PRAIRIE VIEW A&M UNIVERSITY

SYLLABUS

BIOL 4013: Topics in Genomics
Fall 2019

Instructor:	**Dr. E. Gloria C. Regisford**
Section # and CRN:	**P01- 10370**
Office Location:	**Room 430G, E.E. O'Banion Building**
Office Phone:	**936-261-3165; FAX: 936-261-3179**
Email Address:	**gcregisford@pvamu.edu**
Office Hours:	**TR: 11:30 am-2:30 pm or by appointment**
Mode of Instruction:	**Face To Face**

Course Location:	**Room 123, E.E. O'Banion Building**
Class Days & Times:	**TR 3:00-4:20 p.m.**
Catalog Description:	**Biol 4013. Topics in Genomics.** (3-0) Credit 3 semester hours. The study of the Human Genome in a holistic manner. Physical mapping and large scale DNA sequencing of the human genome; gene expression and microarrays; the application of genome data to the incidence of disease; are used as disease markers and gene based therapeutics.

Prerequisites:	BIOL 2054: Genetics; CHEM 2043: Organic Chemistry
Co-requisites:	None

Required Texts:	Students will be assigned current journal articles to read, interpret and discuss. Students will also be referred to different genomics websites.

Recommended Texts:	**Genomes 4, 4th Edition,** T.A. Brown (Author), Garland Science (Publisher) 2017. **ISBN:** 9780815345084. **Bioinformatics and Functional Genomics, 3rd Ed.,** J. Pevsner (Author), Wiley-Blackwell (Publisher) 2015. **ISBN:** 978-1-118-58178-0

Student Learning Outcomes:

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	Upon successful completion of this course, students will be able to:	Program Learning Outcome # Alignment	Core Curriculum Outcome Alignment
1	Develop a comprehensive understanding of the human genome.	2	Critical Thinking
2	Analyze and interpret the data generated from the human genome and genomes of other organisms.	2	Critical Thinking
	Apply genomic information to determine the incidence of disease; identify disease markers and formulate models for gene-based therapies.	2	Critical Thinking
3	Read, interpret and present scientific journal articles that are based on genomics.	1	Communication
4	Write in clear, correct, grammatical prose.	1	Communication
5	Work on genomics/bioinformatics projects in small groups.	3	Teamwork
6	Cite research correctly according to APA format, both in the text and in the bibliography.	5	Personal Responsibility

Major Course Requirements

Course Grade Requirement	Value (percentages)	Total
1) **Class Participation** Ask at least **20** genomics-relevant questions during class meetings	1 each	20%
2) **Group Research Article Presentation** **One** genomics journal article presented as a group	15	15%
3) **Group Research Project Poster Presentation** **One** poster presentation as a group	20	20%
4) **Research Project – Individual Research Paper** **One** individual paper based on Group Research Project	25	25%
5) **Midterm Exam**	10	10%
6) **Final Exam**	10	10%
Total:		**100%**

Method of Determining Final Course Grade

Grading Criteria and Conversion:

A = 90 – 100%
B = 80 – 89%
C = 70 – 79%
D = 60 – 69%
F = 50 – 59%

Detailed Description of Major Assignments:

Assignment Title or Grade Requirement	Description
Class Participation	Students are expected to participate in class by asking relevant questions *(at least one per class session)* and leading discussions that are related to Genomics. Intelligent and relevant questions asked regularly *(at least one per class session)* will account for **20%** of the final grade.
Group Presentation of Journal Articles	Students will also be placed in groups of two (2) or three (3) and assigned recent journal articles, related to the topic discussed that week, to read and present in class. Presentations must be in power-point and approximately **30 minutes** long. Students must be able to answer questions about the journal article during the ten-minute 'question and answer' period after the presentation.
Research Project for Poster Presentation	Each group of students will select a gene which has been identified and whose mutation(s) is/are known to cause a disease. Each group will create a poster, and present this poster on the **structure, function and expression patterns of the gene(s)** and the disease(s) caused by mutation(s) of the gene(s).
Research Project for Individual Research Papers	Each student will write an individual report on the **structure, function and expression patterns of the gene(s)** and the disease(s) caused by mutation(s) of the gene(s). The research paper must be written in APA format, 8-10 pages long, double spaced, 12" font, 1" margins, and must have a cover page and bibliography. **Papers are due on or before December 6th, 2019**
Midterm and Final Exam	Two exams, one midterm exam and one final exam, will be given **in class** during the midterm exam week and at the end of the semester, respectively. The exams will consist of essay and short-answer questions and will cover all the materials presented in class.

Course Procedures or Additional Instructor Policies

Two 1 and ½ -hour lectures will be held weekly. The lecture periods consist of discussions between students and lecturers who have expertise in various current topics in Genomics.

Taskstream

Taskstream is a tool that Prairie View A&M University uses for assessment purposes. One of your assignments may be considered an "artifact," an item of coursework that serves as evidence that course objectives are met. More information will be provided during the semester, but for general information, you can visit Taskstream via the link in eCourses.

References

Books:

1) ***Analysis of Genes and Genomes***, Richard J. Reece, 2004, ISBN:0-470-84379-9 (HC) ISBN:0-470-84380-2 (PB).
2) ***Bioinformatics A Practical Guide to the Analysis of Genes and Proteins, 3rd edition,*** Andreas D. Baxevanis and B.F. Francis Ouellette (Editors), Wiley, 2004. ISBN 978-0-471-47878-2
3) ***Encyclopedic Dictionary of Genetics, Genomics, Proteomics and Informatics, 3rd Edition,*** George P. Rédei, 2008, Springer, Print ISBN: 978-1-4020-6753-2; eReference ISBN: 978-1-4020-6754-9.
4) ***Essentials of Genomics and Bioinformatics,*** Christoph W. Sensen (Editor), Wiley, 2008, ISBN 978-3-527-61265-9.
5) ***Genomic Medicine***, Alan E. Guttmacher, Francis E. Collins and Jeffrey M. Drazen (Editors), The Johns Hopkins University Press, 2004. ISBN: 9780801879791
6) ***Guide to Analysis of DNA Microarray Data, 2nd edition***, Steven Knudsen, Wiley Press, 2004. ISBN 978- 0-471-65604-6
7) ***Microarrays for an Integrative Genomics (Computational Molecular Biology),*** by Isaac S. Kohane, Alvin Kho and Atul Butte, A Bradgord Book, 2005. ISBN: 978-0262612104
8) ***Molecular Biology of the Cell, 6th edition***, Alberts, Johnson, Lewis, Morgan, Raff, Roberts, and Walter, Garland Science, 2014, ISBN: 978-0-815-34432-2 (HC), ISBN: 978-0-8153-4524-4 (loose-leaf)
9) ***Molecular Biology of the Gene, 7th edition,*** Watson, Baker, Gann, Levine, Losick, Benjamin/Cummings, Pearson, 2013, ISBN 978-0-321-76243-6
10) ***Understanding the Human Genome Project, 2nd edition,*** Michael A. Palladino, Pearson, 2005, ISBN 978-0-805-34877-4

Journals:

1) Applied Genomics & Proteomics
2) Bioinformatics, Comparative and Functional Genomics
3) Computational Biology
4) Functional & Integrative Genomics
5) G3.Genes, Genomes, Genetics
6) Gene
7) Genes to Cells
8) Genes & Development
9) Genetics
10) Genetic Testing
11) Genome
12) Genome Biology
13) Genome Letters
14) Genome Research
15) Genomics
16) Journal of Agricultural Genomics
17) Journal of Genomics
18) Physiological Genomics
19) Proteomics
20) Science

World Wide Web Sites:

1) The NCBI Gene Record - www.ncbi.nlm.nih.gov/
2) Online Inheritance in Man – www.omim.org
3) University of California, Santa Cruz Genome Browser - www.genome.ucsc.edu/
4) Ensembl Genome Browser – www.ensembl.org
5) GeneCards: The Human Gene Database - www.genecards.org/
6) National Genome Research Institute - www.genome.gov
7) Genome Programs of the US Department of Energy of Science - www.ornl.gov/hgmis
8) KEGG: Kyoto Encyclopedia of Genes and Genomes – www.genome.jp/kegg/
9) Nature's Genome Gateway - www.nature.com/genomics/
10) Genomics Glossaries and Taxonomies - www.genomicglossaries.com/

Week #	Date	Activities and Assignments
1	08/27	**"Introduction, Discussion of the Syllabus"; Pre-Test**
		Gloria Regisford, Ph.D., Professor, Department of Biology, PVAMU, Prairie View, TX
1	08/29	**"Searching for Journal Articles - PubMed"**
		Gloria Regisford, Ph.D., Professor, Department of Biology, PVAMU, Prairie View, TX
2	09/03	**"Logistics on Presenting a Scientific Journal Article" (Formation of Groups of 2 or 3**
		Gloria Regisford, Ph.D., Professor, Department of Biology, PVAMU, Prairie View, TX
2	09/05	**"DNA Basics – A Review"**
		Gloria Regisford, Ph.D., Professor, Department of Biology, PVAMU, Prairie View, TX
3	09/10	**"Sequence Analysis of DNA and Proteins"**
		Gloria Regisford, Ph.D., Professor, Department of Biology, PVAMU, Prairie View, TX
3	09/12	**"Introduction to Bioinformatics - Websites and Databases"**
		Gloria Regisford, Ph.D., Professor, Department of Biology, PVAMU, Prairie View, TX
4	09/17	**"Chromosomes and Chromosomal Abnormalities in Human Diseases"**
		Groups 1 & 2 Presentation and Class Discussion of Research Articles
4	09/19	**"Chromosomes and Chromosomal Abnormalities in Human Diseases"**
		Ankita Patel, Ph.D., Director, Kleberg Cytogenetics, Baylor College of Medicine, TX ***Weimin Bi, PhD***, Laboratory Director, Baylor Miraca Genetics Laboratories, Baylor College of Medicine, Houston, TX.
5	09/24	**The Human Genome Project, Past Present and Future"**
		Groups 3 & 4 Presentation and Class Discussion of Research Articles
5	09/26	**"The Human Genome Project, Past Present and Future"**
		Steve Scherer, Ph.D., Professor, Baylor College of Medicine, Houston, TX
6	10/01	**"Cancer Epigenetics"**
		Groups 5 & 6 Presentation and Class Discussion of Research Articles
6	10/03	**"Cancer Epigenetics"**
		Roderick Dashwood, Ph.D., Professor & Director, Center for Epigenetics & Disease Prevention, Institute of Biosciences and Technology, TAMU, Houston, TX
7	10/08	**"Annotation and Ontologies"**
		Groups 7 & 8 Presentation and Class Discussion of Research Articles
7	10/10	**"Annotation and Ontologies"**
		Jim Hu, Ph.D., Professor, Department of Biochemistry and Biophysics, TAMU, College Station, TX
8	10/15	**Midterm Exam and Individual Abstract of Research Paper Due** **"Genomics of Prostate Cancer"**
		Groups 9 & 10 Presentation and Class Discussion of Research Articles
8	10/17	**"Genomics of Prostate Cancer"**
		Timothy J. McDonnell, M.D., Ph.D., Professor, Department of Molecular Pathology, M.D. Anderson Cancer Center, Houston, TX

Week #	Date	Activities and Assignments
9	**10/22**	**"Modeling Human Genomic Variability in the Laboratory"**
		Groups 11 & 12 Presentation and Class Discussion of Research Articles
9	**10/24**	**"Modeling Human Genomic Variability in the Laboratory"**
		David Threadgill, Ph.D., Professor, Department of Veterinary Pathophysiology, TAMU, College Station, TX
10	**10/29**	**"Biocuration"**
		Groups 13 & 14 Presentation and Class Discussion of Research Articles
10	**10/31**	**"Biocuration"**
		Jenny Goldstein, PhD, CGC Biocuration Supervisor and Research Assistant Professor, Department of Genetics, UNC-Chapel Hill, Chapel Hill, NC
11	**11/05**	**"Gene Therapy"**
		Groups 15 & 16 Presentation and Class Discussion of Research Articles
11	**11/07**	**"Gene Therapy"**
		Rayne Rouce, M.D., Assistant Professor, Center for Gene Therapy, Baylor College of
12	**11/12**	**"Bioinformatics II – Tools and Databases"**
		Gloria Regisford, Ph.D., Professor, Department of Biology, PVAMU, Prairie View, TX
12	**11/14**	**"Work on Posters"**
		Gloria Regisford, Ph.D., Professor, Department of Biology, PVAMU, Prairie View, TX
13	**11/19**	**"Genomics: Past, Present, and Future"**
		Groups 17 & 18 Presentation and Class Discussion of Research Articles
13	**11/21**	**"Genomics: Past, Present, and Future"**
		Rodolfo Aramayo Ph.D., Professor, TAMU, College Station, TX
14	**11/26**	**"Work on Posters"**
		Gloria Regisford, Ph.D., Professor, Department of Biology, PVAMU, Prairie View, TX
14	**11/28**	**"Thanksgiving Holiday"**
15	**12/03**	**Poster Presentation and Potluck Dinner**
15	**12/05**	**Final Exam (in class); Final Individual Project Research Paper due**

Student Support and Success

John B. Coleman Library

The library and its partners have as their mission "to provide resources and instructional material in support of the evolving curriculum, as a partner in Prairie View A&M University's mission of teaching, research, and service" and to support the University's core values of "access and quality, diversity, leadership, relevance, and social responsibility" through emphasis on ten key areas of service. It maintains library collections and access both on campus, online, and through local agreements to further the educational goals of students and faculty.

Center for Academic Support

The Center for Academic Support (CAS) offers Tutoring via peer tutoring. The services include workshops (i.e., Save My Semester, Recalculate Your Route), seminars (i.e., Tools You Can Use: TI-84), group review sessions (i.e., College Algebra Topic Reviews, GRE Preparation), group study opportunities (i.e., TSIA, HESI, Study Break, Exam Cram), and test-taking strategies (How to take Notes, Study Buddy, 5 Day Study Guide). The Tutoring Center is a nationally certified tutoring program through the National Tutoring Association. The peer tutors are trained and certified by the coordinator each semester. Location: J.B. Coleman Library

COMPASS

The Center for the Oversight and Management of Personalized Academic Student Success (COMPASS) is designed to help Prairie View students in their second year and beyond navigate towards graduation by providing the following services: Academic Advisement, Targeted Tutorials for Personalized Learning, Campus-Wide Referrals, and Academic & Social Workshops. Location: J.B. Coleman Library

Writing Center

The Writing Center provides student consultants on all aspects of the writing process and a variety of writing assignments. Writing Center consultations assist students in such areas as prewriting, brainstorming, audience awareness, organization, research, and citation. Location: Hilliard Hall 121

University Rules and Procedures

Disability statement (See Student Handbook):
Students with disabilities, including learning disabilities, who wish to request accommodations in class should register with the Services for Students with Disabilities (SSD) early in the semester so that appropriate arrangements may be made. In accordance with federal laws, a student requesting special accommodations must provide documentation of their disability to the SSD coordinator.

Academic misconduct (See Student Handbook):
You are expected to practice academic honesty in every aspect of this course and all other courses. Make sure you are familiar with your Student Handbook, especially the section on academic misconduct. Students who engage in academic misconduct are subject to university disciplinary procedures.

Forms of academic dishonesty:

1. Cheating: deception in which a student misrepresents that he/she has mastered information on an academic exercise that he/she has not mastered; giving or receiving aid unauthorized by the instructor on assignments or examinations.

2. Academic misconduct: tampering with grades or taking part in obtaining or distributing any part of a scheduled test.

3. Fabrication: use of invented information or falsified research.

4. Plagiarism: unacknowledged quotation and/or paraphrase of someone else's words, ideas, or data as one's own in work submitted for credit. Failure to identify information or essays from the Internet and submitting them as one's own work also constitutes plagiarism.

Nonacademic misconduct (See Student Handbook)
The university respects the rights of instructors to teach and students to learn. Maintenance of these rights requires campus conditions that do not impede their exercise. Campus behavior that interferes with either (1) the instructor's ability to conduct the class, (2) the inability of other students to profit from the instructional program, or (3) campus behavior that interferes with the rights of others will not be tolerated. An individual engaging in such disruptive behavior may be subject to disciplinary action. Such incidents will be adjudicated by the Dean of Students under nonacademic procedures.

Sexual misconduct (See Student Handbook):
Sexual harassment of students and employers at Prairie View A&M University is unacceptable and will not be tolerated. Any member of the university community violating this policy will be subject to disciplinary action.

Attendance Policy
Prairie View A&M University requires regular class attendance. Excessive absences will result in lowered grades. Excessive absenteeism, whether excused or unexcused, may result in a student's course grade being reduced or in assignment of a grade of "F". Absences are accumulated beginning with the first day of class.

Student Academic Appeals Process
Authority and responsibility for assigning grades to students rests with the faculty. However, in those instances where students believe that miscommunication, errors, or unfairness of any kind may have adversely affected the instructor's assessment of their academic performance, the student has a right to appeal by the procedure listed in the Undergraduate Catalog and by doing so within thirty days of receiving the grade or experiencing any other problematic academic event that prompted the complaint.

Disability statement (See Student Handbook):
Students with disabilities, including learning disabilities, who wish to request accommodations in class should register with the Services for Students with Disabilities (SSD) early in the semester so that appropriate arrangements may be made. In accordance with federal laws, a student requesting special accommodations must provide documentation of their disability to the SSD coordinator.

TECHNICAL CONSIDERATIONS

***Minimum* Recommended Hardware and Software:**

- Intel PC or Laptop with Windows 7; Mac with OS X; Smartphone or iPad/Tablet with Wi-Fi
- High speed Internet access
- 8 GB Memory
- Hard drive with 320 GB storage space
- 15" monitor, 800x600, color or 16 bit
- Sound card w/speakers
- Microphone and recording software
- Keyboard & mouse
- Most current version of Google Chrome, Safari, Internet Explorer or Firefox

Note: Be sure to enable Java & pop-ups

Participants should have a basic proficiency of the following computer skills:

- Sending and receiving email
- A working knowledge of the Internet
- Proficiency in Microsoft Word (or a program convertible to Word)
- Proficiency in the Acrobat PDF Reader
- Basic knowledge of Windows or Mac O.S.

***Netiquette* (online etiquette):**

Students are expected to participate in all discussions and virtual classroom chats as directed. Students are to be respectful and courteous to others on discussions boards. Foul or abusive language will not be tolerated.

***Technical Support*:**

Students should go to https://mypassword.pvamu.edu/ if they have password issues. The page will provide instructions for resetting passwords and contact information if login issues persist. For other technical questions regarding eCourses, call the Office of Distance Learning at 936-261-3283

***Communication Expectations and Standards*:**

Emails or discussion postings will receive a response from the instructor, usually in less than 48 hours. Urgent emails should be marked as such. Check regularly for responses.

Discussion Requirement:

Online courses often require minimal to no face-to-face meetings. However, conversations about the readings, lectures, materials, and other aspects of the course can take place in a seminar fashion. This will be accomplished by the use of the discussion board. The exact use of discussion will be determined by the instructor.

It is strongly suggested that students type their discussion postings in a word processing application and save it to their PC or a removable drive before posting to the discussion board. This is important for two reasons: 1) If for some reason your discussion responses are lost in your online course, you will have another copy; 2) Grammatical errors can be greatly minimized by the use of the spell-and-grammar check functions in word processing applications. Once the post(s) have been typed and corrected in the word processing application, it should be copied and pasted to the discussion board.

Calendar Fall 2019

Aug 26 Monday	First Class Day
Aug 26 Monday	Tuition & Fees Payment Due Date
Aug 26 - Sep 03 Monday through Tuesday	Attendance Reporting Period (NS/SH) Students who do not attend class during this period will have their courses removed and financial aid reduced or cancelled
Aug 26 Monday	Late Registration Fee Begins ($50.00)
Aug 30 Friday	Final Day to Register with Late fee 12:00 am - 12:00 am
Aug 31 Saturday	Final Day to Add a class(s) for credit
Sep 02 Monday	Labor Day Holiday (University Closed)
Sep 09 Monday	Financial Aid Refunds Begin
Sep 11 Wednesday	12th Class Day (Census Date)
Sep 11 Wednesday	Final Day to Drop/Withdraw from Course(s) without Academic Record (A Financial Record will still exist)
Sep 12 Thursday	Withdrawal from Courses with Academic Record (“W”) Begins

Sep 17 Tuesday	Drop for Non-Payment of Tuition and Fees @ 5:00 p.m.
Oct 17 - Oct 19 Thursday through Saturday	Mid-Semester Examination Period
Oct 22 Tuesday	Mid-Semester Grades Due
Oct 31 Thursday	Final Date to Apply for Fall 2019 Graduation (ceremony participation)
Nov 01 Friday	Final Day to Withdraw from Course(s) with Academic Record ("W")
Nov 01 Friday	Application for Graduation-Degree Conferral only for Fall 2019 Graduation Begins (no ceremony participation or name listed in the program)
Nov 01 Friday	Final Day to Withdraw from Course(s) with Academic Record ("W") – Fall 2019 16-week session
Nov 11 Monday	Priority Registration for continuing students for Spring and Summer semesters
Nov 18 Monday	Pre-Registration for all other student for the Spring and Summer semesters
Dec 02 - Dec 03 Monday through Tuesday	Course Review Days (Classes must convene and instructors will prepare students for final exams)
Dec 03 Tuesday	Final Day to Apply for Degree Conferral only for Fall 2019 Graduation (no ceremony participation or name listed in the program)
Dec 03 Tuesday	Last Class Day

Dec 03 Tuesday	Final Day to Submit Application for Tuition Rebate for Fall Graduation 2019 (Undergraduate Candidates)
Dec 03 Tuesday	Final Day to Withdraw from the University (from all courses) for the Fall 2019 16-week session
Dec 04 - Dec 10 Wednesday through Tuesday	Final Examination