

Courses Offered

Class Schedule

Schedule as of November 18, 2019

- [Fall 2019](#)
- [Spring 2020](#)

NE101 - Intro to Nuclear Engineering

An introduction to the profession of nuclear engineering; current research in this field; career choices; guidance and advice on curricular matters and effective study techniques for nuclear engineering students.

		Sections			
#	CRN	Time/Location	Instructor	Credits	Seats Available
		F 12:00 PM - 12:50 PM Centennial Engineering Center 1026	Carl A Willis - carlwillis@unm.edu	1	19 Fees: \$15
		Web Enhanced - Lecture			

NE213 - Laboratory Electronics

(Also offered as CBE 213) Basic DC and AC circuits including capacitors and inductors and their applications in radiation measurement equipment and chemical process parameter measurements. Oscilloscopes, Op Amps, and Sensors and their use in the CBE and NE laboratories. {Spring}

		Sections			
#	CRN	Time/Location	Instructor	Credits	Seats Available
		W 8:00 AM - 8:50 AM Sara Raynolds Hall 101			
001	66886	TR 8:00 AM - 9:15 AM Centennial Engineering Center 1026	Kenneth Carpenter - kenc@unm.edu	3	10 Fees: \$45
		Web Enhanced - Lecture			

NE230 - Princ of Radiation Protection

Nuclear reactions, decay, interactions of physical radiation with matter, methods of radiation detection and biological effects of radiation, external and internal dosimetry. Open-ended exercises and design project. Prerequisite: (CHEM 1215 or CHEM 131) and CHEM 1215L. {Fall}

Sections						
#	CRN	Time/Location	Instructor	Credits	Seats Available	
		TR 9:30 AM - 10:45 AM				
		Mechanical Engineering				
001	53495	214	Cassiano R Endres De Oliveira - cassiano@unm.edu	3	24	Fees: \$45
		Instructional TV Parent - Lecture				

NE311 - Intro Transport Phenomena

The mechanisms and the related mathematical analysis of momentum and heat transport in both the molecular and turbulent regimes. Similarities and differences between transport types and the prediction of transport properties. Prerequisite: 314 and MATH **316. Corequisite: 315. Restriction: admitted to School of Engineering. {Fall}

Sections						
#	CRN	Time/Location	Instructor	Credits	Seats Available	
CANCELLED						
001	53811	Lecture	Staff	3	25	Fees: \$45
		TR 9:30 AM - 10:45 AM				
		Dane Smith Hall 134				
002	67193		Minghui Chen - mnu@unm.edu	3	12	Fees: \$45
		Instructional TV Parent - Lecture				

NE315 - NE Analysis and Calculations

Application of analytical and numerical techniques to neutron diffusion problems and point reactor kinetics. Includes data analysis; solution of ODEs and PDEs for nuclear criticality problems, and point kinetics with and without delayed neutrons. Prerequisite: 231 and CS 151L and MATH **316. Corequisite: 311. Restriction: admitted to School of Engineering.

Sections

#	CRN	Time/Location	Instructor	Credits	Seats Available
		TR 11:00 AM - 12:15 PM Mechanical Engineering	William J Martin - martiwj@unm.edu	3	17 Fees: \$45
001	53812	208			
		Web Enhanced - Lecture			

NE323L - Radiation Detection Measurement

Radiation interaction with matter and detection techniques for nuclear radiations. Experiments will be performed using gas, scintillation and semiconductor counters and include the design of experiments and identification of unknown radionuclides. Prerequisite: ENGL 2210. Restriction: admitted to School of Engineering.

Sections

#	CRN	Time/Location	Instructor	Credits	Seats Available
		M 1:00 PM - 3:50 PM Nuclear Engineering Laboratory LAB	Neven Ali - neali@unm.edu	3	16 Fees: \$45
001	53500	MW 10:00 AM - 10:50 AM Mechanical Engineering 300			
		Web Enhanced - Lecture			

NE439 - Radioactive Waste Management

(Also offered as CE 539) Introduction to the nuclear fuel cycle emphasizing sources, characteristics and management of radioactive wastes. Types of radiation, radioactive decay calculations, shielding requirements. Radwaste management technologies and disposal options. Restriction: admitted to School of Engineering. {Fall}

Sections

#	CRN	Time/Location	Instructor	Credits	Seats Available
CANCELLED	002	57815	ITV Parent	3	15 Fees: \$45
		Web Enhanced - Lecture	Staff		

NE462 - Monte Carlo Technique Nucl Sys

Monte Carlo methods for nuclear criticality and reactor analysis and radiation shielding calculation using production Monte Carlo codes, understand basics of probability and statistics

and of particle transport in the context of Monte Carlo methods. Prerequisite: 410. Restriction: admitted to School of Engineering. {Fall}

Sections						
#	CRN	Time/Location	Instructor	Credits	Seats Available	
		F 9:00 AM - 11:50 AM Farris Engineering Center				
002	52995 2550		Forrest B Brown - fbrown@unm.edu	3	21	Fees: \$45
		Lecture				

NE464 - Thermal-Hydraulics Nuclear Sys

Nuclear system heat transfer and fluid flow; convection in single and two phase flow; liquid metal heat transfer, pressure loss calculations; fuel element design and heat transfer; thermal-hydraulics design of nuclear systems. Prerequisite: 312 and 313L and 410. Restriction: admitted to School of Engineering. {Fall}

Sections						
#	CRN	Time/Location	Instructor	Credits	Seats Available	
CANCELLED 002	61373	Lecture	Staff	3	11	Fees: \$45
CANCELLED 003	67977	Lecture	Staff	3	4	Fees: \$45
		T 1:00 PM - 1:50 PM Mechanical Engineering 310				
004	68001	TR 3:30 PM - 4:45 PM Centennial Engineering Center 1032	Mohamed S El-Genk - mgenk@unm.edu	3	8	Fees: \$45
		Lecture				

NE468 - Intro Space Nuclear Power

Introduction to design and mass optimization of Space Power Systems, passive and active energy conversion systems and design of RTG's, radiation shield, heat pipe theory, design and applications, advanced radiators, TE-EM pumps and orbital lifetime calculations and safety. Prerequisite: MATH **312 or MATH **316. Pre- or corequisite: 464. Restriction: admitted to School of Engineering. {Spring}

			Sections			
#	CRN	Time/Location	Instructor	Credits	Seats Available	
		M 10:00 AM - 12:30 PM Mechanical Engineering 214	Mohamed S El-Genk - mgenk@unm.edu	3	12	Fees: \$45
001	63150	Instructional TV Parent - Lecture				

NE491 - Undergraduate Problems

Advanced studies in various areas of nuclear engineering. Restriction: admitted to School of Engineering. {Summer, Fall, Spring}

			Sections			
#	CRN	Time/Location	Instructor	Credits	Seats Available	
003	52997	Independent Study	Gary W Cooper - garywc@unm.edu	1 TO 3	5	Fees: \$45
004	52999	Independent Study	Mohamed S El-Genk - mgenk@unm.edu	1 TO 3	5	Fees: \$45
005	53000	Independent Study	Robert D Busch - busch@unm.edu	1 TO 3	5	Fees: \$45
007	53001	Independent Study	Cassiano R Endres De Oliveira - cassiano@unm.edu	1 TO 3	5	Fees: \$45
009	53003	Independent Study	Anil K Prinja - prinja@unm.edu	1 TO 3	5	Fees: \$45
025	53004	Independent Study	Adam A Hecht - hecht@unm.edu	1 TO 3	5	Fees: \$45
CANCELLED 028	59731	Web Enhanced - Independent Study	Staff	1 TO 3	15	Fees: \$45
029	65675	Independent Study	Osman Anderoglu - oanderoglu@unm.edu	1 TO 3	5	Fees: \$45
030	68561		Carl A Willis - carlwillis@unm.edu	1 TO 3	8	Fees: \$45

#	CRN	Time/Location	Sections		Credits	Seats Available
			Instructor			
		Web Enhanced - Independent Study				

NE495 - NE Honors Problems I

Senior thesis for students seeking departmental honors. Restriction: admitted to School of Engineering. {Summer, Fall, Spring}

#	CRN	Time/Location	Sections		Credits	Seats Available
			Instructor			
002 53007		Independent Study	Christopher M Perfetti - cperfetti@unm.edu		1 TO 6	4 Fees: \$45

NE496 - NE Honors Problems II

Senior thesis for students seeking departmental honors. Restriction: admitted to School of Engineering. {Summer, Fall, Spring}

#	CRN	Time/Location	Sections		Credits	Seats Available
			Instructor			
002 53009		Independent Study	Christopher M Perfetti - cperfetti@unm.edu		1 TO 6	5 Fees: \$45

NE497L - NE Computational Methods

Problem solving techniques, nuclear systems, design, interactions of parameters and the importance of trade-offs and optimization in design. Neutronics, computer models and impact of cross sections and materials on fissile systems. Two lectures, 2 hours lab. Prerequisite: 410. Restriction: admitted to School of Engineering. {Fall}

Sections						
#	CRN	Time/Location	Instructor	Credits	Seats Available	
001	53010	TR 11:00 AM - 12:15 PM Farris Engineering Center 1025	Cassiano R Endres De Oliveira - cassiano@unm.edu	3	10	Fees: \$45
		Web Enhanced - Combined Lecture/Lab				

NE499 - Sel T:

A course which permits various faculty members to present detailed examinations of developing sciences and technologies in a classroom setting. Restriction: admitted to School of Engineering. {Offered upon demand}

Sections						
#	CRN	Time/Location	Instructor	Credits	Seats Available	
		Sel T: Nuc Criticality Safety				
		CANCELLED				
001	67432	Topics	Staff	3	15	Fees: \$45
		Sel T: Nuc Criticality Safety				
		TR 9:30 AM - 10:45 AM				
002	67907	Woodward Lecture Hall 149	Christopher M Perfetti - cperfetti@unm.edu	3	11	Fees: \$45
		Instructional TV Parent - Topics				
		Sel T: MR Imaging&Spectroscopy				
		MR 4:15 PM - 5:30 PM				
004	67914	Domenici Ctr for Health Sci Ed 2706	Stefan Posse - SPosse@salud.unm.edu	3	2	Fees: \$45
		Web Enhanced - Topics				

NE501 - Nuclear Engineering Seminar

Colloquia, special lectures and individual study in areas of current research. A maximum of 3 credit hours can be applied toward degree. {Fall, Spring}

Sections

#	CRN	Time/Location	Instructor	Credits	Seats Available
		T 2:00 PM - 3:50 PM Farris Engineering Center 2500	Cassiano R Endres De Oliveira - cassiano@unm.edu	1	Section Full Fees: \$15
		Seminar			

NE508 - Nuclear Engin Research Seminar

Discussion of topics such as space nuclear power and propulsion, reactor design thermal-hydraulics, nuclear fuel cycles and materials, energy conversion, computation and simulation, space radiation effects and shielding, criticality safety, and instrumentation and control. {Fall, Spring, offered upon demand}

Sections

#	CRN	Time/Location	Instructor	Credits	Seats Available
		F 3:00 PM - 5:00 PM Mechanical Engineering 400	Mohamed S El-Genk - mgenk@unm.edu	2	10 Fees: \$30
		Seminar			

NE515 - ST:

{Offered upon demand}

Sections

#	CRN	Time/Location	Instructor	Credits	Seats Available
		ST: Radiation Damage Materials			
		CANCELLED			
001	63206	Instructional TV Parent - Topics	Staff	3	20 Fees: \$45
		ST: Plasma Physics I			
		TR 4:00 PM - 5:15 PM			
003	53027	Mechanical Engineering 214	Mark A Gilmore - mgilmore@unm.edu	3	1 Fees: \$45
		Instructional TV Parent - Topics			

Sections						
#	CRN	Time/Location	Instructor	Credits	Seats Available	
ST: Nuc Criticality Safety						
005	67909	TR 9:30 AM - 10:45 AM Woodward Lecture Hall 149	Christopher M Perfetti - cperfetti@unm.edu	3	9	Fees: \$45
Instructional TV Parent - Topics						
ST: MR Imaging&Spectroscopy						
007	67913	MR 4:15 PM - 5:30 PM Domenici Ctr for Health Sci Ed 2706	Stefan Posse - SPosse@salud.unm.edu	3	4	Fees: \$45
Web Enhanced - Topics						
ST: Monte Carlo Tech Nucl Sys						
CANCELLED 008	53025	Topics	Staff	3	1	Fees: \$45
ST: Nuc Criticality Safety						
CANCELLED 010	67251	Topics	Staff	3	15	Fees: \$45

NE523L - Environmental Measurements Lab

In-depth consideration of radiation detection systems and nuclear measurement techniques. Experiments using semiconductor devices, MCA/MSCs, sampling techniques, dosimeters, tracer techniques and radiochemistry. Emphasis on selection of sampling techniques and instrumentation for measuring low-levels of radiation in air, soil and water. Course credit determined for each student based on the extent of related laboratory work in his or her undergraduate program. Two lectures, 3 hours lab. {Fall}

Sections						
#	CRN	Time/Location	Instructor	Credits	Seats Available	
001	53530	M 1:00 PM - 3:50 PM Nuclear Engineering Laboratory LAB	Adam A Hecht - hecht@unm.edu	3	15	Fees: \$45

Sections

#	CRN	Time/Location	Instructor	Credits	Seats Available
		MW 10:00 AM - 10:50 AM Mechanical Engineering 300 Laboratory			

NE524 - Interaction Radiation w Matter

Nuclear models and energy levels, cross sections, decay processes, range/energy relationships for alphas, betas, gammas, neutrons and fission products. Ionization, scattering and radiative energy exchange processes. Effect of radiation on typical materials used in the nuclear industry. Both theory and application will be presented. Prerequisite: 330 and MATH **316. {Fall}

Sections

#	CRN	Time/Location	Instructor	Credits	Seats Available
002	62444	MWF 11:00 AM - 11:50 AM Mechanical Engineering 210 Instructional TV Parent - Lecture	Adam A Hecht - hecht@unm.edu	3	13 Fees: \$45

NE525 - Meth Analy Nuc Chem & Bio Engr

(Also offered as CBE 525) Mathematical methods used in chemical and nuclear engineering; partial differential equations of series solutions transport processes, integral transforms. Applications in heat transfer, fluid mechanics and neutron diffusion. Separation of variables eigen function expansion. {Fall}

Sections

#	CRN	Time/Location	Instructor	Credits	Seats Available
001	63107	MW 1:00 PM - 2:15 PM Mechanical Engineering 214 ITV Parent Web Enhanced - Lecture	Dimiter N Petsev - dimiter@unm.edu	3	1 Fees: \$45

NE539 - Radioactive Waste Management

(Also offered as CE 539) Introduction to the nuclear fuel cycle emphasizing sources, characteristics and management of radioactive wastes. Types of radiation, radioactive decay

calculations, shielding requirements. Radwaste management technologies and disposal options.
 {Fall}

Sections						
#	CRN	Time/Location	Instructor	Credits	Seats Available	
CANCELLED 002	58665	ITV Parent Web Enhanced	Lecture Staff	3	5	Fees: \$45

NE551 - Problems

Advanced study, design or research either on an individual or small group basis with an instructor. Recent topics have included convective diffusion, reactor safety, inertial confinement fusion and nuclear waste management.

Sections						
#	CRN	Time/Location	Instructor	Credits	Seats Available	
003	53040	Independent Study	Gary W Cooper - garywc@unm.edu	1 TO 3	10	Fees: \$45
004	53042	Independent Study	Mohamed S El-Genk - mgenk@unm.edu	1 TO 3	8	Fees: \$45
005	53044	Independent Study	Robert D Busch - busch@unm.edu	1 TO 3	10	Fees: \$45
008	53045	Independent Study	Cassiano R Endres De Oliveira - cassiano@unm.edu	1 TO 3	9	Fees: \$45
009	53047	Independent Study	Anil K Prinja - prinja@unm.edu	1 TO 3	10	Fees: \$45
025	53049	Independent Study	Adam A Hecht - hecht@unm.edu	1 TO 3	10	Fees: \$45
026	59733		Staff	1 TO 3	10	Fees: \$45

Sections					
#	CRN	Time/Location	Instructor	Credits	Seats Available
		Independent Study			
027	59735	Independent Study	Osman Anderoglu - oanderoglu@unm.edu	1 TO 3	10 Fees: \$45

NE562 - Monte Carlo Technique Nucl Sys

Monte Carlo methods for nuclear criticality and reactor analysis and radiation shielding calculation using production Monte Carlo codes, understand basics of probability and statistics and of particle transport in the context of Monte Carlo methods. Prerequisite: *410. {Fall}

Sections					
#	CRN	Time/Location	Instructor	Credits	Seats Available
		F 9:00 AM - 11:50 AM Farris Engineering Center			
001	67564	2550	Forrest B Brown - fbrown@unm.edu	3	1 Fees: \$45
		Lecture			

NE564 - Thermal-Hydraulics Nuclear Sys

Nuclear system heat transfer and fluid flow; convection in single and two phase flow; liquid metal heat transfer, pressure loss calculations; fuel element design and heat transfer; thermal-hydraulics design of nuclear systems. {Fall}

Sections					
#	CRN	Time/Location	Instructor	Credits	Seats Available
		T 1:00 PM - 1:50 PM Mechanical Engineering 310			
001	68518	TR 3:30 PM - 4:45 PM Centennial Engineering Center 1032	Mohamed S El-Genk - mgenk@unm.edu	3	4 Fees: \$45
		Lecture			

NE568 - Intro Space Nuclear Power

Introduction to design and mass optimization of Space Power Systems, passive and active energy conversion systems, and design of RTG s, radiation shield, heat pipe theory, design and applications, advanced radiators, TE-EM pumps and orbital lifetime calculations and safety.

Prerequisite: 231 and MATH **316. {Spring}

Sections					
#	CRN	Time/Location	Instructor	Credits	Seats Available
001	68364	M 10:00 AM - 12:30 PM Mechanical Engineering 214	Mohamed S El-Genk - mgenk@unm.edu	3	3 Fees: \$45
		Instructional TV Parent - Lecture			

NE571 - Radiation Damage in Materials

Fundamentals of radiation damage and long term evolution of damage structure in structural materials for nuclear applications.

Sections					
#	CRN	Time/Location	Instructor	Credits	Seats Available
001	67737	TR 9:30 AM - 10:45 AM Mechanical Engineering 210	Osman Anderoglu - oanderoglu@unm.edu	3	14 Fees: \$45
		Instructional TV Parent - Lecture			

NE591 - Practicum

(Also offered as MPHY 591) Professional practice experience in radiation protection and environmental measurements in non-traditional settings under the guidance of health physicists and radiation protection engineers. Internship arrangement with a local facility employing health physicists or related personnel such as a national laboratory, analytical facility, or hospital.

{Summer, Fall, Spring}

Sections					
#	CRN	Time/Location	Instructor	Credits	Seats Available
001	53050		Robert D Busch - busch@unm.edu	3 OR 6	10 Fees: \$45

#	CRN	Time/Location	Sections	Credits	Seats Available
			Instructor		
		Practice Experience			

NE599 - Master's Thesis

See Graduate Programs section for total credit requirements. Offered on a CR/NC basis only.

#	CRN	Time/Location	Sections	Credits	Seats Available
			Instructor		
003	53055	Thesis	Gary W Cooper - garywc@unm.edu	1 TO 6	9 Fees: \$45
004	53058	Thesis	Mohamed S El-Genk - mgenk@unm.edu	1 TO 6	10 Fees: \$45
005	53060	Thesis	Robert D Busch - busch@unm.edu	1 TO 6	10 Fees: \$45
007	53063	Thesis	Cassiano R Endres De Oliveira - cassiano@unm.edu	1 TO 6	10 Fees: \$45
009	53065	Thesis	Anil K Prinja - prinja@unm.edu	1 TO 6	10 Fees: \$45
026	53067	Thesis	Adam A Hecht - hecht@unm.edu	1 TO 6	8 Fees: \$45
027	59736	Thesis	Minghui Chen - mnu@unm.edu	1 TO 6	9 Fees: \$45
028	59739	Thesis	Osman Anderoglu - oanderoglu@unm.edu	1 TO 6	10 Fees: \$45
030	61312	Thesis	Forrest B Brown - fbrown@unm.edu	1 TO 6	10 Fees: \$45
032	65676	Thesis	Christopher M Perfetti - cperfetti@unm.edu	1 TO 6	9 Fees: \$45

NE610 - Adv Meths Radiation Transport

Advanced numerical methods in neutral and charged particle transport, including discontinuous finite element methods, structured and unstructured grids, adjoint techniques and Monte Carlo methods. Prerequisite: 511.

#	CRN	Time/Location	Sections Instructor	Credits	Seats Available
001	67692	MW 12:00 PM - 1:15 PM Electrical & Comp Engineering 310	Anil K Prinja - prinja@unm.edu	3	2 Fees: \$45
		Lecture			

NE699 - Dissertation