONS**

A final evaluation activity will occur during the published final evaluation period. The appropriate dean, director, or department chair must approve any variation to this schedule.

HCC strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability (including mental health, chronic or temporary medical conditions), please meet with a campus Abilities Counselor as soon as possible in order to establish reasonable accommodations. Reasonable accommodations are established through an interactive process between you, your instructor(s) and Ability Services. It is the policy and practice of HCC to create

inclusive and accessible learning environments consistent with federal and state law. For more information, please go to <http://www.hccs.edu/district/students/disability-services/>

**TENTATIVE COURSE SCHEDULE:**

Date		
01/11	Chapters 1, 2	Lab: Microscope
01/18	Chapters 3, 4	Lab: Mitosis/Meiosis
01/25	Chapters 5, 6	Lab: Punnett Square, Pedigree
02/01	Chapters 7, 8	Lab: Karyotype
02/08	Chapters 9 Chapter 10	Lab: ABO blood type
02/15	Chapters 11 TEST 1	Lab: Micropipette and centrifugation <b>Two topics for seminar due</b>
02/22	Chapter 15, 16	Lab: DNA Extraction, Fruit flies Part 1;
03/01	Chapters 12, 13, 14	Group Presentation
03/08	Chapters 17, 18	Lab: Fruit flies, Part 2
03/15	<b>Spring break</b>	
03/22	TEST 2 Chapter 19	Lab: Gel electrophoresis, Ligation
03/29	Chapters 20, 21	
04/05	Chapters 22, 23	Lab: GFP PCR
04/12		
04/19	<b>Spring Holiday</b>	
04/26	Chapters 26	Lab: Transformation part 1, part 2
05/03	<b>Seminar Presentation</b>	<b>Lab Notebook submission</b>
05/10	<b>Test 3 and Departmental Final</b>	

**GRADE CALCULATION:**

3 Lecture Exams:	60%	Lab reports:	5%
Group Presentation:	5%	Genetic Disorder Seminar:	10%
Home work:	10%	Departmental Final	10%

**GRADING SCALE:**

A=90% and up; B=80-89%; C=70-79%; D=60-69%; F=59% and below

FX (Failure due to non-attendance), IP (In Progress), W (Withdrawn), I (Incomplete)

**IMPORTANT DATES:**

**01/28/2018: OFFICIAL DATE OF RECORD**

**04/01/2018: LAST DAY FOR ADMINISTRATIVE/STUDENT WITHDRAWAL (4:30 PM)**

**05/03/2018: GENETIC DISORDER SEMINAR**

**05/10/2018: FINAL**

**THE INSTRUTOR RESERVES THE RIGHT TO CHANGE INFORMATION IN THIS SYLLABUS.**