Protein Structure and Function
CHEM 5750 (Fall 2016)
MW 1:00 – 2:20 pm, SLSRC 2430

Instructor: Dr. Rakhi Rajan
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Office hours: MW 2:30 - 3:30 pm or by appointment

Course website (Desire2Learn): http://learn.ou.edu

Course Objectives:
This course is intended to provide students with: 1) a comprehensive discussion of protein structure and architecture; 2) examine selected protein structures from the literature and discuss structure/function relationships and present to the class the structural basis for its biological function; and 3) an opportunity to make use of interactive molecular graphics computer programs for the visualization and analysis of three-dimensional protein structures and to learn to use the virtual reality developed by the Bizzell library for macromolecular structure analysis.

Prerequisites (recommended):
CHEM 5200 (Introduction to Biochemical Methods) or permission from the instructor.

Essential:
Laptop or computer to install graphical programs to review macromolecular structures.

Useful References:

Useful Aids (recommended but optional):
Biochemistry 3D Model Kits (e.g. Molecular Visions Biochemistry Model Kit, Cochrane's Minit Molecular Model Kit for Biochemistry available from Aldrich, Z15317-6);

Grading:
The final grade for the course will be determined based on the following: i) Computer graphics exercise; ii) In-class examination; iii) in-class quizzes; iv) In-class oral presentation on an approved topic.
Computer exercise 150 pts (37.5%)  
Exam 100 pts (25.0%)  
Quizzes 50 pts (12.5%)  
Oral presentation 100 pts (25.0%)  
Total 400 pts

Grade cut-offs (guaranteed):

A = 360 pts (90%)  
B = 320 pts (80%)  
C = 280 pts (70%)  
D = 240 pts (60%)

**Lecture schedule (subject to change)**

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<th>Date</th>
<th>Topic</th>
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<tr>
<td>8/22</td>
<td>Overview of course; review of amino acids</td>
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<tr>
<td>8/24</td>
<td>1° structure, peptide bond, Ramachandran plot</td>
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<tr>
<td>8/29</td>
<td>2° structure; super-2° structure (motifs)</td>
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<td>8/31</td>
<td>Computer graphics overview (websites to go from sequence to structure)</td>
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<td>9/5</td>
<td>2° structure; super-2° structure (motifs)</td>
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<tr>
<td>9/7</td>
<td>3° structure (domains, folds, topologies)</td>
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<td>9/12</td>
<td>3° structure (domains, folds, topologies)</td>
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<td>9/14</td>
<td>Virtual reality demo and practice</td>
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<td>9/19</td>
<td>4° structure; protein-protein interactions</td>
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<td>9/21</td>
<td>Protein folding, Unfolded proteins</td>
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<td>Virtual reality presentation</td>
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<td>9/28</td>
<td>Case study</td>
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<td>10/3</td>
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<td>Methods to determine protein structure</td>
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<td>10/12</td>
<td>Exam</td>
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<td>10/31</td>
<td>Student presentations - TBA</td>
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**Dates to remember:**

1) Computer graphics exercise due Sep. 21st  
2) Exam in-class is scheduled for Oct. 12th  
3) Student presentations will begin Oct. 17th
UNIVERSITY CODES AND POLICIES OF BEHAVIOR:
See "University policies regarding instruction" downloadable from the Provost's website, http://www.ou.edu/content/provost/memos.html

Each student should acquaint her or his self with the University's codes, policies, and procedures involving academic misconduct, grievances, sexual and ethnic harassment, and discrimination based on physical handicap.

University Policy Regarding Reasonable Accommodations:
The University of Oklahoma is committed to providing reasonable accommodation for all students with disabilities. Students with disabilities who require accommodations in this course are requested to speak with the instructor as early in the semester as possible. Students with disabilities must be registered with the Office of Disability Services prior to receiving accommodations in this course. The Office of Disability Services is located in Goddard Health Center, Suite 166, phone 405/325-3852 or TDD only 405/325-4173.

Adjustments for Pregnancy/Childbirth Related Issues
Should you need modifications or adjustments to your course requirements because of documented pregnancy-related or childbirth-related issues, please contact me as soon as possible to discuss. Generally, modifications will be made where medically necessary and similar in scope to accommodations based on temporary disability. Please see www.ou.edu/content/eoo/pregnancyfaqs.html for commonly asked questions.

University Policy Regarding Codes of Behavior:
Each student should acquaint himself or herself with the University's codes, policies, and procedures involving academic misconduct, grievances, sexual and ethnic harassment, and discrimination based on physical handicap. Students engaging in academic misconduct (including cheating, plagiarism, and any other action that may improperly affect evaluation) will be subject to sanctions in accordance with the Norman Campus Academic Misconduct Code. Grade sanctions could range from a zero for the specific assignment to an "F" for the course. University sanctions can be severe, i.e., expulsion from the University. Any form of academic misconduct, as specified in the Student Code at OU and in the Chemistry Department's Graduate Student Handbook, will be reported to the Department and the Dean for appropriate action.

Title IX Resources
For any concerns regarding gender-based discrimination, sexual harassment, sexual misconduct, stalking, or intimate partner violence, the University offers a variety of resources, including advocates on-call 24.7, counseling services, mutual no contact orders, scheduling adjustments and disciplinary sanctions against the perpetrator. Please contact the Sexual Misconduct Office 405-325-2215 (8-5) or the Sexual Assault Response Team 405-615-0013 (24.7) to learn more or to report an incident.
Other important items:

Religious Holidays
It is the policy of the University to excuse the absences of students that result from religious observances and to provide without penalty for the rescheduling of examinations and additional required classwork that may fall on religious holidays.

Academic Integrity
Please be familiar with the rules for academic integrity as required by the University of Oklahoma (http://integrity.ou.edu).

Any student in this course who has a disability that may prevent the full demonstration of his or her abilities should contact me personally as soon as possible so we can discuss accommodations necessary to ensure full participation and facilitate your educational opportunities.” (Disability Resource Center, (Goddard Health Center, Room 166, 325-3852))

PLEASE NOTE:
This syllabus is a guide. The instructor reserves the right to change by addition and/or subtraction any and/or all materials contained in this syllabus. This includes, but is not limited to, course content, assignments, due dates, and portion(s) of the grade assigned to individual items within this course.