College of Science

The College of Science is the home of the University's first doctoral degree program, the Doctor of Geological Sciences, which was approved in 1974. In 1991, the designation of the degree was changed to PhD in Geological Sciences. The College now offers the PhD programs in Biological Sciences, Chemistry and Ecology and Evolutionary Biology, and also participates in three interdisciplinary PhD programs. The Departments of Chemistry and Physics are participants in a program leading to the PhD degree in Materials Science and Engineering and the Departments of Biological Sciences, Chemistry, Geological Sciences, Mathematics, and Physics are participants in a program leading to the PhD degree in Environmental Science and Engineering. Information about admission to these programs and degree requirements is found in the *Interdisciplinary Programs* section of this catalog.

Doctoral Degrees

Doctor of Philosophy in Biosciences

The educational objective of the doctoral program in Biosciencesis to prepare students for research on the pressing pathobiological problems of the region, with an emphasis on the pathogenesis of infectious diseases, the toxic and carcinogenic effects of environmental pollutants, and neurological and metabolic disorders.

Doctor of Philosophy in Chemistry

The doctoral program in chemistry embraces a variety of advanced disciplines, which is a natural outcome of our research faculty’s expertise. These areas include physical, computational, inorganic, organic, biochemistry, and environmental and materials chemistry. Through the adept leadership of the President of the University of Texas at El Paso and the dedication of the Chair of Chemistry, a new building for the Department of Chemistry was completed at the time the new Ph.D. in Chemistry program began. This was fortunate and because of the good timing, the new building has had a very positive effect on increasing the quality of the Ph.D. program, the quality of the facilities, and the quality of new professors that can be attracted to the department. Facilities that support Ph.D. research now include state of the art NMRs, LC-MS, EPR, GFAAS, BET, MALDI-TOF MS, TEM, SEM, SPR, HPLC, Confocal microscopy, ICP-OES, ICP-MS, XRF, FTIR. UV-Vis, light scattering particle analyzer, high powered computing for modeling, AFM, and Raman IR and many others.

Doctor of Philosophy in Computational Science

The doctoral program in computational science combines Computer Science, Applied and Computational Mathematics, and Science and Engineering disciplines. CPS is an interdisciplinary program, crossing departmental and college boundaries, that yields an integrated knowledge base for the effective solution of complex systems in which computer usage plays a fundamental role. A CPS student is to acquire an integrated understanding of techniques such as mathematical modeling, algorithmic design, computer simulation, scientific visualization, statistical processing of large data sets, and high-performance computing on parallel and distributed systems.

Doctor of Philosophy in Data Science

The PhD program in Data Science will prepare and train individuals who can immediately obtain positions in industry using data to guide decision-making, it can be applied to an array of industries which includes enterprise management, marketing, medical treatment options, scientific research and development services, aerospace product and parts manufacturing, securities, commodity contracts, and financial investment activities. The program is open to individuals from many backgrounds.

Doctor of Philosophy in Ecology and Evolutionary Biology

The EEB doctoral program provides a training environment in ecological and evolutionary science for future scientists and societal leaders that focuses on research that challenges and/or improves current theory and knowledge and has the capacity to be relevant to society. Faculty in the EEB program work on scales ranging from molecules to global change, in terrestrial and aquatic systems both regionally and around the world. In particular, our research focuses in two key areas: Biodiversity and Global Change Ecology.

Doctor of Philosophy in Environmental Science and Engineering

The University of Texas at El Paso presents both an extraordinary setting and excellent capabilities for the interdisciplinary doctoral program in Environmental Science and Engineering. Located on the U.S.-Mexico border and one of the most environmentally-impacted areas of North America, and with a global research footprint, UTEP has established itself as a hub for environmental science and engineering research and education. Our faculty and students have received support from multiple federal and state agencies, and foundations. The program is administered out of the Graduate School and includes the participation of faculty from more than 12 departments spanning four colleges, and numerous research centers (CERM, CyberShARE and, CIDS), and active collaboration with agencies, national labs, and industry. For information regarding admission and degree requirements, students should refer to the *Interdisciplinary Programs* section.

Doctor of Philosophy in Geological Sciences

The PhD in Geological Sciences was approved in 1974 as the first doctoral degree program of the University. The PhD program embraces a variety of advanced disciplines in Earth and Environmental Sciences, with research themes focused in Earth System Geochemistry, Geospatial Research, Professional and Entrepreneurial Geosciences, Science Learning and Education, Solid Earth and Geophysics, and Tectonics and Sedimentation, although PhD degrees may be obtained in any field of the geological sciences. The program has a vibrant group of ~20 tenured and tenure-track

faculty, with a research portfolio addressing global challenges in the environment and natural resources, while taking advantage of the unique and excellent geological settings in our region for research and education. The PhD program is hosted in the attractive Geological Sciences Building with 90,000-sq.ft spaces for offices, laboratories, and classrooms. The department facilities that support our PhD research include a variety of geochemical instruments for advanced isotope and element analysis (MC-ICP-MS, ICP-MS, ICP-OES, IRMS, Laser isotope analyzer, electron microprobe, laser diffraction particle size analyzer and many others), geophysical research infrastructure (seismometers, gravimeters, magnetometers, differential GPS receivers, surface and downhole conductivity and resistivity tools, ground-penetrating radar), geospatial facility, and extensive computational and software resources.

Doctor of Philosophy in Materials Science and Engineering

The PhD in Materials Science and Engineering is an interdisciplinary doctoral program coordinated by the Materials Research and Technology Institute (MRTI) to prepare scientists and engineers to address the rapidly expanding opportunities and problems created by emerging materials-related industries. The program emphasizes a cross-disciplinary perspective of this vital field with a range of skills linking materials, structure, properties, synthesis and processing, and performance. For information regarding admission and degree requirements, students should refer to the *Interdisciplinary Programs* section.

Master’s Degrees

The College of Science offers 11 graduate degrees at the master’s level. These include Master of Science (MS) degrees in Bioinformatics, Biological Sciences, Chemistry, Computational Science, Environmental Science, Geological Sciences, Geophysics, Mathematics, Physics, and Statistics & Data Science. Five-year BS-MS programs are offered in Chemistry and Physics. The Department of Mathematical Sciences offers a Master of Arts in Teaching (MAT) with a major in Mathematics and the Office of the Dean houses a Master of Arts in Teaching (MAT) with a major in Science. For information regarding admission and degree requirements for these degrees, students should refer to the individual department sections. The College of Science also offers a Master of Science in Professional Science composed of two graduate certificates: one 15-18 hour graduate certificate must be taken in the College of Science; the second 15-18 hour graduate certificate can be taken in any college at UTEP or outside UTEP online or in-person as long as both the institution and the certificate are accredited.

Graduate Certificates

The College of Science offers 15-18 graduate certificates in Bioinformatics, Biological Sciences, Chemistry, Geospatial Information and Technology, Applied and Computational Mathematics, Applied Statistics, Big Data Analytics, and Physics.

Dean

Dr. Robert Kirken (http://facultyprofile.utep.edu/default.aspx?ID=rkirken)

Associate Dean

Dr. Nancy C. Marcus (https://expertise.utep.edu/node/26265/), Associate Dean

Dr. Michael J. Kenney (https://expertise.utep.edu/node/34291/), Associate Dean for Research

Dr. Deana D. Pennington (https://expertise.utep.edu/node/26556/), Associate Dean

Dr. Kristine M. Garza, Associate Dean for Student Success

Professor

Robert Kirken (http://facultyprofile.utep.edu/default.aspx?ID=rkirken)
Contact Information: rkirken@utep.edu; 915-747-5536
Education: BA, Olivet College; Ph D, Wright State University; Postdoctoral Research Fellowship, National Institutes of Health/National Cancer Institute

Mourat Tchoshanov (http://facultyprofile.utep.edu/default.aspx?ID=mouratt)
Contact Information: mouratt@utep.edu; 915-747-7668
Education: Specialist Degree, Turkmen State Pedagogical Institute; Candidate of Sciences Degree, Kazan State Pedagogical Institute; Ph D, Kazan State Pedagogical University

College of Science (Dean's Office)

Go to information for this department. (http://catalog.utep.edu/grad/college-of-science/college-science-deans-office/)

Programs

Master of Arts in Teaching

- Master of Arts in Teaching Science (http://catalog.utep.edu/grad/college-of-science/college-science-deans-office/teaching-science-master-of-arts/)

Master of Science

- M.S. in Bioinformatics (http://catalog.utep.edu/grad/college-of-science/college-science-deans-office/bioinformatics-ms/)
- M.S. in Computational Science (http://catalog.utep.edu/grad/college-of-science/college-science-deans-office/computational-science-ms/)

Doctor of Philosophy

- Ph.D. in Computational Science (http://catalog.utep.edu/grad/college-of-science/college-science-deans-office/computational-science-phd/)

Biological Sciences

Go to information for this department. (http://catalog.utep.edu/grad/college-of-science/biological-sciences/)

Programs

Master of Science

- M.S. in Biological Sciences (http://catalog.utep.edu/grad/college-of-science/biological-sciences/biological-sciences-ms/)

Doctor of Philosophy

- Ph.D. in B (http://catalog.utep.edu/grad/college-of-science/biological-sciences/biological-sciences-pathobiology-phd/)iosciences (http://catalog.utep.edu/grad/college-of-science/biological-sciences/biological-sciences-pathobiology-phd/)
- Ph.D. in Ecology and Evolutionary Biology (http://catalog.utep.edu/grad/college-of-science/biological-sciences/ecology-evolutionary-biology-phd/)

Chemistry

Go to information for this department. (http://catalog.utep.edu/grad/college-of-science/chemistry/)

Programs

Master of Science

- M.S. in Chemistry (http://catalog.utep.edu/grad/college-of-science/chemistry/chemistry-ms/)

Doctor of Philosophy

- Ph.D. in Chemistry (http://catalog.utep.edu/grad/college-of-science/chemistry/chemistry-phd/)

Earth, Environmental and Resource Sciences

Go to information for this department. (http://catalog.utep.edu/grad/college-of-science/earth-environmental-and-resource-sciences/)

Programs

Master of Science

- M.S. in Environmental Science (http://catalog.utep.edu/grad/college-of-science/earth-environmental-and-resource-sciences/environmental-science-ms/)
- M.S. in Geological Sciences (http://catalog.utep.edu/grad/college-of-science/earth-environmental-and-resource-sciences/geological-sciences-ms/)
- M.S. in Geophysics (http://catalog.utep.edu/grad/college-of-science/earth-environmental-and-resource-sciences/geophysics-ms/)

Doctor of Philosophy

- Ph.D. in Geological Sciences (http://catalog.utep.edu/grad/college-of-science/earth-environmental-and-resource-sciences/geological-sciences-phd/)

Graduate Certificate

- Graduate Certificate in Geospatial Information Science and Technology (http://catalog.utep.edu/grad/college-of-science/earth-environmental-and-resource-sciences/gr-cer-geospatial-information-science-and-technology/)

Mathematical Sciences

Go to information for this department. (http://catalog.utep.edu/grad/college-of-science/mathematical-sciences/)

Programs

Doctor of Philosophy

- Ph.D. in Data Science (http://catalog.utep.edu/grad/college-of-science/mathematical-sciences/data-science-phd/)

Master of Arts in Teaching

- Master of Arts in Teaching Mathematics (http://catalog.utep.edu/grad/college-of-science/mathematical-sciences/teaching-mathematics-master-of-arts/)

Master of Science

- M.S. in Mathematical Sciences (http://catalog.utep.edu/grad/college-of-science/mathematical-sciences/mathematical-sciences-ms/)
- M.S. in Statistics and Data Science (http://catalog.utep.edu/grad/college-of-science/mathematical-sciences/statistics-ms/)

Graduate Certificate

- Graduate Certificate in Applied and Computational Mathematics (http://catalog.utep.edu/grad/college-of-science/mathematical-sciences/graduate-certificate-in-applied-and-computational-mathematics/)
- Graduate Certificate in Applied Statistics (http://catalog.utep.edu/grad/college-of-science/mathematical-sciences/graduate-certificate-in-applied-statistics/)
- Graduate Certificate in Big Data Analytics (http://catalog.utep.edu/grad/college-of-science/mathematical-sciences/graduate-certificate-in-big-data-analysis/)

Physics

Go to information for this department. (http://catalog.utep.edu/grad/college-of-science/physics/)

Programs

Master of Science

- M.S. in Physics (http://catalog.utep.edu/grad/college-of-science/physics/physics-ms/)

Fast Track to Graduate Programs

When a student is within 30 hours of graduating and has met the departmental requirements. This permits students to take graduate courses while an undergraduate that count toward both their undergraduate program and graduate program. The College of Science offers the follow fast track programs:

Biological Sciences

Any M.S. degree in the Biological Sciences department/Any Undergraduate degree implemented by the Biological Sciences Department

Code	Title	Hours
BIOL 5130	Seminar	1
BIOL 5131	Ethical, Soc/Pol Dimensions	1
BIOL 5301	Select Adv Topics Biol Science	3
BIOL 5305	Herpetology	3
BIOL 5307		3
BIOL 5308	Rsrch Funding & Prof Developmt	3
BIOL 5313	Biogeography	3
BIOL 5316	Biosystematics	3
BIOL 5318		3
BIOL 5322	Advances/Evolutionary Theory	3
BIOL 5323		3
BIOL 5324		3
BIOL 5326	Advances Immunological Concept	3
BIOL 5327	Advances in Ecological Theory	3
BIOL 5328	Biostatistics	3
BIOL 5329	Physiology of Bacterial Cell	3
BIOL 5340	Structure/Funct Macromolecules	3
BIOL 5342		3
BIOL 5343		3
BIOL 5344	Molecular Pathogenesis	3
BIOL 5346		3
BIOL 5351	Intro Bio I:Basic Seq. Comp.	3
BIOL 5352	Intro Bio II: Gene Find/Compar	3

BIOL 5354		3
BIOL 5360	Aquatic Ecology	3

M.B.A. - Master of Business Administration (http://catalog.utep.edu/grad/college-of-business-administration/business-administration-deans-office/master-of-business-administration/) / B.S. in Biomedical Sciences

Code	Title	Hours
ACCT 5304	Accounting Analysis	3
BLAW 5306	Business Law and Ethics	3
ECON 5311	Managerial Economics	3
FIN 5311	Financial Management	3
MGMT 5311	Organizational Mgmt Seminar	3
MKT 5311	Marketing Management	3
QMB 5311	Quantitative Methods-Business	3
OSCM 5308	Concepts of Production Mgmt	3

M.B.A. - Master of Business Administration (http://catalog.utep.edu/grad/college-of-business-administration/business-administration-deans-office/master-of-business-administration/) / B.S. in Ecology and Evolutionary Biology

Code	Title	Hours
ACCT 5304	Accounting Analysis	3
BLAW 5306	Business Law and Ethics	3
ECON 5311	Managerial Economics	3
FIN 5311	Financial Management	3
MGMT 5311	Organizational Mgmt Seminar	3
MKT 5311	Marketing Management	3
QMB 5311	Quantitative Methods-Business	3
OSCM 5308	Concepts of Production Mgmt	3

M.B.A. - Master of Business Administration (http://catalog.utep.edu/grad/college-of-business-administration/business-administration-deans-office/master-of-business-administration/) / B.S. in Microbiology

Code	Title	Hours
ACCT 5304	Accounting Analysis	3
BLAW 5306	Business Law and Ethics	3
ECON 5311	Managerial Economics	3
FIN 5311	Financial Management	3
MGMT 5311	Organizational Mgmt Seminar	3
MKT 5311	Marketing Management	3
QMB 5311	Quantitative Methods-Business	3
OSCM 5308	Concepts of Production Mgmt	3

M.S. in Bioinformatics (http://catalog.utep.edu/grad/college-of-science/college-science-deans-office/bioinformatics-ms/) / B.S. in Biomedical Sciences; B.S. in Microbiology

Code	Title	Hours
BINF 5351	Intro. Bioinformatics I	3
BINF 5352	Intro. Bioinformatics II	3
BIOL 5351	Intro Bio I:Basic Seq. Comp.	3
BIOL 5352	Intro Bio II: Gene Find/Compar	3
BIOL 5316	Biosystematics	3
BIOL 5326	Advances Immunological Concept	3
BIOL 5329	Physiology of Bacterial Cell	3
BIOL 5340	Structure/Funct Macromolecules	3
BIOL 5342		
BIOL 5343		
BIOL 5344	Molecular Pathogenesis	3

M.S. in Biological Sciences (http://catalog.utep.edu/grad/college-of-science/biological-sciences/biological-sciences-ms/) / B.S. in Biomedical Sciences

Code	Title	Hours
BIOL 5131	Ethical, Soc/Pol Dimensions	1
BIOL 5301	Select Adv Topics Biol Science	3
BIOL 5305	Herpetology	3
BIOL 5307		
BIOL 5308	Rsrch Funding & Prof Developmt	3
BIOL 5313	Biogeography	3
BIOL 5316	Biosystematics	3
BIOL 5318		
BIOL 5322	Advances/Evolutionary Theory	3
BIOL 5323		
BIOL 5324		
BIOL 5326	Advances Immunological Concept	3
BIOL 5327	Advances in Ecological Theory	3
BIOL 5328	Biostatistics	3
BIOL 5329	Physiology of Bacterial Cell	3
BIOL 5340	Structure/Funct Macromolecules	3
BIOL 5342		
BIOL 5343		
BIOL 5344	Molecular Pathogenesis	3
BIOL 5346		
BIOL 5351	Intro Bio I:Basic Seq. Comp.	3
BIOL 5352	Intro Bio II: Gene Find/Compar	3
BIOL 5354		
BIOL 5360	Aquatic Ecology	3

M.S. in Biomedical Engineering (http://catalog.utep.edu/grad/college-of-engineering/metallurgical-materials-engineering/20biomedical-engineering-ms/)/ B.S. Biomedical Sciences; B.S. in Cellular and Molecular Biochemistry; B.S. in Microbiology

Code	Title	Hours
BIOL 5301	Select Adv Topics Biol Science *	3
BIOL 5308	Rsrch Funding & Prof Developmt	3
BIOL 5311	Neurobiology of Brain Diseases	3
BIOL 5320	Endocrinology	3
BIOL 5330	Cancer Biology	3
BME 5301	BME for Global Health	3
BME 5302	Telemedicine & Imaging Info.	3
BME 5303	Research & Lab Methods	3
BME 5304	BME Device Design & Regulation	3
BME 5310	Biomaterials	3
BME 5313	Tissue Engineering	3
BME 5321	Biomechatronics	3
BME 5353		3
BME 5390	Special Topics in BME	3

* Advisor approval needed

Chemistry

M.S. in Bioinformatics (http://catalog.utep.edu/grad/college-of-science/college-science-deans-office/bioinformatics-ms/) / B.S. in Chemistry

Code	Title	Hours
BINF/CHEM 5341	Anal./Model of Bio Structures	3
CHEM 5321	Advanced Organic Chemistry I	3
CHEM 5322	Advanced Organic Chemistry II	3
CHEM 5329	Contem Topics Organic Chemistr	3
CHEM 5339	Contemp Topics in Biochemistry	3

M.S. in Chemistry (http://catalog.utep.edu/grad/college-of-science/chemistry/chemistry-ms/) / B.S. in Chemistry

Code	Title	Hours
CHEM 5322	Advanced Organic Chemistry II	3
CHEM 5351	Advanced Physical Chemistry I	3

Earth, Environmental and Resource Sciences

M.B.A. - Master of Business Administration (http://catalog.utep.edu/grad/college-of-business-administration/business-administration-deans-office/master-of-business-administration/) / B.S. in Geological Sciences

Code	Title	Hours
ACCT 5304	Accounting Analysis	3
BLAW 5306	Business Law and Ethics	3
ECON 5311	Managerial Economics	3
FIN 5311	Financial Management	3
MGMT 5311	Organizational Mgmt Seminar	3
MKT 5311	Marketing Management	3
QMB 5311	Quantitative Methods-Business	3
OSCM 5308	Concepts of Production Mgmt	3

M.S. in Environmental Sciences (http://catalog.utep.edu/grad/college-of-science/earth-environmental-and-resource-sciences/environmental-science-ms/) / B.S. in Environmental Sciences

Code	Title	Hours
BINF 5341	Anal./Model of Bio Structures	3
BINF 5351	Intro. Bioinformatics I	3
BINF 5352	Intro. Bioinformatics II	3
BINF 5354	Post-Genomic Analysis	3
BIOL 5130	Seminar	1
BIOL 5131	Ethical, Soc/Pol Dimensions	1
BIOL 5301	Select Adv Topics Biol Science	3
BIOL 5305	Herpetology	3
BIOL 5307		3
BIOL 5308	Rsrch Funding & Prof Developmt	3
BIOL 5313	Biogeography	3
BIOL 5316	Biosystematics	3
BIOL 5318		3
BIOL 5322	Advances/Evolutionary Theory	3
BIOL 5323		3
BIOL 5324		3
BIOL 5326	Advances Immunological Concept	3
BIOL 5327	Advances in Ecological Theory	3
BIOL 5328	Biostatistics	3
BIOL 5329	Physiology of Bacterial Cell	3
BIOL 5340	Structure/Funct Macromolecules	3
BIOL 5342		3

BIOL 5343		3
BIOL 5344	Molecular Pathogenesis	3
BIOL 5346		3
BIOL 5351	Intro Bio I:Basic Seq. Comp.	3
BIOL 5352	Intro Bio II: Gene Find/Compar	3
BIOL 5354		3
BIOL 5360	Aquatic Ecology	3
CHEM 5321	Advanced Organic Chemistry I	3
CHEM 5322	Advanced Organic Chemistry II	3
CHEM 5329	Contem Topics Organic Chemistr	3
CHEM 5339	Contemp Topics in Biochemistry	3
CHEM 5341	Anal./Model of Bio Structures	3
CHEM 5351	Advanced Physical Chemistry I	3
GEOL 5101	Graduate Seminar	1
GEOL 5102		1
GEOL 5115	Selected Topics in Geol Scien	1
GEOL 5162	Directed Study in Geology	1
GEOL 5289	Graduate Research in Geol Sci	2
GEOL 5303	Computer Appl in Earth Sci	3
GEOL 5307		3
GEOL 5308	Planetary Geology	3
GEOL 5310	Intro Entrepreneurial Geosci	3
GEOL 5311		3
GEOL 5315	Selected Topics-Geological Sci	3
GEOL 5317	Hydrogeology	3
GEOL 5318	Petroleum Geology	3
GEOL 5320	Environmental Tracers in Water	3
GEOL 5321	Introduction to GIST	3
GEOL 5322	Advanced GIST	3
GEOL 5323	Spat Analysis Earth/Env Sci	3
GEOL 5324	Machine Learning in Geoscience	3
GEOL 5343	Isotope Geology	3
GEOL 5344	Advanced Petrology	3
GEOL 5345		3
GEOL 5348		3
GEOL 5362	Directed Study in Geology	3
GEOL 5363	Sandstone Petrography	3
GEOL 5364	Sedimentary Depositional Envir	3
GEOL 5365	Basin Analysis	3
GEOL 5375	Quantit Techniq Geological Sci	3
GEOL 5376	Low Temperature Geochemistry	3
GEOL 5378	Global Biochemical Cycles	3
GEOL 5379		3
GEOL 5381	Paleoclimatology	3
GEOL 5384		3
GEOL 5387		3
GEOL 5389	Graduate Research in Geol Sci	3
GEOL 5392		3
GEOL 5397	Geol/Mineral Resources Mexico	3
GEOL 5401	Fundamentals of Earth Science	4
GEOL 5402	Fundmtls/Fld Meth in Earth Sci	4
GEOP 5163	Directed Study in Geophysics	1

GEOP 5263	Directed Study in Geophysics	2
GEOP 5306	Atmospheric Processes	3
GEOP 5336	Digital Image Processing	3
GEOP 5352	Geophysical Inverse Theory	3
GEOP 5353	Reflection Seismic Data Proces	3
GEOP 5354	Seismology	3
GEOP 5356	Topics in Geophysics	3
GEOP 5357	Well Logging	3
GEOP 5361	Plate Tectonics	3
GEOP 5362		3
GEOP 5363	Directed Study in Geophysics	3
GEOP 5364		3
GEOP 5460	Geop App-Digital Signal Proces	4
MATH 5310		
MATH 5311	Topics in Applied Mathematics	3
MATH 5314		
MATH 5315		
MATH 5321	Principles of Analysis	3
MATH 5325	Principles of Algebra	3
MATH 5329	Numerical Analysis	3
MATH 5330	Comp Methods of Linear Algebra	3
MATH 5331	Real Variables	3
MATH 5335	Techniques in Optimization	3
MATH 5341	General Topology	3
MATH 5343	Numer Solution Part Diff Equat	3
MATH 5345	Numerical Optimization	3
MATH 5346		
MATH 5351	Complex Variables	3
PHYS 5196	Graduate Research in Physics	1
PHYS 5321	Mechanics	3
PHYS 5325	Mathematical Physics	3
PHYS 5341	Electrodynamics	3
PHYS 5361	Quantum Mechanics	3
PHYS 5365	Advanced Statistical Mechanics	3
PHYS 5371	Solid State Physics	3
PHYS 5393	Special Topics in Physics	3
PHYS 5396	Graduate Research in Physics	3
STAT 5329	Statistical Programming	3
STAT 5354	Post-Genomic Analysis	3
STAT 5428	Intro to Statistical Analysis	4

M.S. in Geological Sciences (http://catalog.utep.edu/grad/college-of-science/earth-environmental-and-resource-sciences/geological-sciences-ms/) / B.S. in Geological Sciences

Code	Title	Hours
GEOL 5101	Graduate Seminar	1
GEOL 5102		1
GEOL 5115	Selected Topics in Geol Scien	1
GEOL 5162	Directed Study in Geology	1
GEOL 5215	Selected Topics in Geol Scienc	2
GEOL 5262	Directed Study in Geology	2
GEOL 5289	Graduate Research in Geol Sci	2
GEOL 5303	Computer Appl in Earth Sci	3

GEOL 5307		3
GEOL 5308	Planetary Geology	3
GEOL 5309	Mineral Resrcs, Econ & Environ	3
GEOL 5310	Intro Entrepreneurial Geosci	3
GEOL 5311		3
GEOL 5315	Selected Topics-Geological Sci	3
GEOL 5317	Hydrogeology	3
GEOL 5318	Petroleum Geology	3
GEOL 5320	Environmental Tracers in Water	3
GEOL 5321	Introduction to GIST	3
GEOL 5322	Advanced GIST	3
GEOL 5323	Spat Analysis Earth/Env Sci	3
GEOL 5324	Machine Learning in Geoscience	3
GEOL 5343	Isotope Geology	3
GEOL 5344	Advanced Petrology	3
GEOL 5345		3
GEOL 5348		3
GEOL 5362	Directed Study in Geology	3
GEOL 5363	Sandstone Petrography	3
GEOL 5364	Sedimentary Depositional Envir	3
GEOL 5365	Basin Analysis	3
GEOL 5375	Quantit Techniq Geological Sci	3
GEOL 5376	Low Temperature Geochemistry	3
GEOL 5378	Global Biochemical Cycles	3
GEOL 5379		3
GEOL 5381	Paleoclimatology	3
GEOL 5384		3
GEOL 5387		3
GEOL 5389	Graduate Research in Geol Sci	3
GEOL 5392		3
GEOL 5397	Geol/Mineral Resources Mexico	3
GEOL 5401	Fundamentals of Earth Science	4
GEOL 5402	Fundmtls/Fld Meth in Earth Sci	4
GEOP 5163	Directed Study in Geophysics	1
GEOP 5263	Directed Study in Geophysics	2
GEOP 5306	Atmospheric Processes	3
GEOP 5335	Intro to Remote Sensing	3
GEOP 5336	Digital Image Processing	3
GEOP 5352	Geophysical Inverse Theory	3
GEOP 5353	Reflection Seismic Data Proces	3
GEOP 5354	Seismology	3
GEOP 5356	Topics in Geophysics	3
GEOP 5357	Well Logging	3
GEOP 5361	Plate Tectonics	3
GEOP 5362		3
GEOP 5363	Directed Study in Geophysics	3
GEOP 5364		3
GEOP 5460	Geop App-Digital Signal Proces	4

Mathematics

M.B.A. - Master of Business Administration (http://catalog.utep.edu/grad/college-of-business-administration/business-administration-deans-office/master-of-business-administration/) / B.S. in Mathematical Sciences

Code	Title	Hours
ACCT 5304	Accounting Analysis	3
BLAW 5306	Business Law and Ethics	3
ECON 5311	Managerial Economics	3
FIN 5311	Financial Management	3
MGMT 5311	Organizational Mgmt Seminar	3
MKT 5311	Marketing Management	3
QMB 5311	Quantitative Methods-Business	3
OSCM 5308	Concepts of Production Mgmt	3

M.B.A. - Master of Business Administration (http://catalog.utep.edu/grad/college-of-business-administration/business-administration-deans-office/master-of-business-administration/) / B.S. in Mathematical Sciences (Actuarial Concentration)

Code	Title	Hours
ACCT 5304	Accounting Analysis	3
BLAW 5306	Business Law and Ethics	3
ECON 5311	Managerial Economics	3
FIN 5311	Financial Management	3
MGMT 5311	Organizational Mgmt Seminar	3
MKT 5311	Marketing Management	3
QMB 5311	Quantitative Methods-Business	3
OSCM 5308	Concepts of Production Mgmt	3

M.B.A. - Master of Business Administration (http://catalog.utep.edu/grad/college-of-business-administration/business-administration-deans-office/master-of-business-administration/) / B.S. in Mathematical Sciences (Applied Concentration)

Code	Title	Hours
ACCT 5304	Accounting Analysis	3
BLAW 5306	Business Law and Ethics	3
ECON 5311	Managerial Economics	3
FIN 5311	Financial Management	3
MGMT 5311	Organizational Mgmt Seminar	3
MKT 5311	Marketing Management	3
QMB 5311	Quantitative Methods-Business	3
OSCM 5308	Concepts of Production Mgmt	3

M.B.A. - Master of Business Administration (http://catalog.utep.edu/grad/college-of-business-administration/business-administration-deans-office/master-of-business-administration/) / B.S. in Mathematical Sciences (Statistics Concentration)

Code	Title	Hours
ACCT 5304	Accounting Analysis	3
BLAW 5306	Business Law and Ethics	3
ECON 5311	Managerial Economics	3
FIN 5311	Financial Management	3
MGMT 5311	Organizational Mgmt Seminar	3
MKT 5311	Marketing Management	3
QMB 5311	Quantitative Methods-Business	3
OSCM 5308	Concepts of Production Mgmt	3

M.S. in Bioinformatics (http://catalog.utep.edu/grad/college-of-science/college-science-deans-office/bioinformatics-ms/) / B.S. in Mathematics

Code	Title	Hours
BINF/STAT 5354	Post-Genomic Analysis	3
MATH 5330	Comp Methods of Linear Algebra	3
MATH 5335	Techniques in Optimization	3
STAT 5329	Statistical Programming	3
STAT 5428	Intro to Statistical Analysis	4

M.S. in Mathematical Sciences (http://catalog.utep.edu/grad/college-of-science/mathematical-sciences/mathematical-sciences-ms/) / B.S. in Mathematical Sciences

Code	Title	Hours
MATH 5310		
MATH 5311	Topics in Applied Mathematics	3
MATH 5314		
MATH 5315		
MATH 5321	Principles of Analysis	3
MATH 5325	Principles of Algebra	3
MATH 5329	Numerical Analysis	3
MATH 5330	Comp Methods of Linear Algebra	3
MATH 5331	Real Variables	3
MATH 5335	Techniques in Optimization	3
MATH 5341	General Topology	3
MATH 5343	Numer Solution Part Diff Equat	3
MATH 5345	Numerical Optimization	3
MATH 5346		
MATH 5351	Complex Variables	3
MATH 5370	Special Topics	3

M.S. in Statistics (http://catalog.utep.edu/grad/college-of-science/mathematical-sciences/statistics-ms/) / B.S. in Mathematical Sciences

Code	Title	Hours
MATH 5321	Principles of Analysis	3
STAT 5329	Statistical Programming	3
STAT 5428	Intro to Statistical Analysis	4

Physics

M.B.A. - Master of Business Administration (http://catalog.utep.edu/grad/college-of-business-administration/business-administration-deans-office/master-of-business-administration/) / B.S. in Physics - Applied Physics Concentration

Code	Title	Hours
ACCT 5304	Accounting Analysis	3
BLAW 5306	Business Law and Ethics	3
ECON 5311	Managerial Economics	3
FIN 5311	Financial Management	3
MGMT 5311	Organizational Mgmt Seminar	3
MKT 5311	Marketing Management	3
QMB 5311	Quantitative Methods-Business	3
OSCM 5308	Concepts of Production Mgmt	3

M.S. in Physics (http://catalog.utep.edu/grad/college-of-science/physics/physics-ms/) / B.S. in Physics

Code	Title	Hours
PHYS 5196	Graduate Research in Physics	1
PHYS 5321	Mechanics	3
PHYS 5325	Mathematical Physics	3

PHYS 5341	Electrodynamics	3
PHYS 5361	Quantum Mechanics	3
PHYS 5365	Advanced Statistical Mechanics	3
PHYS 5371	Solid State Physics	3
PHYS 5396	Graduate Research in Physics	3

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