

 FLORIDA ATLANTIC UNIVERSITY	NEW COURSE PROPOSAL Graduate Programs		UGPC Approval _____ UFS Approval _____ SCNS Submittal _____ Confirmed _____ Banner _____ Catalog _____	
	Department Biomedical Science College Medicine (To obtain a course number, contact erudolph@fau.edu)			
Prefix PCB Number 6208	(L = Lab Course; C = Combined Lecture/Lab; add if appropriate) Lab Code	Type of Course Lecture	Course Title Proteins in Health and Disease	
Credits (See Definition of a Credit Hour) 3	Grading (Select One Option) Regular <input type="radio"/> Sat/UnSat <input type="radio"/>	Course Description (Syllabus must be attached; see Template and Guidelines) To understand the characteristics of complex biological macromolecules and the applications to the studies of human diseases. Protein structure and function and the underlying mechanisms will be discussed in both Physiology (normal function) and Pathology (diseased states). Lectures combined with journal club-styled case study and research paper discussions are involved.		
Effective Date (TERM & YEAR) Fall 2025				
Prerequisites Permission of instructor		Academic Service Learning (ASL) course <input type="checkbox"/> Academic Service Learning statement must be indicated in syllabus and approval attached to this form.		
Prerequisites, Corequisites and Registration Controls are enforced for all sections of course.		Corequisites	Registration Controls (For example, Major, College, Level) Permission of instructor	
Minimum qualifications needed to teach course: Member of the FAU graduate faculty and has a terminal degree in the subject area (or a closely related field).		List textbook information in syllabus or here N/A		
Faculty Contact/Email/Phone Dr. Xupei Huang xhuang@health.fau.edu 561-29		List/Attach comments from departments affected by new course		

Approved by Department Chair <u>marc kantorow</u> College Curriculum Chair <u>marc kantorow</u> College Dean <u>marc kantorow</u> UGPC Chair <u>[Signature]</u> UGC Chair <u>[Signature]</u> Graduate College Dean <u>[Signature]</u> UFS President _____ Provost _____	Date 12/9/24 12/9/24 12/9/24 02/06/2025 02/06/2025 02/06/2025 _____ _____
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Email this form and syllabus to UGPC@fau.edu 10 days before the UGPC meeting.



FLORIDA ATLANTIC UNIVERSITY

PCB 6933-001 14283

Proteins in Health and Disease

Date: Wednesday 1:00 PM - 3:50 PM

Building: College of Medicine Boca **Room:** 214

3 Credit(s)

Fall 2024 - 1 Full Term

Instructor Information

Xupe Huang

Email: xhuang@health.fau.edu

Office

TA Name:

Office: Rm. 223, COM

Office Hours: Mon. and Wed. 12:00 - 1:00 pm.

Telephone: 561-2972443

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Course Description

Special Topics

Prerequisite: Permission of instructor

Topics of interest to students in Biomedical Science, such as clinical microbiology and protein misfolding and disease.

Variable title

Course Description

To understand the characteristics of complex biological macromolecules and the applications to the studies of human diseases. Protein structure and function and the underlying mechanisms will be discussed in both Physiology (normal function) and Pathology (diseased states). Lectures combined with journal club-styled case study and research paper discussions are involved.

College major in Biology or Biochemistry and related subjects.

Instructional Method

In-Person

Traditional concept of in person. Mandatory attendance is at the discretion of the instructor.

Required Texts/Materials

N/A

Course Objectives/Student Learning Outcomes

Student Learning Outcomes (SLOs)

To explain the basic structure and functions of key proteins important for health and disease

To understand the fundamental mechanisms of protein synthesis and regulation including transcription, translation and post-translational modification important for human physiology and disease.

To review the state of the field and attain oral and written proficiency in protein nomenclature and related data bases.

To participate in journal club (paper discussion) and classroom discussions on recent research topics related to the course content.

Faculty Rights and Responsibilities

Florida Atlantic University respects the rights of instructors to teach and students to learn. Maintenance of these rights requires classroom conditions that do not impede their exercise. To ensure these rights, faculty members have the prerogative to:

- Establish and implement academic standards.
- Establish and enforce reasonable behavior standards in each class.
- Recommend disciplinary action for students whose behavior may be judged as disruptive under the Student Code of Conduct [University Regulation 4.007](#).

Disability Policy

In compliance with the Americans with Disabilities Act Amendments Act (ADAAA), students who require reasonable accommodations due to a disability to properly execute coursework must register with Student Accessibility Services (SAS) and follow all SAS procedures. SAS has offices across three of FAU's campuses – Boca Raton, Davie and Jupiter – however disability services are available for students on all campuses. For more information, please visit the SAS website at www.fau.edu/sas/.

Course Evaluation Method

One session per week. Each session covers lectures (1.0 – 1.5 hours) and a problem session (1- 1.5 hour) on discussion of case-based or research paper-based protein physiology and pathology.

Exams 40 points

The final examination is a research proposal (NIH format) related to the topics of the course.

Problem/Participation 30 points

In Problem Sessions, each student will participate by completing any assigned readings or preparing answers to problems prior to the class. During the session they will be expected to answer questions from the instructor and/or present their answers to problems. Participation is also expected involving asking pertinent questions and engaging in scientific dialogue with instructor and classmates. There will be two Problem Sessions during the course that require pre-class preparation,

Student Presentation:

Graduate students 30 points

Each student will prepare 2 research paper presentation and lead a class discussion on a course-related topic. More details will be provided separately.

Different grading for undergraduates

The written exams will be different for undergraduate and graduate students, taking account of their differing levels of preparation. Also, one research paper presentation is required for undergraduates. Instead of the presentation, they can write a 4-page paper on a disease-related topic that is relevant to the course, that they can select from a list provided by the instructor or devise themselves (with approval from the instructor). They can get extra credit if they chose to make a presentation.

Total 100 points

Code of Academic Integrity

Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards, because it interferes with the university mission to provide a high quality education in which no student enjoys an unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see [University Regulation 4.001](#).

Attendance Policy Statement

Students are expected to attend all their scheduled University classes and to satisfy all academic objectives as outlined by the instructor. The effect of absences upon grades is determined by the instructor, and the University reserves the right to deal at any time with individual cases of non-attendance. Students are responsible for arranging to make up work missed because of legitimate class absence, such as illness, family emergencies, military obligation, court-imposed legal obligations, or participation in University-approved activities. Examples of University-approved reasons for absences include participating on an athletic or scholastic team, musical and theatrical performances, and debate activities. It is the student's responsibility to give the instructor notice prior to any anticipated absences and within a reasonable amount of time after an unanticipated absence, ordinarily by the next scheduled class meeting. Instructors must allow each student who is absent for a University-approved reason the opportunity to make up work missed without any reduction in the student's final course grade as a direct result of such absence.

Attendance is required. 2 points will be deducted from final grade for each absence, except those excused by FAU policy (Please see below). Only absences that meet FAU criteria will be considered.

Religious Accommodation Policy Statement

In accordance with the rules of the Florida Board of Education and Florida law, students have the right to reasonable accommodations from the University in order to observe religious practices and beliefs regarding admissions, registration, class attendance, and the scheduling of examinations and work assignments. University Regulation 2.007, Religious Observances, sets forth this policy for FAU and may be accessed on the FAU website at www.fau.edu/regulations.

Any student who feels aggrieved regarding religious accommodations may present a grievance to the executive director of The Office of Civil Rights and Title IX. Any such grievances will follow Florida Atlantic University's established grievance procedure regarding alleged discrimination.

Time Commitment Per Credit Hour

For traditionally delivered courses, not less than one (1) hour of classroom or direct faculty instruction each week for fifteen (15) weeks per Fall or Spring semester, and a minimum of two (2) hours of out-of-class student work for each credit hour. Equivalent time and effort are required for Summer Semesters, which usually have a shortened timeframe. Fully Online courses, hybrid, shortened, intensive format courses, and other non-traditional modes of delivery will demonstrate equivalent time and effort.

Course Grading Scale

Letter Grade	Letter Grade
A	93 - 100%
A-	90 - 92%
B+	87 - 89%
B	83 - 86%

Letter Grade

B-
C+
C
C-
D+
D
D-
F

Letter Grade

80 - 82%
77 - 79%
73 - 76%
70 - 72%
67 - 69%
63 - 66%
60 - 62%
Below 60

Grade Appeal Process

You may request a review of the final course grade when you believe that one of the following conditions apply:

- There was a computational or recording error in the grading.
- The grading process used non-academic criteria.
- There was a gross violation of the instructor's own grading system.

[University Regulation 4.002](#) of the University Regulations contains information on the grade appeals process

Policy on Make-up Tests, Late work, and Incompletes

If you have a particular policy relating to student behavior in the class, such as relating to tardiness or on the use of electronic devices in the classroom, state so here. Recognizing the unique relationship between faculty and student and adhering to the principles of academic responsibility, any such policies must be reasonable, non-discriminatory and not impede the educational mission. If you have a policy on the use of recording devices, please include a statement here.

Special Course Requirements

For students with disabilities:

In compliance with the Americans with Disabilities Act (A.D.A.), students who require special accommodations due to a disability to properly execute coursework must register with the Office for Students with Disabilities (OSD) located in Boca SU Building, Room 133 (297-3880), and follow all OSD procedures.

Policy on the Recording of Lectures

Students enrolled in this course may record video or audio of class lectures for their own personal educational use. A class lecture is defined as a formal or methodical oral presentation as part of a university course intended to present information or teach students about a particular subject. Recording class activities other than class lectures, including but not limited to student presentations (whether individually or as part of a group), class discussion (except when incidental to and incorporated within a class lecture), labs, clinical presentations such as patient history, academic exercises involving student participation, test or examination administrations, field trips, and private conversations between students in the class or between a student and the lecturer, is prohibited. Recordings may not be used as a substitute for class participation or class attendance and may not be published or shared without the written consent of the faculty member. Failure to adhere to these requirements may constitute a violation of the University's Student Code of Conduct and/or the Code of Academic Integrity.

Artificial Intelligence Preamble

FAU recognizes the value of generative AI in facilitating learning. However, output generated by artificial intelligence (AI), such as written words, computations, code, artwork, images, music, etc., for example, is drawn from previously published materials and is not your own original work.

FAU students are not permitted to use AI for any course work unless explicitly allowed to do so by the instructor of the class for a specific assignment. [\[Policy 12.16 Artificial Intelligence\]](#)

Class policies related to AI use are decided by the individual faculty. Some faculty may permit the use of AI in some assignments but not others, and some faculty may prohibit the use of AI in their course entirely. In the case that an instructor permits the use of AI for some assignments, the assignment instructions will indicate when and how the use of AI is permitted in that specific assignment. It is the student's responsibility to comply with the instructor's expectations for each assignment in each course. When AI is authorized, the student is also responsible and accountable for the content of the work. AI may generate inaccurate, false, or exaggerated information. Users should approach any generated content with skepticism and review any information generated by AI before using generated content as-is.

If you are unclear about whether or not the use of AI is permitted, ask your instructor before starting the assignment.

Failure to comply with the requirements related to the use of AI may constitute a violation of the [Florida Atlantic Code of Academic Integrity, Regulation 4.001](#).

Proper Citation: If the use of AI is permitted for a specific assignment, then use of the AI tool must be properly documented and cited. For more information on how to properly cite the use of AI tools, visit <https://fau.edu/ai/citation>

Counseling and Psychological Services (CAPS) Center

Life as a university student can be challenging physically, mentally and emotionally. Students who find stress negatively affecting their ability to achieve academic or personal goals may wish to consider utilizing FAU's Counseling and Psychological Services (CAPS) Center. CAPS provides FAU students a range of services – individual therapy, group therapy, and crisis services, to name a few - offered to help improve and maintain emotional well-being. For more information, go to <http://www.fau.edu/counseling/>

Student Support Services and Online Resources

- [Center for Learning and Student Success \(CLASS\)](#)
- [Counseling and Psychological Services \(CAPS\)](#)
- [FAU Libraries](#)
- [Math Learning Center](#)
- [Office of Information Technology Helpdesk](#)
- [Center for Global Engagement](#)
- [Office of Undergraduate Research and Inquiry \(OURI\)](#)
- [Science Learning Center](#)
- [Speaking Center](#)
- [Student Accessibility Services](#)
- [Student Athlete Success Center \(SASC\)](#)
- [Testing and Certification](#)
- [Test Preparation](#)
- [University Academic Advising Services](#)
- [University Center for Excellence in Writing \(UCEW\)](#)
- [Writing Across the Curriculum \(WAC\)](#)

Course Topical Outline

Course Topical Outline

Week 1. Introduction of general protein structural and function, protein production and proteomics study

- Protein structure and function
- Posttranslational modification and proteomics
- A study of proteomics

Week 2. Review of chemistry and physics of macromolecules

- Protein structure and protein folding
- Chemical bonds that maintain the structure
- A study of protein folding

Week 3. Hemoglobin physiology and some hemoglobinopathies

- Hemoglobin structure and function
- Hemoglobinopathies and causes
- A study of hemoglobin related disease

Week 4. G6PDH and erythrocytes, physiology and pathology

- G6PDH structure and function
- G6PDH in red blood cells
- A case study of G6PDH mutation caused disease

Week 5. Enzyme SOD function and in motor neuron disease

- Superoxide dismutase structure and function
- Mutations in SOD
- SOD and amyotrophic lateral sclerosis
- A case study of ALS

Week 6. Proteinase inhibitor, Physiology and Pathology

- Proteinase structure and function
- Types of proteinase inhibitors
- Physiology and pathology of proteinase inhibitors
- A case study of proteinase inhibitor
- Week.7. Fibrillin structure and function in normal and disease
 - Fibrillin structure and function
 - Fibrillin mutations
 - Fibrillin mutation caused pathology
 - A study of fibrillin

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Week 8. Effects of Cl channels and cystic fibrosis

- Cl channels and CFTR
- Structure and function of Cl channels
- Phosphorylation of Cl channels
- Mutation of chloride channels and cystic fibrosis
- A case study of cystic fibrosis

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Week 9. Myosin and hypertrophic cardiomyopathy (HCM)

- Myosin, a motor protein in muscles
- Myosin structure and function
- Myosin mutations
- Myosin mutation associated HCM
- A case study of HCM related to myosin mutations

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Week 10. Troponin and restrictive cardiomyopathy (RCM)

- Troponin, a regulatory protein in the heart
- Troponin and heart attack
- Troponin mutation related RCM
- A case study of RCM related to troponin mutations

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Week 11. General proteomics and stem cell application (disease in dishes)

- Introduction of stem cells
- How to produce mutant proteins in stem cells
- Disease in dishes
- A study in stem cell application

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Week 12. Protein big data analyses, health database and antibody synthesis

- Proteomics data analyses
- Analysis of antigenicity of proteins
- How to produce antibodies against various antigens, polyclonal and monoclonal antibody production

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Week 13. Research Paper Study (reading day)

Week 14. General review

Week 15. Final exam