

University of New Orleans

Spring 2023

Course List

CSCI 5125	Data Models and Database Systems	Mon / Wed / Fri	1:00pm – 1:50pm
CSCI 5130	Introduction to Cryptography	Tues / Thurs	11:00am – 12:15pm
CSCI 5311	Computer Networks and Telecommunications	Tues / Thurs	3:30pm – 4:45pm
CSCI 5401	Principles of Operating Systems I	Tues / Thurs	5:00pm – 6:15pm
CSCI 5501	Programming Language Structure	Mon / Wed	3:30pm – 4:45pm
CSCI 5525	Introduction to Artificial Intelligence	Mon / Wed	5:00pm – 6:15pm
CSCI 5588	Machine Learning II	Mon / Wed / Fri	12:00pm – 12:50pm
CSCI 5621	Intro to Cyber Security	Mon / Wed / Fri	2:00pm – 2:50pm
CSCI 5631	Principles of Computer Graphics	Mon / Wed	6:30pm – 7:45pm
CSCI 6090	Advanced Problems in Computer Science	TBD	TBD
CSCI 6110	Applied Combinatorics and Graph Theory	Tues / Thurs	3:30pm – 4:45pm
CSCI 6521	Advanced Machine Learning I	Mon / Wed	6:30pm – 7:45pm
CSCI 6625	Network Penetration Testing and Defense	Mon / Wed	12:30pm – 1:45pm
CSCI 6650	Intelligent Agents and Multi-Agent Systems	Tues / Thurs	9:30am – 10:45am
ENEE 5131	Reliability, Availability, and Maintenance of Engineering Systems	Tues / Thurs	3:30pm – 4:45pm
PHYS 5211	Introduction to Computational Physics	Mon / Wed / Fri	2:00pm – 2:50pm
PHYS 5302	Classical Mechanics II	Mon / Wed / Fri	1:00pm – 1:50pm
PHYS 5322	Introduction to Acoustics	Tues / Thurs	9:30am – 10:45am
PHYS 5401	Introduction to Quantum Mechanics	Tues / Thurs	11:00am – 12:15pm
PHYS 5501	Electricity and Magnetism I	Mon / Wed / Fri	9:00am – 9:50am
PHYS 5601	Thermodynamics & Statistical Mechanics	Tues / Thurs	10:30am – 11:45am
PHYS 5901	Condensed Matter and Materials Physics	Tues / Thurs	9:00am – 10:15am
PHYS 6206	Image Restoration and Enhancement	Tues / Thurs	11:00am – 12:15pm
PHYS 6209	Introduction to Wavelet Transforms	Tues / Thurs	2:00pm – 3:15pm
PHYS 6620	Introduction to Electron Microscopy for Materials Characterization	Tues / Thurs	5:00pm – 6:15pm

Course Descriptions

CSCI 5125	Data Models and Database Systems Instructor: Wagner, James	Mon / Wed / Fri	1:00pm – 1:50pm
<p>Prerequisite: CSCI 2125. Methods, structures, and algorithms used for the organization, representation, and manipulation of large data bases; design and implementation of data base management systems. Students will be required to develop a large project in a team setting. (Units: 3.00/3.00)</p>			

CSCI 5130	Introduction to Cryptography Instructor: Vadrevu, Krishna Phani Kumar	Tues / Thurs	11:00am – 12:15pm
	(MATH 4530 & CSCI 4130 are cross-listed) Prerequisites: MATH 3721. Elementary ciphers, Data Encryption Standard, Advanced Encryption Standard (Rijndael), Rivest-Adleman-Shamir (RSA) Encryption, and other topics in modern cryptography (subject to change as progress in field changes). This course is aimed at both CSCI and MATH majors, with both programming assignments and proofs as problem options. (Units: 3.00/3.00)		
CSCI 5311	Computer Networks and Telecommunications Instructor: Nur, Abdullah Yasin	Tues / Thurs	3:30pm – 4:45pm
	Prerequisites: CSCI 2125 and CSCI 2450. Overview of modern computer communication networks covering the theoretic multi-layered model from the top down with an emphasis on working protocols and algorithms. Topics include client-server model, common application protocols, connectionless and reliable transport, flow and congestion control, routing, switching, shared medium protocols, transmission media and network hardware. (Units: 3.00/3.00)		
CSCI 5401	Principles of Operating Systems I Instructor: Vadrevu, Krishna Phani Kumar	Tues / Thurs	5:00pm – 6:15pm
	Prerequisites: CSCI 2125 and CSCI 2467. An introduction to the organization of various types of operating systems; machine structure and the functions of an operating system; multiprogramming and time-sharing environments; memory management and resource allocation; virtual memory concepts; the file system and IO device handling; protection and error recovery. (Units: 3.00/3.00)		
CSCI 5501	Programming Language Structure Instructor: Depano, N Adlai A	Mon / Wed	3:30pm – 4:45pm
	Prerequisite: CSCI 2125. A study of the concepts of programming languages as realized in a variety of commonly used languages, with emphasis on language definition and structure. (Units: 3.00/3.00)		
CSCI 5525	Introduction to Artificial Intelligence Instructor: Samuel, Benjamin Michael	Mon / Wed	5:00pm – 6:15pm
	Prerequisite: CSCI 2125. Introduction to the problem domain of artificial intelligence and the methods used to solve those problems. Topics include knowledge representation, search strategies, and surveys of principal subareas of artificial intelligence such as expert systems, natural language processing, reasoning systems, games, learning, and vision. Programming assignments in a current artificial intelligence language will be required. (Units: 3.00/3.00)		
CSCI 5588	Machine Learning II Instructor: Hoque, Tamjidul	Mon / Wed / Fri	12:00pm – 12:50pm
	Prerequisite: CSCI 2125 or CSCI 3220 or consent of department. Topics include Machine Learning Models: Neural Networks, Support Vector Machines, Boosting, Genetic Algorithms, Decision Trees, Random Forests, and Deep Belief Nets. The focus of the class will be on the programming aspects of the statistical topics listed here. The in-depth mathematical instruction of the statistical concepts and the related statistical analyses are covered in Math 4371/5371 and Math 4385/5385. (Units: 3.00/3.00)		
CSCI 5621	Intro to Cyber Security Instructor: Roussev, Vassil R	Mon / Wed / Fri	2:00pm – 2:50pm
	Prerequisites: CSCI 2467. Overview of cyber security; physical security models; authentication and access control mechanisms; application and operating system level security; malicious software; overview of digital forensics; encryption, including private- and public-key encryption methods. A balance between theory and historical/current practice. Students will be required to develop a large project in a team setting. (Units: 3.00/3.00)		

CSCI 5631	Principles of Computer Graphics Instructor: Summa, Christopher M	Mon / Wed	6:30pm – 7:45pm
	Prerequisite: CSCI 2125. Types of graphics hardware point plotting vector and raster technologies; techniques for defining images point vector and raster-based approaches; graphical data and program structures; image manipulation two- and three-dimensional transformations; techniques for producing perspective; hidden line removal; shading; clipping; and windowing. Applications in several fields. (Units: 3.00/3.00)		
CSCI 6090	Advanced Problems in Computer Science Instructor: Summa, Christopher M	TBD	TBD
	Prerequisite: consent of department. A projects course of independent work under the direction of a faculty supervisor whose sponsorship must be obtained in advance. May be taken multiple times for a maximum of 3 credit hours. Cannot be used for degree credit by students who elect to fulfill the thesis degree requirements. (Units: 1.00/3.00)		
CSCI 6110	Applied Combinatorics and Graph Theory Instructor: Depano, N Adlai A	Tues / Thurs	3:30pm – 4:45pm
	Prerequisites: CSCI 4101. A study of combinatorial and graph theoretic techniques for complexity analysis. Includes generating functions, recurrence relations, Polya's theory of counting, planar directed and undirected graphs, and NP-complete problems of combinatorial or graph-theoretic nature. Application of techniques to analysis of algorithms in graph theory, as well as more general problems, such as sorting and searching. (Units: 3.00/3.00)		
CSCI 6521	Advanced Machine Learning I Instructor: Hoque, Tamjidul	Mon / Wed	6:30pm – 7:45pm
	Prerequisites: CSCI 4587/5587 or consent of the department. A probabilistic perspective of machine learning - Regression, Probability, Bayesian Statistics, Kernels, Deep Learning and models such as Gaussian, Mixture, and Markov. Students will have opportunities to learn state-of-the-art machine learning algorithms, implementations, and their application to solving real-world problems. The focus on the class would be on the programming aspects of the statistical topics listed here. The in-depth mathematical instruction of the statistical concepts and the related statistical analyses are covered in MATH 6371 and MATH 6375. (Units: 3.00/3.00)		
CSCI 6625	Network Penetration Testing and Defense Instructor: Roussev, Vassil R	Mon / Wed	12:30pm – 1:45pm
	Prerequisites: CSCI 4311/5311 . Introduces the basic methodology of network penetration testing as a means to continually improve the cyber security mechanisms deployed by an organization. Provides students with hands-on experience with reconnaissance, footprinting, scanning, vulnerability detection, reporting and remediation techniques employed during a test. Student learn how perform tests of introductory-to-intermediate level of sophistication similar to the ones required for professional certification. (Units: 3.00/3.00)		
CSCI 6650	Intelligent Agents and Multi-Agent Systems Instructor: Redwan Newaz, Abdullah Al	Tues / Thurs	9:30am – 10:45am
	Prerequisite: CSCI 4525. An investigation of computational systems in which several intelligent agents or agents and humans, interact. Includes architectures for building intelligent agents, design and implementation of multi-agent systems, inter-agent communication languages and protocols, problem-solving, planning, learning and adaptation techniques in multi-agent systems. (Units: 3.00/3.00)		

ENEE 5131	Reliability, Availability, and Maintenance of Engineering Systems Instructor: Xiros, Nikolaos	Tues / Thurs	3:30pm – 4:45pm
	(NAME 4131, ENME 4734, and ENEE 4131 are cross-listed) Prerequisite for ENME 4734 and ENEE 4131: MATH 2115 or 2134. Prerequisite for NAME 4131: MATH 2134 (or MATH 2115) with a grade of C or better. Review of probability and statistics; analytical stochastic models for component and system failures; strategies for inspection, maintenance, repair and replacement. Introduction to fault-tree and event-tree analysis; frequency and duration techniques; Markov models; and case studies. (Units: 3.00/3.00)		
PHYS 5211	Introduction to Computational Physics Instructor: Leftwich, Kendal McCain	Mon / Wed / Fri	2:00pm – 2:50pm
	Prerequisites: PHYS 4501 and CSCI 1203, CSCI 1205 or CSCI 1583. An introduction to the computational treatment of physics problems in areas such as electromagnetic phenomena, acoustic wave propagation, scattering, atomic structure, and astrophysics. (Units: 3.00/3.00)		
PHYS 5302	Classical Mechanics II Instructor: Seab, Charles G	Mon / Wed / Fri	1:00pm – 1:50pm
	Prerequisite: PHYS 3301. Special relativity; variational techniques; Lagrangian and Hamiltonian formulations of classical mechanics. (Units: 3.00/3.00)		
PHYS 5322	Introduction to Acoustics Instructor: Ioup, Juliette W	Tues / Thurs	9:30am – 10:45am
	Prerequisites: PHYS 3064 and MATH 2221. Fundamental principles of acoustics, emphasizing the physical concepts, derivations, and solutions of acoustic wave equations in bounded and unbounded fluids and solids. Reflection, refraction, and transmission; radiation characteristics of vibrating bodies. Acoustic wave guide theory, geometrical acoustics, and ray theory. Selected topics as time permits. (Units: 3.00/3.00)		
PHYS 5401	Introduction to Quantum Mechanics Instructor: Puri, Ashok	Tues / Thurs	11:00am – 12:15pm
	Prerequisites: PHYS 3064 and credit or concurrent enrollment in MATH 2221. An introduction to the basic concepts in quantum mechanics. (Units: 3.00/3.00)		
PHYS 5501	Electricity and Magnetism I Instructor: Puri, Ashok	Mon / Wed / Fri	9:00am – 9:50am
	Prerequisites: PHYS 1062 and MATH 2115 or MATH 2134. Fundamentals of electricity and magnetism. (Units: 3.00/3.00)		
PHYS 5601	Thermodynamics & Statistical Mechanics Instructor: Malkinski, Leszek	Tues / Thurs	10:30am – 11:45am
	Prerequisites: PHYS 3064 and MATH 2134. A study of theory and experiments in the fields of thermodynamics and statistical mechanics. (Units: 3.00/3.00)		
PHYS 5901	Condensed Matter and Materials Physics Instructor: Malkinski, Leszek	Tues / Thurs	9:00am – 10:15am
	Prerequisite: PHYS 3064 and MATH 2134. Properties of the crystalline state. Free electron and band theories of metals, insulators, and semiconductors. Magnetism, superconductivity, and superfluidity. (Units: 3.00/3.00)		

PHYS 6206	Image Restoration and Enhancement Instructor: Ioup, Juliette W	Tues / Thurs	11:00am – 12:15pm
	Prerequisite: PHYS 6205. Restoration and enhancement of one- and two-dimensional physical data by noise removal, deconvolution, and other techniques of digital filtering; the Wiener filter, maximum entropy, and maximum likelihood; iterative techniques; spectral windows; and filters for seismic data and images. (Units: 3.00/3.00)		
PHYS 6209	Introduction to Wavelet Transforms Instructor: Ioup, Juliette W	Tues / Thurs	2:00pm – 3:15pm
	Prerequisites: PHYS 3064 or PHYS 4205. Low and high pass filters and filter banks; down and up sampling; dilation and wavelet equations; matrix representation; maxflat filters; wavelet bases and frames; windows; wavelet transforms, perfect reconstruction; modulation matrices; polyphase for vectors, filters, and filter banks; orthonormality and Condition O; accuracy and Condition Ap; multiresolution; recursion and cascades; dilation equation in the frequency domain; biorthogonal wavelets; eigenvalues and eigenvectors and Condition E; smoothness, splines, and wavelets; multifilters and multiwavelets; physical applications. (Units: 3.00/3.00)		
PHYS 6620	Introduction to Electron Microscopy for Materials Characterization Instructor: Zhou, Weilie	Tues / Thurs	5:00pm – 6:15pm
	Prerequisites: MATH 2111, CHEM 4310, and CHEM 4410, or consent of department. This course is designed to give students an introduction to the fundamental principles of electron diffraction theory and electron microscopy imaging. The course aims to teach the principles of external and internal characterization of materials by presenting the theory and operating principles of scanning electron microscope (SEM), transmission electron microscopy (TEM), and x-ray chemical microanalysis. It will include in-class lectures and laboratory experiments to give students hands-on experience of operating SEM and TEM. The content will cover atomic theory, electron optics, vacuum physics, crystallography, diffraction physics, magnetism, and imaging techniques. (CHEM 6620 and PHYS 6620 are cross listed.) (Units: 3.00/3.00)		

University of New Orleans

Registration Information

Admissions

Applicants for non-degree admission to the Graduate School must have a bachelor's degree. Up to 12 hours earned as a non-degree student may be transferred toward a Graduate degree upon approval of the Graduate Program. Applicants for non-probational admission to a Graduate Program should have at least a 2.5 undergraduate average, a 3.0 average in any graduate work taken, and satisfactory test scores. Individual programs may have additional requirements. Students not seeking a degree may apply to be a special student.

All students must satisfy prerequisite requirements for UNO courses or receive consent of the department offering the course.

Registration

Registration for Spring 2023 is ongoing through January 22nd, 2022 without a late fee. Classes begin on January 23rd, 2022. Students should register for classes on-line. Please contact Danielle Poole at 228-688-3170 to let her know that you have enrolled so that she can track your paperwork and avoid problems. If you have any questions, please contact Danielle Poole at the CHL.

You can also log on to the University of New Orleans homepage located at www.uno.edu for more information on programs and classes on campus. Classes, days, and times listed are subject to change.

Tuition

Resident and non-resident tuition is \$1,460 for 3 graduate credit hours (not including any additional fees). A full listing of tuition costs based on other credit hours and residency status is available at <https://www.uno.edu/bursar/grad-fees>.

Note: The Center of Higher Learning makes every attempt to accurately list tuition rates for our participating universities. It is advisable, however, to check with the University before submitting your final paperwork or payment.

Important Dates

January 22 nd	Last day to add or drop classes without a late fee
January 23 rd	Classes begin
May 11 th	Last day of classes
May 12 th	Final exams begin

Payment

Payment can be made with a personal check, credit card, cash, or by a government training form.

Student Advisement

Dr. Juliette loup (504-280-6715) is available for counseling students who are interested in the UNO Ph.D. program in Engineering and Applied Science, the master's program in Applied Physics, and any other UNO degree program. Please make appointments by contacting Danielle Poole at 228-688-3170.