

Protein Structure and Function

Chem654

Instructor : Thomas Kuhn, 474-5752, tbkuhn@alaska.edu
 Department of Chemistry and Biochemistry
 Reichardt Building Room 184

Office Hours: after lecture (1h) or arrange meeting time (email, phone)

Lecture: Tuesdays, Thursdays, 9:45 am ± 11:15 am, REIC204

Text: Review articles and primary research literature
 Proteins ± Structure and Function
 David Whitford
 John Wiley & Sons, Ltd
 ISBN: 0-471-498939 HB
 ISBN: 0-471-498947 PB

Course:

This 3 credit course introduces the concept of the intricate relationships between protein structure and protein function, one of the most fundamental concepts of biochemistry. The four major topics include 1) basic aspects of protein structure, 2) protein function, 3) protein life history, and 4) protein structure in disease. With the chemistry of amino acids as a foundation, the course will examine the constraints on protein structure/motifs that determine ultimately their biological function as well as the detrimental consequences of protein misfolding disease particularly in the nervous system. Modern technologies to elucidate structure and function aspects of proteins are integrated.

Course Goals:

- x Develop an understanding of protein structure/function relationship
- x Integration of physicochemical concepts into protein folding and stability
- x Become familiar with methods relevant to protein structure and function
- x Navigate on line information related to protein structure
- x Misfolding of proteins and its consequences

Learning Outcomes

- x Identify key elements in proteins to predict function and stability
- x Utilize knowledge to develop strategies for protein purification/analysis
- x Design approaches to elucidate protein-protein interactions
- x Design proteomics approaches to the study of proteins
- x Apply key concepts to contemporary research

Instructional Methods:

Course material is exclusively composed of review articles and primary research literature pertinent to the topics. The suggested textbook serves as a basic reference. The course is composed of a large part of class discussion (approx. 50%) thus participation is vital individual/group presentations (approx. 30%), and lectures (20%) which are solely intended to introduce topics. Hence preparation and reading of material is critical as well as active participation.

Blackboard:

Blackboard will be utilized as the central communication platform for announcements, posting of lectures and reading material, distribution/collection of exams and email notification. It is assumed that you regularly visit blackboard and inform yourself of notifications, announcements and more.

Course Policies:

Attendance: Regular student attendance is expected to ensure consistent discussion and presentations. Active student participation is essential and will be accounted for in the final grade.

Exams: Two e

Written and oral assignment(s) will be scored as follows (detailed scoring sheets will be provided after completion of assignments)

Content:	30%
Organization:	30%
Presentation/Format	25%
Quality of Discussion:	15%

Grade	Percentage
A +	97- 100
A	90 - 96
A ±	88 - 89
B +	86 - 87
B	80 - 85
B -	78 - 79
C +	76 - 77
C	70 - 75
C -	68 - 69