PRAIRIE VIEW A & M UNIVERSITY
COLLEGE OF ENGINEERING
Roy G. Perry College of Engineering
Department of Chemical Engineering

COURSE SYLLABUS

CHEG 4103 – Special Topics in Chemical Engineering: Biological Transport Phenomena and Biomedical Engineering

Spring 2019

Instructor: Dr. Kazeem B. Olanrewaju
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Class Meeting Time: TR 12:30 – 1:50 p.m.
Location: ***Juvenile Justice Building RM 365***

Office Hours: Room 201 C , M 2.00 pm – 5:00 pm
Prerequisites:

Textbook: Required*: Transport in Biological Systems, George.A.Truskey; Fan Yuan; David F. Katz,, Pearson, Prentice Hall, 2001, ISBN: 13 978-0-13 -156988-1 or ISBN:1 0 0-13-156 988-0

References: Transport Phenomena in Biomedical Engineering : Artifical Organ Design and Development and Tissue Engineering, Kal Renganathan Sharma, Mc-GrawHill, ISBN : 978-0-07-166397-7; MIHD 0-07-166397-5

Course Description: Introduction to human physiological to better understand the concepts of biological transport and physiological fluid mechanics. Fundamentals and applications of mass transport in biological systems and effect of mass transport upon biochemical interactions will be presented. Transport in organs and energy and bioheat transport will be taught. Biomedical devices, artificial kidney devices, artificial hearts, heart valves and Heart –Lung Machines (Oxygenators) will be studied.

Course Goals: This course will expose students to the application of Chemical Engineering concepts to human physiological system and also provide insight to how these concepts can help in diagnosing and offer therapeutic suggestions to range of pathological conditions.

* See textbook policy elsewhere in this syllabus.

Access to Learning Resources

CHEG Department Computer Lab
Wilson 202
PVAMU Library:
phone: (936) 261-1500;
web: http://www.tamu.edu/pvamu/library/
University Bookstore:
phone: (936) 261-1990;
web: https://www.bkstr.com/Home/10001-10734-1?demoKey=d

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. **Calculators are limited** to basic scientific and graphing functions for exams and quizzes (those with USB or other data exchange port are prohibited).

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.

5. Use or possession of textbook solution manual. Since these are restricted by the copyright holder to teaching faculty only who are then prohibited from sharing with students, there is *no legitimate way* for a student to have a copy of the solution manual.

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.

Grading Policy:

The overall grade will be calculated based on attendance, homework/project work, quiz/test/midterm, final exam. Homework will be given and will be graded. It is up to the student to make best use of Homeworks, which are designed to prepare for exams/test.

Grade Element	Weight	Actual
Quiz/Attendance	10%	
Homework/Project	40%-50%	
Test /Midterm Exams	10%-15%	
Final Exam/Project	25%-30%	
Overall Grade	100%	
Extra Credit4		
Adjusted Grade		

1. The Actual column may be used to record your grade elements and your overall grade (calculate as a weighted sum of the elements).
2. At least one project will be assigned, which will probably be team based.
3. The attendance policy notwithstanding, the overall grade is subject to be discounted up to 10% for lack of (1) attendance, (2) punctuality, or (3) participation.
4. Extra credit assignments may be applicable to this course and would consist of extra writing assignments and/or oral presentations. Discuss with instructor.

Letter grades will be assigned based on the numeric value of the adjusted grade (above) using a scale similar to the one below:

A	90-100%
B	80-89%
C	70-79%
D	60-69%
F	00-59%

Conduct:

Students will conduct themselves in a manner that is respectful to his/her fellow classmates and the instructor at all times.

Detailed Syllabus and Course Organization*

Week	Lecture Topic with reference	Assignments
Week 1:	Introduction to Human Physiology	
Week 2:	Introduction to Human Physiology	
Week 3:	Introduction Biological Transport	
Week 4:	Introduction to Physiological Fluid Mechanics	
Week 5:	Fundamentals and Applications of Mass Transport in Biological Systems	
Week 6:	Fundamentals and Applications of Mass Transport in Biological Systems	
Week 7:	The Effect of Mass Transport Upon Biochemical Interactions	
Week 8:	The Effect of Mass Transport Upon Biochemical Interactions	
Week 9:	Transport in Organs	
Week 10:	Transport in Organs	
Week 11:	Energy and Bioheat Transfer	
Week 12:	Energy and Bioheat Transfer	
Week 13:	Artificial Kidney Devices Artificial Hearts and Heart Valves	
Week 14:	Heart –Lung Machines (Oxygenators)	
Week 15:	Last day of class (course review) Study day (no class).	
Week 16:	Final Exam /Project	TBD

*Note: Instructor reserves the right to modify/change the course syllabus as needed. Students will be provided with a revised syllabus if changes or modifications are made.