

Fall 2022 Selectives

View course schedules online: <https://student.apps.utah.edu/uofu/stu/ClassSchedules/main/1228/index.html>

Attention: Classroom assignments may change between the time you register, and when classes begin. Please check your class schedule for the latest information before attending class.

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Class #	Catalog #	Cr Hrs	Course Title	Lead Instructor	Day	Time	Bldg/Room
18385	ANAT 6400	1.5	Fundamentals in Cellular and Molecular Neuroscience	Jason Shepherd	M, W	9:00 - 10:30 AM	BPRB 501
			The nervous system is the most complex organ in the body; behavior requires unique cell biology and biochemistry. The goal of this course will be to introduce core cellular and molecular processes in the main brain cell types; neurons and glia. In addition, we will highlight how these processes can go awry in neurological disorders. Topics covered include: Cellular and molecular composition of the nervous system The molecular basis for synaptic transmission – the conversion of electrical activity by chemical synapses. How synapses form circuits during development and learning How synapses signal to the nucleus to regulate gene expression The role of glia (microglia and astrocytes) in brain function. Molecular basis of common neurological disorders New advanced methods to study the brain – optogenetics, human pluripotent stem cells, organoids				
18577	BIO C 6420	1.5	Biophysical Methods	Michael Kay & Wes Sundquist	T, TH	2:30 - 3:50 PM	EHSEB 5100C
			This course will focus on biochemical and biophysical approaches to studying proteins and their functional interactions. Topics covered will include: protein-ligand interactions, cooperativity and allostery, protein folding and design, spectroscopic techniques, analytical ultracentrifugation, calorimetry, biosensors, proteomics approaches, and protein structure prediction.				
18654	BIO C 6430	1.5	Structural Methods	Julia Brasch, Erhu Cao & Peter Shen	M, W, F	2:00 - 2:50 PM	BPRB 501
			This course provides an integrated approach to the applications of X-ray crystallography and electron microscopy in structural biology. Topics covered include basic theory and the application of methods of structure determination, including X-ray crystallography, single particle electron cryo-microscopy (cryo-EM), and electron cryo-tomography (cryo-ET).				
18180	BIO C 6600	1.5	Regulation of Metabolism	Keren Hilgendorf & Janet Lindsley	T, TH	9:30 - 11:00 AM	EHSEB 2600
			This half-semester course will begin with a review of carbohydrate and lipid metabolic pathways, particularly pathway integration and regulation. It will then progress into discussions of the breadth of metabolism research questions being asked at University of Utah Health Sciences by a variety of faculty.				
18398	BIOL 6140	1.5	Advanced Genetics	Kent Golic, Kelly Hughes, & Erik Jorgensen	M, W, F	10:45 - 11:35 AM	CSC 25
			Advanced Genetics covers the fundamentals of classical genetics and genetic analysis in prokaryotes and eukaryotes. Classical genetics encompasses the mechanisms of inheritance and the behavior of genes and chromosomes in somatic cells and germ cells. Genetic analysis is a branch of biological investigation that uses mutations and mutant phenotypes to study the function and behavior of cells and groups of cells, in isolation and in a developmental context. Prokaryotes and eukaryotes have different modes of inheritance and significant differences in gene regulation and in their cellular biology. Prokaryotes provided the foundational discoveries of molecular biology and continue to be a source of new genetic tools and biological understanding with health and ecological relevance. Modern eukaryotic genetics blends the tools of molecular biology, cell biology and classical genetics to investigate gene and cell function in complex organisms.				
12635	CHEM 7430	2.0	Chemical Biology of Proteins	Ming Hammond	T, TH	9:10 - 10:30 AM	HEB 2002
			This is a one half semester course that focuses on the application of organic chemistry to the study and manipulation of proteins. Topics include chemical synthesis of peptides, proteins, and peptide mimics and chemical biology methods to study the role of proteins in cell biology and signaling. Prerequisite: 2 semesters undergraduate organic chemistry.				
1753	CHEM 7450	2.0	Biophysical Chemistry	Jessica Swanson	M, W, F	9:35 - 10:40 AM	HEB 2010
			Topics covered include: Basics of thermodynamics and statistical mechanics, with applications in biochemistry; transport phenomena; enzyme kinetics and inhibition; kinetic isotope effects; principles and applications of absorbance, fluorescence, and CD spectroscopies.				
18270	ONCSC 6500	1.5	Molecular Mechanisms of Cancer	Sean Tavgigian	M, W, F	3:00 - 3:50 PM	HCI South Auditorium

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		Review current understanding of the genetic, molecular, and cellular biology of cancer and how this knowledge relates to the prevention, diagnosis, and treatment of cancer.					
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20143	ONCSC 7700 - 011	1.0	Cell Biology	Matthew Miller & Ben Myers	T, TH	2:30 - 4:00 PM	HSEB Alumni Hall
		This course covers basic and advanced topics related to cell structure and function including cytoskeleton, membrane trafficking, protein targeting/modification and degradation, cell cycle regulation, and signal transduction.					
Class #	Catalog #	Cr Hrs	Course Title	Lead Instructor	Day	Time	Bldg/Room
18557	PATH 6500	1.0 - 2.0	Immunity, Inflammation and Infectious Disease	June Round, Ryan O'Connell, & Matthew Williams	M, W	1:30 - 2:50 PM	EHSEB 4100C
		The immune system is an integral part of virtually every organ system of the body including the neuronal, digestive, cardiovascular and endocrine, to name just a few. Moreover, while the immune system is fundamental to our ability to fend off infectious pathogens, it is intimately involved in a variety of diseases that plague the modern world including all cancers, behavioral diseases, and autoimmunity. Studies in immunology have led revolutionary discoveries that have fundamentally transformed human health, such as protection from deadly pathogens through vaccination and reversal of cancers through immune-based therapies. Thus, an understanding of basic immunological concepts is broadly applicable in multiple disease settings. Furthermore, the immune system provides an effective platform for understanding fundamental concepts of cellular and molecular biology, including events controlling cellular development, differentiation and function, DNA recombination and repair, and cell signaling. This course was designed to introduce basic immunology while integrating and helping to solidify cell biology, genetic and molecular biology concepts. This course will allow you to address questions such as: How does the immune system detect and respond to microbes? How does immunity elicit protection from microbes? Why doesn't the immune system react to self tissue? How do cells of the immune system differentiate and make fate decisions in response to external stimuli? What are the mechanisms used by the immune system to recognize such a diversity of microbes? How is the immune system used to fight cancer? Why don't we generally get sick twice with the same pathogen? Undergraduate exposure to basic principles of cell biology, genetics, and molecular biology will improve understanding of this course.					
Class #	Catalog #	Cr Hrs	Course Title	Lead Instructor	Day	Time	Bldg/Room
18710	PHARM 6500	2.0	Therapeutics Discovery, Development, and Evaluation	Raphael Franzini	M, W, F	11:10 - 12:00 PM	EHSEB 4100C
		This half-semester course, which is open to graduate students from departments in the College of Pharmacy and those participating in the Biological Chemistry/Molecular Biology PhD programs, will explore the process of developing therapeutics. Subject matters include steps spanning the entire drug development process from discovering active species, developing them into compounds that are suitable for clinical evaluation, assessing pharmacokinetics and pharmacodynamics, and determining the efficacy of candidates in clinical studies and after FDA approval					