Instructor:
Dr. Don Zhu
Donghui.Zhu@unt.edu
(940) 369-8707
Office: B 131A
Office Hours: M W 10:50 AM-12:00 PM or by appointment

Class Schedule:
M W 9:30AM-10:50AM, Room: Discovery Park B142

Required Textbook:
ISBN 1441981187.

Catalog Course Description:
Quantitative analysis of transport phenomena in physiological systems. Introduction to bio-fluid mechanics, mass and heat transfer across biological system. Topics covered include fluid statics, mass, heat and momentum conservation, laminar and turbulent flow, microscale and macroscale analytical methods, mass transport with biochemical reactions, applications to transport in tissue and organs.

Prerequisite(s): BMEN 1300, MATH 1720, PHYS 1710

Course Objectives:
1. Provide an understanding of transport phenomena in human physiological systems.
2. Understand the concept of bio-fluid mechanics and applications.
3. Understand mass and heat transfer across biological system.
4. Understand biochemical reactions associated with mass transfer.
5. Gain knowledge of macroscale and microscale analytical methods.

Brief list of topics
Biotransport Basics
Design Approaches
Design of a heart-lung machine
Cell fluid volume regulation
Determinants of cell size
Postmortem interval
Renal (kidney) function / blood flow regulation
Blood doping
Blood rheology
**ABET Criteria:**
BMEN 2980 addresses the following ABET program outcomes:
   a) Apply knowledge of mathematics, engineering and science
   c) Identify, formulate and solve engineering problems
   j) Achieve knowledge of contemporary issues

**Homework and Quizzes:**
Homework assignments will be given using UNT’s Blackboard Learn online program. In-class quizzes will cover reading material from the textbook and reference material.

**Grade Evaluation:**

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<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Homework</td>
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<td>Quizzes</td>
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<td>Exam 1</td>
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<td>Exam 2</td>
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<tr>
<td>Final Project/Presentation</td>
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A: 90-100%
B: 80-89%
C: 70-79%
D: 60-69%
F: < 60%

**Disability Policy:**
All reasonable accommodation will be made to facilitate special needs. If special accommodations are required, the student must first meet with the staff of the Office of Disability Accommodation (ODA), Union Suite 322, (940) 565-4323. After meeting with that office, please contact me to discuss what accommodations will be necessary. For more information, see [http://www.unt.edu/oda](http://www.unt.edu/oda).