

## MEMORANDUM

TO: Deans and Chairs  
 FROM: Becky Bitter, Sr. Assistant Registrar  
 DATE: August 31, 2016  
 SUBJECT: Minor Change Bulletin No. 1

The courses listed below reflect the minor curricular changes approved by the catalog editor since approval of the last Minor Change Bulletin. The column to the far right indicates the date each change becomes effective.

Subject	Course Number	New Revise Drop	Current	Proposed	Effective Date
AFS	445 / 545	Revise	<b>Field Analysis of Sustainable Food Systems</b> 3 Experiential course visiting farms, food processing and marketing facilities to develop understanding of issues and relationships of sustainable food systems. ( <del>Crosslisted course offered as AFS 445, CRS 445</del> ). Offered at 400 and 500 level. Typically offered Spring.	<b>Field Analysis of Sustainable Food Systems</b> 3 Experiential course visiting farms, food processing and marketing <u>sites</u> to develop understanding of issues <u>in food systems sustainability</u> . <u>Field trip required. Credit not granted for both AFS 445 and AFS 545.</u> Typically offered Spring.	1-17
BIO ENG	322	Revise	<b>[M] Mechanics of Biological Materials Lab</b> 1 (0-3) Course Prerequisite: BIO ENG 321 or concurrent enrollment; and <del>MATH</del> 370 or concurrent enrollment, or <del>MATH</del> 423 or concurrent enrollment; certified major in Bioengineering. Laboratory experiments focused on mechanics of biological and engineering materials; experimental design and statistical analysis of data; scientific writing. Typically offered Fall.	<b>[M] Mechanics of Biological Materials Lab</b> 1 (0-3) Course Prerequisite: BIO ENG 321 or concurrent enrollment; and <u>STAT</u> 370 or concurrent enrollment, or <u>STAT</u> 423 or concurrent enrollment; certified major in Bioengineering. Laboratory experiments focused on mechanics of biological and engineering materials; experimental design and statistical analysis of data; scientific writing. Typically offered Fall.	8-16
CE	402 / 502	Revise	<b>Applied Meteorology</b> 3 Course Prerequisite: MATH 172 or 182; PHYSICS 201. Atmospheric physical behavior across spatial scales linking concepts of meteorological phenomena to engineering design principles. Credit not granted for both CE 402 and CE 502. <del>Offered at 400</del>	<b>Applied Meteorology</b> 3 Course Prerequisite: MATH 172 or 182; PHYSICS 201. Atmospheric physical behavior across spatial scales linking concepts of meteorological phenomena to engineering design principles. Credit not granted for both CE 402 and CE 502. Typically	8-16

			<del>and 500 level. Typically offered Fall.</del>	offered Fall. <u>Cooperative: Open to UI degree-seeking students.</u>	
CE	403 / 503	Revise	<b>Air Quality Management 3</b> Air pollution from the perspective of an environmental manager; regulatory framework, management strategies, monitoring, modeling tools, and control technologies. <del>Offered at 400 and 500 level. Typically offered Spring.</del>	<b>Air Quality Management 3</b> Air pollution from the perspective of an environmental manager; regulatory framework, management strategies, monitoring, modeling tools, and control technologies. <u>Credit not granted for both CE 403 and CE 503. Typically offered Spring. Cooperative: Open to UI degree-seeking students.</u>	8-16
CE	405 / 505	Revise	<b>Sustainability: Green Engineering 3</b> Course Prerequisite: Senior standing; certified major in Architecture, Construction Management, Civil Engr, Electrical Engr, Bioengineering, Chemical Engr, Mechanical Engr, Computer Science, Materials Science Engr, or Computer Engr. Focus on the LEED green building rating system with topics on sustainable site selection, alternative transportation, heat island effect, light pollution, water and energy efficiency/use, regional and global climate/air issues, use/reuse of many material and resources, and indoor environmental quality. <del>Offered at 400 and 500 level. Typically offered Fall and Spring.</del>	<b>Sustainability: Green Engineering 3</b> Course Prerequisite: Senior standing; certified major in Architecture, Construction Management, Civil Engr, Electrical Engr, Bioengineering, Chemical Engr, Mechanical Engr, Computer Science, Materials Science Engr, or Computer Engr. Focus on the LEED green building rating system with topics on sustainable site selection, alternative transportation, heat island effect, light pollution, water and energy efficiency/use, regional and global climate/air issues, use/reuse of many material and resources, and indoor environmental quality. <u>Credit not granted for both CE 405 and CE 505. Typically offered Fall and Spring. Cooperative: Open to UI degree-seeking students.</u>	8-16
CE	415 / 515	Revise	<b>Environmental Measurements 3</b> (1-6) Course Prerequisite: CE 341; MATH 360 or concurrent enrollment or <del>MATH 370</del> or concurrent enrollment; certified major in Civil Engineering. Theory and laboratory measurement techniques used in analyzing environmental quality parameters. Credit not granted for both CE 415 and CE 515. Required preparation must include CE 341. <del>Offered at 400 and 500</del>	<b>Environmental Measurements 3</b> (1-6) Course Prerequisite: CE 341; STAT 360 or concurrent enrollment or <u>STAT 370</u> or concurrent enrollment; certified major in Civil Engineering. Theory and laboratory measurement techniques used in analyzing environmental quality parameters. Credit not granted for both CE 415 and CE 515. Required preparation must include CE 341. Typically offered Fall.	8-16

			level. Typically offered Fall.	<u>Cooperative: Open to UI degree-seeking students.</u>	
CE	419 / 519	Revise	<b>Hazardous Waste Treatment 3</b> Course Prerequisite: CE 418 with a C or better; certified major in Civil Engineering. Principles of operation and application of processes in design of technologies used in hazardous waste treatment and remediation. Credit not granted for both CE 419 and CE 519. <del>Offered at 400 and 500 level.</del> Typically offered Spring.	<b>Hazardous Waste Treatment 3</b> Course Prerequisite: CE 418 with a C or better; certified major in Civil Engineering. Principles of operation and application of processes in design of technologies used in hazardous waste treatment and remediation. Credit not granted for both CE 419 and CE 519. Typically offered Spring. <u>Cooperative: Open to UI degree-seeking students.</u>	8-16
CE	431	Revise	<b>Structural Steel Design 3</b> Course Prerequisite: CE 330 with a C or better; CE 414; certified major in Civil Engineering. Design of steel structures by load and resistance factor design (LRFD); behavior and design of beams, columns, tension members and connections. Typically offered Spring.	<b>Structural Steel Design 3</b> Course Prerequisite: CE 330 with a C or better; CE 414 <u>or concurrent enrollment</u> ; certified major in Civil Engineering. Design of steel structures by load and resistance factor design (LRFD); behavior and design of beams, columns, tension members and connections. Typically offered Spring.	1-17
CE	433	Revise	<b>Reinforced Concrete Design 3</b> Course Prerequisite: CE 330 with a C or better; CE 414; certified major in Civil Engineering. Behavior, analysis, and design of reinforced concrete structures; flexure; shear; bond; serviceability requirements; design of beams, columns, and slabs. Typically offered Fall and Summer.	<b>Reinforced Concrete Design 3</b> Course Prerequisite: CE 330 with a C or better; CE 414 <u>or concurrent enrollment</u> ; certified major in Civil Engineering. Behavior, analysis, and design of reinforced concrete structures; flexure; shear; bond; serviceability requirements; design of beams, columns, and slabs. Typically offered Fall and Summer.	1-17
CE	436	Revise	<b>Design of Timber Structures 3</b> Course Prerequisite: CE 330 with a C or better; CE 414; certified major in Civil Engineering. Engineering properties of wood materials; analysis and design of members, connections, trusses, shearwalls and structural diaphragms; durability and moisture effects on engineered wood products. Typically offered Fall. Cooperative: Open to UI degree-seeking students.	<b>Design of Timber Structures 3</b> Course Prerequisite: CE 330 with a C or better; CE 414 <u>or concurrent enrollment</u> ; certified major in Civil Engineering. Engineering properties of wood materials; analysis and design of members, connections, trusses, shearwalls and structural diaphragms; durability and moisture effects on engineered wood products. Typically offered Fall. Cooperative: Open to UI degree-seeking students.	1-17

CE	451 / 551	Revise	<b>Open Channel Flow 3</b> Course Prerequisite: CE 351 with a C or better; certified major in Civil Engineering. Steady, non-uniform flow; controls and transitions in fixed-bed channels. Credit not granted for both CE 451 and CE 551. <del>Offered at 400 and 500 level.</del> Typically offered Fall.	<b>Open Channel Flow 3</b> Course Prerequisite: CE 351 with a C or better; certified major in Civil Engineering. Steady, non-uniform flow; controls and transitions in fixed-bed channels. Credit not granted for both CE 451 and CE 551. Typically offered Fall. <u>Cooperative: Open to UI degree-seeking students.</u>	8-16
CE	460 / 560	Revise	<b>Advanced Hydrology 3</b> Components of the hydrologic cycle; conceptual models; watershed characteristics; probability/statistics in data analysis; hydrographs; computer models; and design applications. Credit not granted for both CE 460 and CE 560. <del>Offered at 400 and 500 level.</del>	<b>Advanced Hydrology 3</b> Components of the hydrologic cycle; conceptual models; watershed characteristics; probability/statistics in data analysis; hydrographs; computer models; and design applications. Credit not granted for both CE 460 and CE 560. <u>Cooperative: Open to UI degree-seeking students.</u>	8-16
CE	504	Revise	<b>Sustainability Engineering I 3</b> Green building and sustainable development topics including low impact development (LID) stormwater design and environmental life cycle assessment (LCA).	<b>Sustainability Engineering I 3</b> Green building and sustainable development topics including low impact development (LID) stormwater design and environmental life cycle assessment (LCA). <u>Cooperative: Open to UI degree-seeking students.</u>	8-16
CE	507	Revise	<b>Sustainability: Life Cycle Assessment 3</b> Principles of life cycle assessment (LCA), environmental impacts categories, LCA system models, and methods for life cycle inventory. Typically offered Fall.	<b>Sustainability: Life Cycle Assessment 3</b> Principles of life cycle assessment (LCA), environmental impacts categories, LCA system models, and methods for life cycle inventory. Typically offered Fall. <u>Cooperative: Open to UI degree-seeking students.</u>	8-16
CE	509	Revise	<b>Numerical Modeling of Geomaterials 3</b> Modeling of the response of geomaterials to changes in imposed stresses or strains under both static and dynamic conditions.	<b>Numerical Modeling of Geomaterials 3</b> Modeling of the response of geomaterials to changes in imposed stresses or strains under both static and dynamic conditions. <u>Cooperative: Open to UI degree-seeking students.</u>	8-16
CE	510	Revise	<b>Advanced Geomaterial Characterization 3</b> Advanced mechanics of geomaterials;	<b>Advanced Geomaterial Characterization 3</b> Advanced mechanics of geomaterials;	8-16

			compressibility, concept of stress and strain; shear strength, stress/strain and time-dependent behavior; dynamic properties.	compressibility, concept of stress and strain; shear strength, stress/strain and time-dependent behavior; dynamic properties. <u>Cooperative: Open to UI degree-seeking students.</u>	
CE	535	Revise	<b>Advanced Finite Elements 3</b> Plate and shell analysis; nonlinear solution methods for finite strain/rotation and nonlinear materials.	<b>Advanced Finite Elements 3</b> Plate and shell analysis; nonlinear solution methods for finite strain/rotation and nonlinear materials. <u>Cooperative: Open to UI degree-seeking students.</u>	8-16
CE	537	Revise	<b>Advanced Topics in Structural Engineering 3</b> May be repeated for credit; cumulative maximum 9 hours. Elastic stability, plates and shells, other relevant topics.	<b>Advanced Topics in Structural Engineering 3</b> May be repeated for credit; cumulative maximum 9 hours. Elastic stability, plates and shells, other relevant topics. <u>Cooperative: Open to UI degree-seeking students.</u>	8-16
CE	540	Revise	<b>Instrumental Analysis of Environmental Contaminants 3</b> (1-6) Course Prerequisite: CE 515. Theory and methods of analysis of water and water suspensions for contaminants using electrometric, spectrophotometric, and chromatographic techniques.	<b>Instrumental Analysis of Environmental Contaminants 3</b> (1-6) Course Prerequisite: CE 515. Theory and methods of analysis of water and water suspensions for contaminants using electrometric, spectrophotometric, and chromatographic techniques. <u>Cooperative: Open to UI degree-seeking students.</u>	8-16
CE	543	Revise	<b>Advanced Topics in Environmental Engineering Practice V 1-4</b> May be repeated for credit; cumulative maximum 9 hours. Analysis and evaluation of air/water/soil pollution problems, new measurement methods, hazardous waste treatment, global climate change, and water/wastewater treatments.	<b>Advanced Topics in Environmental Engineering Practice V 1-4</b> May be repeated for credit; cumulative maximum 9 hours. Analysis and evaluation of air/water/soil pollution problems, new measurement methods, hazardous waste treatment, global climate change, and water/wastewater treatments. <u>Cooperative: Open to UI degree-seeking students.</u>	8-16
CE	552	Revise	<b>Advanced Topics in Hydraulic Engineering V 1-3</b> May be repeated for credit; cumulative maximum 9 hours. Cavitation, air entrainment, hydraulic machinery, similitude, mixing in rivers and estuaries, hydraulic design. Required preparation must include	<b>Advanced Topics in Hydraulic Engineering V 1-3</b> May be repeated for credit; cumulative maximum 9 hours. Cavitation, air entrainment, hydraulic machinery, similitude, mixing in rivers and estuaries, hydraulic design. Required preparation must include	8-16

			CE 351.	CE 351. <u>Cooperative: Open to UI degree-seeking students.</u>	
CE	555	Revise	<b>Natural Treatment Systems 3</b> Principles and design procedures of natural systems for wastewater treatment for agricultural and non-agricultural applications. (Crosslisted course offered as CE 555, BSYSE 555).	<b>Natural Treatment Systems 3</b> Principles and design procedures of natural systems for wastewater treatment for agricultural and non-agricultural applications. (Crosslisted course offered as CE 555, BSYSE 555). <u>Cooperative: Open to UI degree-seeking students.</u>	8-16
CE	584	Revise	<b>Environmental Microbiology 3</b> Provides a fundamental understanding of microbiology to engineering and environmental science students; cell structure and metabolism; microbial ecology and diversity.	<b>Environmental Microbiology 3</b> Provides a fundamental understanding of microbiology to engineering and environmental science students; cell structure and metabolism; microbial ecology and diversity. <u>Cooperative: Open to UI degree-seeking students.</u>	8-16
CE	585	Revise	<b>Aquatic System Restoration 3</b> Study of natural, damaged and constructed ecosystems with emphasis on water quality protection and restoration of lakes, rivers, streams and wetlands. (Crosslisted course offered as CE 585, BSYSE 554, ENVR SCI 585). Required preparation must include CHEM 345; MBIOS 101. <del>Required preparation must include CHEM 345; MBIOS 101.</del>	<b>Aquatic System Restoration 3</b> Study of natural, damaged and constructed ecosystems with emphasis on water quality protection and restoration of lakes, rivers, streams and wetlands. (Crosslisted course offered as CE 585, BSYSE 554, ENVR SCI 585). Required preparation must include CHEM 345; MBIOS 101. <u>Cooperative: Open to UI degree-seeking students.</u>	8-16
CE	586	Revise	<b>Bioremediation of Hazardous Waste 3</b> Applications of bioremediations to in situ subsurface treatment of hazardous waste; subsurface microbial degradation as related to microbial ecology.	<b>Bioremediation of Hazardous Waste 3</b> Applications of bioremediations to in situ subsurface treatment of hazardous waste; subsurface microbial degradation as related to microbial ecology. <u>Cooperative: Open to UI degree-seeking students.</u>	8-16
CE	588	Revise	<b>Atmospheric Turbulence and Air Pollution Modeling 3</b> Physical aspects of atmospheric turbulence, theoretical developments in atmospheric diffusion, and applied computer modeling with regulatory and research models.	<b>Atmospheric Turbulence and Air Pollution Modeling 3</b> Physical aspects of atmospheric turbulence, theoretical developments in atmospheric diffusion, and applied computer modeling with regulatory and research models. <u>Cooperative: Open to UI degree-seeking students.</u>	8-16

CE	589	Revise	<b>Atmospheric Chemical and Physical Processes</b> 3 Processes of removal of pollutants from the atmosphere; radical chain reactions, particle formation, model calculations.	<b>Atmospheric Chemical and Physical Processes</b> 3 Processes of removal of pollutants from the atmosphere; radical chain reactions, particle formation, model calculations. <u>Cooperative: Open to UI degree-seeking students.</u>	8-16
CE	590	Revise	<b>Spectroscopy and Radiative Transfer of the Atmosphere</b> 3 Concepts of radiative transfer and molecular spectra in the troposphere and stratosphere with applications to trace gas measurements.	<b>Spectroscopy and Radiative Transfer of the Atmosphere</b> 3 Concepts of radiative transfer and molecular spectra in the troposphere and stratosphere with applications to trace gas measurements. <u>Cooperative: Open to UI degree-seeking students.</u>	8-16
CE	591	Revise	<b>Aerosol Dynamics and Chemistry</b> 3 Chemical and physical properties of atmospheric aerosols; sources, sinks, and transformation processes.	<b>Aerosol Dynamics and Chemistry</b> 3 Chemical and physical properties of atmospheric aerosols; sources, sinks, and transformation processes. <u>Cooperative: Open to UI degree-seeking students.</u>	8-16
CPT S	111	Revise	<b>Introduction to Algorithmic Problem Solving</b> 3 (2-3) Elementary algorithmic problem solving, computational models, sequential, iterative and conditional operations, parameterized procedures, array and list structures and basic efficiency analysis. Typically offered Fall and Spring.	<b>[QUAN] Introduction to Algorithmic Problem Solving</b> 3 (2-3) <u>Course Prerequisite: MATH 101 with a C or better, MATH 103 with a C or better, or higher level MATH course with a C or better, or a minimum ALEKS math placement score of 45%.</u> Elementary algorithmic problem solving, computational models, sequential, iterative and conditional operations, parameterized procedures, array and list structures and basic efficiency analysis. Typically offered Fall and Spring.	5-16
CPT S	515	Revise	<b>Advanced Algorithms</b> 3 Advanced algorithms and data structures, design and analysis, intractability.	<b>Advanced Algorithms</b> 3 Advanced algorithms and data structures, design and analysis, intractability.	8-16
CS	166	Revise	<b>Foundations of Computational Theory</b> 3 Course Prerequisite: CS 122 with a C or better or concurrent enrollment; MATH 106 with a C or better, or Math 107 with a C or better, or Math	<b>Discrete Mathematics for Computing</b> 3 Course Prerequisite: CS 122 with a C or better or concurrent enrollment; MATH 106 with a C or better, or Math 107 with a C or better, or	1-17

			171 with a C or better, or ALEKS math placement score of 80%. Introduction to the theoretical foundations of computing. Combinatorics, relations, trees, graphs, Boolean algebra, proof methods, and discrete probability as applied to computer science.	Math 171 with a C or better, or ALEKS math placement score of 80%. Introduction to the theoretical foundations of computing. Combinatorics, relations, trees, graphs, Boolean algebra, proof methods, and discrete probability as applied to computer science.	
<b>DTC / ENGLISH</b>	<b>356</b>	<b>Revise</b>	<del><b>Electronic Research and the Rhetoric of Information</b></del> 3 Course Prerequisite: DTC 101. Social and cultural role of information; research with electronic sources; production, validation, storage, retrieval, evaluation, use, impact of electronic information. (Crosslisted course offered as DTC 356, ENGLISH 356).	<b>Information Structures</b> 3 Course Prerequisite: DTC 101. Social and cultural role of information; research with electronic sources; production, validation, storage, retrieval, evaluation, use, impact of electronic information. (Crosslisted course offered as DTC 356, ENGLISH 356).	<b>8-16</b>
<b>E M</b>	<b>490 / 590</b>	<b>Revise</b>	<del><b>Design for Product and Service Realization</b></del> 3 Course Prerequisite: Junior standing. Techniques and tools to optimize cost, quality, time to market, and to improve comprehensive product design, manufacturability and service components. Credit not granted for both E M 490 and E M 590. Offered at 400 and 500 level.	<b>Leading Design and Innovation</b> 3 Course Prerequisite: Junior standing. Techniques and tools to optimize cost, quality, time to market, and to improve comprehensive product design, manufacturability and service components. Credit not granted for both E M 490 and E M 590.	<b>8-17</b>
<b>ENGLISH</b>	<b>324</b>	<b>Revise</b>	<del><b>[M] Rhetoric and Composition for Teaching</b></del> 3 Course Prerequisite: Junior standing. Rhetoric, composition grammar, and assessment for secondary teaching. Typically offered Fall and Spring.	<b>[M] Rhetoric and Composition for Teaching</b> 3 Rhetoric, composition grammar, and assessment for secondary teaching. Typically offered Fall and Spring.	<b>8-16</b>
<b>FIN</b>	<b>350</b>	<b>Revise</b>	<del><b>Risk and Insurance</b></del> 3 Course Prerequisite: B LAW 210; ECONS 102; certified major or minor in the College of Business. Concepts in risk management and insurance; personal risks and treatment methods; legal principles in risk and insurance; overview of the insurance industry, company operations, and insurance regulation. Typically offered Fall and Spring.	<b>Risk and Insurance</b> 3 Course Prerequisite: B LAW 210; ECONS 102; certified major or minor in the College of Business <u>or in Data Analytics</u> . Concepts in risk management and insurance; personal risks and treatment methods; legal principles in risk and insurance; overview of the insurance industry, company operations, and insurance regulation. Typically offered Fall	<b>8-16</b>



				and Spring.	
<b>GEOLOGY</b>	<b>340</b>	<b>Revise</b>	<del>[M] <b>Geologic Structures</b> 4 (3-3)</del> Course Prerequisite: GEOLOGY 210; MATH 107. Basic understanding and techniques of working in deformed rocks in mountain belts. Field trip required. Typically offered Spring.	<b>[M] <u>Structural Geology</u> 4 (3-3)</b> Course Prerequisite: GEOLOGY 210; MATH 107. Basic understanding and techniques of working in deformed rocks in mountain belts. Field trip required. Typically offered Spring.	<b>1-17</b>
<b>HBM</b>	<b>381</b>	<b>Revise</b>	<b>[M] <u>Hospitality Leadership and Organizational Behavior</u> 3</b> Course Prerequisite: <del>ACCTG 230</del> ; certified major in the College of Business, or certified minor in Hospitality Business Management. Focusing on interpersonal skills and group dynamics; covers key hospitality leadership and management issues. Typically offered Fall and Spring. Cooperative: Open to UI degree-seeking students.	<b>[M] <u>Hospitality Leadership and Organizational Behavior</u> 3</b> Course Prerequisite: <u>Certified</u> major in the College of Business, or certified minor in Hospitality Business Management. Focusing on interpersonal skills and group dynamics; covers key hospitality leadership and management issues. Typically offered Fall and Spring. Cooperative: Open to UI degree-seeking students.	<b>1-17</b>
<b>HBM</b>	<b>401</b>	<b>Revise</b>	<b>Industry Experience 1</b> Course Prerequisite: <del>ACCTG 230</del> ; certified major in the College of Business, or certified minor in Hospitality Business Management. Final employment preparation to include mock traditional/panel interviews, resume/cover letter critiques, etiquette dinner, and networking. Typically offered Fall and Spring.	<b>(320) <u>Industry Experience</u> 1</b> Course Prerequisite: <u>Certified</u> major in the College of Business, or certified minor in Hospitality Business Management. Final employment preparation to include mock traditional/panel interviews, resume/cover letter critiques, etiquette dinner, and networking. Typically offered Fall and Spring.	<b>1-17</b>
<b>HISTORY</b>	<b>483</b>	<b>Revise</b>	<b>[CAPS] [T] <u>Medicine, Science, and Technology in World History</u> 3</b> Course Prerequisite: <del>HISTORY 105 or 305</del> ; <del>senior standing</del> . The emergence of modern technological society with emphasis on scientific development and exchange among world civilizations across history.	<b>[CAPS] [T] <u>Medicine, Science, and Technology in World History</u> 3</b> Course Prerequisite: <u>Junior standing</u> . The emergence of modern technological society with emphasis on scientific development and exchange among world civilizations across history.	<b>8-16</b>
<b>KINES</b>	<b>270</b>	<b>Revise</b>	<b>Examination for Lower Extremity in Athletic Training 3</b> Course Prerequisite: KINES 262 with a C or better; KINES 263 with a C or better; <del>KINES 266 with a C or better</del> ; KINES 267 with a C or better; instructor	<b>Examination for Lower Extremity in Athletic Training 3</b> Course Prerequisite: KINES 262 with a C or better; KINES 263 with a C or better; KINES 267 with a C or better; instructor permission. In-depth study of the	<b>8-17</b>

			permission. In-depth study of the lower extremities including physical examination, injury recognition, treatment, taping, bracing and rehabilitation. Typically offered Fall.	lower extremities including physical examination, injury recognition, treatment, taping, bracing and rehabilitation. Typically offered Fall.	
<b>KINES</b>	<b>291</b>	<b>Revise</b>	<b>Athletic Training Clinical Internship I 2</b> May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: KINES 262 with a C or better; KINES 263 with a C or better; <del>KINES 266 with a C or better;</del> KINES 267 with a C or better; instructor permission. Beginning techniques in management of sport injury/illness under supervision of a certified athletic trainer. Typically offered Fall and Spring.	<b>Athletic Training Clinical Internship I 2</b> May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: KINES 262 with a C or better; KINES 263 with a C or better; KINES 267 with a C or better; instructor permission. Beginning techniques in management of sport injury/illness under supervision of a certified athletic trainer. Typically offered Fall and Spring.	<b>8-17</b>
<b>ME</b>	<b>304</b>	<b>Revise</b>	<b>Heat Transfer 3</b> Course Prerequisite: ME 301; ME 303; certified major in Mechanical Engineering, <del>Materials Science Engineering, Civil Engineering, or Electrical Engineering.</del> Conduction, radiation, and convection heat transfer; analytical, numerical, experimental results for solids, liquids, and gases; heat exchanger design. Typically offered Fall and Spring. Cooperative: Open to UI degree-seeking students.	<b>Heat Transfer 3</b> Course Prerequisite: ME 301; ME 303; certified major in Mechanical Engineering. Conduction, radiation, and convection heat transfer; analytical, numerical, experimental results for solids, liquids, and gases; heat exchanger design. Typically offered Fall and Spring. Cooperative: Open to UI degree-seeking students.	<b>8-16</b>
<b>ME</b>	<b>306</b>	<b>Revise</b>	<b>Thermal and Fluids Laboratory 2 (1-3)</b> Course Prerequisite: ME 301; ME 303; MATH 370 or concurrent enrollment; certified major in Mechanical Engineering; <del>Materials Science Engineering, Civil Engineering, or Electrical Engineering.</del> Instrumentation, data acquisition, and theory verification in the thermal and fluid sciences. Typically offered Fall and Spring.	<b>Thermal and Fluids Laboratory 2 (1-3)</b> Course Prerequisite: ME 301; ME 303; STAT 370 or concurrent enrollment; certified major in Mechanical Engineering. Instrumentation, data acquisition, and theory verification in the thermal and fluid sciences. Typically offered Fall and Spring.	<b>8-16</b>
<b>ME</b>	<b>310</b>	<b>Revise</b>	<b>Manufacturing Processes 2</b> Course Prerequisite: MSE 201; certified major in Mechanical Engineering, <del>Materials Science</del>	<b>Manufacturing Processes 2</b> Course Prerequisite: MSE 201; certified major in Mechanical Engineering. Manufacturing	<b>8-16</b>

			<del>Engineering, Civil Engineering, or Electrical Engineering.</del> Manufacturing processes, material fabrication, and nontraditional processing. Typically offered Fall, Spring, and Summer.	processes, material fabrication, and nontraditional processing. Typically offered Fall, Spring, and Summer.	
ME	311	Revise	<b>Manufacturing Processes Laboratory 1</b> (0-3) Course Prerequisite: ME 310 or concurrent enrollment; certified major in Mechanical Engineering; <del>Materials Science Engineering, Civil Engineering, or Electrical Engineering.</del> Manufacturing processes laboratory in machining, welding, forming; manufacturing project. Typically offered Fall, Spring, and Summer.	<b>Manufacturing Processes Laboratory 1</b> (0-3) Course Prerequisite: ME 310 or concurrent enrollment; certified major in Mechanical Engineering. Manufacturing processes laboratory in machining, welding, forming; manufacturing project. Typically offered Fall, Spring, and Summer.	<b>8-16</b>
ME	316	Revise	<b>Mechanical Component Analysis and Design 3</b> Course Prerequisite: CE 215; ME 216; certified major in Mechanical Engineering; <del>Materials Science Engineering, Civil Engineering, or Electrical Engineering.</del> Optimal design of machinery; analysis for prevention of machine elements failure. Typically offered Fall and Spring.	<b>Mechanical Component Analysis and Design 3</b> Course Prerequisite: CE 215; ME 216 or concurrent enrollment; ME 220 or concurrent enrollment; certified major in Mechanical Engineering. Optimal design of machinery; analysis for prevention of machine elements failure. Typically offered Fall and Spring.	<b>8-16</b>
ME	348	Revise	<b>Dynamics Systems 3</b> Course Prerequisite: ME 212; ME 313; certified major in Mechanical Engineering; <del>Materials Science Engineering, Civil Engineering, or Electrical Engineering.</del> Fundamentals of vibration analysis, control systems, system modeling and dynamics analysis. Typically offered Fall and Spring.	<b>Dynamics Systems 3</b> Course Prerequisite: ME 212; ME 313; certified major in Mechanical Engineering. Fundamentals of vibration analysis, control systems, system modeling and dynamics analysis. Typically offered Fall and Spring.	<b>8-16</b>
ME	401	Revise	<b>Mechatronics 3</b> (2-3) Course Prerequisite: E E 304; ME 348. Integration of mechanical and microprocessor-based systems; control theory implemented with data acquisition systems; sensors; actuators, signal conditioning, programmable logic controllers. Typically offered Fall and Spring.	<b>Mechatronics 3</b> (2-3) Course Prerequisite: E E 304; ME 348; <u>certified major in Mechanical Engineering.</u> Integration of mechanical and microprocessor-based systems; control theory implemented with data acquisition systems; sensors; actuators, signal conditioning, programmable logic controllers. Typically offered Fall	<b>8-16</b>

				and Spring.	
ME	405	Revise	<b>Thermal Systems Design 3</b> Course Prerequisite: ME 304; certified major in Mechanical Engineering, <del>Materials Science Engineering, Civil Engineering, or Electrical Engineering</del> . Design and analysis of thermofluid systems using principles of thermodynamics, fluid mechanics and heat transfer. Typically offered Fall and Spring.	<b>Thermal Systems Design 3</b> Course Prerequisite: ME 304; certified major in Mechanical Engineering. Design and analysis of thermofluid systems using principles of thermodynamics, fluid mechanics and heat transfer. Typically offered Fall and Spring.	8-16
ME	406	Revise	<b>[M] Experimental Design 3 (1-6)</b> Course Prerequisite: ME 220; ME 304; ME 306; ME 316; certified major in Mechanical Engineering, <del>Materials Science and Engineering, Civil Engineering, or Electrical Engineering</del> . Designing, conducting, and reporting of experimental investigations involving mechanical equipment. Recommended preparation: ME 348. Typically offered Fall, Spring, and Summer.	<b>[M] Experimental Design 3 (1-6)</b> Course Prerequisite: <u>ENGLISH 402</u> or concurrent enrollment; ME 220; ME 304; ME 306; <u>ME 348</u> ; certified major in Mechanical Engineering. Designing, conducting, and reporting of experimental investigations involving mechanical equipment. Typically offered Fall, Spring, and Summer.	8-16
ME	415	Revise	<b>[M] Engineering Design 3</b> Course Prerequisite: ME 310 or concurrent enrollment; ME 311 or concurrent enrollment; ME 316 or concurrent enrollment; certified major in Mechanical Engineering, <del>Materials Science Engineering, Civil Engineering, or Electrical Engineering</del> . Systems and component design; product development from specifications to manufacturing; team-based CAD design projects; engineering economics; engineering professional skills. Typically offered Fall and Spring.	<b>[M] Engineering Design 3</b> Course Prerequisite: ME 310 or concurrent enrollment; ME 311 or concurrent enrollment; ME 316 or concurrent enrollment; certified major in Mechanical Engineering. Systems and component design; product development from specifications to manufacturing; team-based CAD design projects; engineering economics; engineering professional skills. Typically offered Fall and Spring.	8-16
ME	416	Revise	<b>[CAPS] Mechanical Systems Design 3 (1-6)</b> Course Prerequisite: ME 304; <del>ME 316; ME 348; ME 414</del> or concurrent enrollment; senior standing. Integrative design in mechanical engineering; multidisciplinary design project considering both technical and non-technical	<b>[CAPS] Mechanical Systems Design 3 (1-6)</b> Course Prerequisite: ME 304; ME 348; <u>ME 415</u> ; certified major in <u>Mechanical Engineering</u> ; senior standing. Integrative design in mechanical engineering; multidisciplinary design project considering both technical and	8-16

			contexts; organizational dynamics and communications. Typically offered Fall and Spring.	non-technical contexts; organizational dynamics and communications. Typically offered Fall and Spring.	
ME	431	Revise	<b>Design of Solar Thermal Systems</b> 3 Course Prerequisite: ME 301; ME 303; ME 404; certified major in Mechanical Engineering, <del>Materials Science Engineering, Civil Engineering, Electrical Engineering, or Architecture</del> . Design of solar thermal systems for heating and cooling of buildings, heating of water, electrical generation, industrial processes and distillation. Typically offered Spring.	<b>Design of Solar Thermal Systems</b> 3 Course Prerequisite: ME 301; ME 303; ME 404; certified major in Mechanical Engineering. Design of solar thermal systems for heating and cooling of buildings, heating of water, electrical generation, industrial processes and distillation. Typically offered Spring.	8-16
ME	495	Revise	<b>Internship in Mechanical Industry V 3-6</b> May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: Certified major in Mechanical Engineering, <del>Materials Science Engineering, Civil Engineering, or Electrical Engineering</del> . By interview only. Students work full time on engineering assignment in approved industries with industrial and faculty supervision. Typically offered Fall, Spring, and Summer. S, F grading.	<b>Internship in Mechanical Industry V 3-6</b> May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: Certified major in Mechanical Engineering. By interview only. Students work full time on engineering assignment in approved industries with industrial and faculty supervision. Typically offered Fall, Spring, and Summer. S, F grading.	8-16
MIS	322	Revise	<b>[M] Enterprise Business Process Analysis</b> 3 Course Prerequisite: MIS 250; certified major or minor in the College of Business. The role of the systems analyst, and the application of systems analysis and design techniques in information systems development. Typically offered Fall, Spring, and Summer.	<b>[M] Enterprise Business Process Analysis</b> 3 Course Prerequisite: MIS 250; certified major or minor in the College of Business <u>or in Data Analytics</u> . The role of the systems analyst, and the application of systems analysis and design techniques in information systems development. Typically offered Fall, Spring, and Summer.	8-16
MIS	372	Revise	<b>[M] Data Management</b> 3 Course Prerequisite: MIS 322; certified major or minor in the College of Business. The management of data in business environments. Typically offered Fall, Spring, and Summer.	<b>[M] Data Management</b> 3 Course Prerequisite: MIS 322; certified major or minor in the College of Business <u>or in Data Analytics</u> . The management of data in business environments. Typically offered Fall, Spring, and Summer.	8-16

MIS	420	Revise	<b>Business Intelligence</b> 3 Course Prerequisite: MIS 250; certified major or minor in the College of Business. Fundamentals of using information systems for business intelligence and decision support. Typically offered Fall and Spring.	<b>Business Intelligence</b> 3 Course Prerequisite: MIS 250; certified major or minor in the College of Business <u>or in Data Analytics</u> . Fundamentals of using information systems for business intelligence and decision support. Typically offered Fall and Spring.	8-16
MUS	371	Revise	<b>Diction for Singers I</b> 2 Italian and English; International Phonetic Alphabet; fundamental diction principles, applied to each language and oriented to needs of the singer.	<b>Diction for Singers I</b> 2 Italian and English; International Phonetic Alphabet; fundamental diction principles, applied to each language and oriented to needs of the singer. <u>Typically offered Odd Years - Fall.</u>	8-17
SOC	517	Revise	<b>Seminar in Contemporary Sociological Theory</b> 3 Recent developments in sociological theory, analysis, application and appraisal of specific theoretical systems. Typically offered Fall and Spring.	<b>Seminar in Contemporary Sociological Theory</b> 3 Recent developments in sociological theory, analysis, application and appraisal of specific theoretical systems. Typically offered Fall and Spring. <u>Cooperative: Open to UI degree-seeking students.</u>	8-16
SOIL SCI	374	Revise	<del><b>Remote Sensing and Airphoto Interpretation</b></del> 3 (2-3) Course Prerequisite: 3 credits of [ <del>B</del> ], [ <del>BSCI</del> ], [ <del>P</del> ], or [ <del>PSCI</del> ] <del>GER</del> -or UCORE-categories. Physical basis of remote sensing, fundamentals of aerial photography and image analysis applied to agriculture, forestry, wildland management problems. Typically offered Spring.	<b>Introduction to Remote Sensing</b> 3 (2-3) Course Prerequisite: 3 credits of [BSCI] or [PSCI] UCORE. Physical basis of remote sensing, fundamentals of aerial photography and image analysis applied to agriculture, forestry, wildland management problems. Typically offered Spring.	1-17
SOIL SCI	442	Revise	<b>Soil Fertility Laboratory</b> 2 (1-3) Course Prerequisite: SOIL SCI 441 or concurrent enrollment. Laboratory exercises and methodology for characterization of soil fertility and chemistry including CEC, acidity, carbon, nitrogen, and plant nutrients. Recommended preparation: CHEM 220. Typically offered Spring.	<b>Soil Fertility Laboratory</b> 1 (0-3) Course Prerequisite: SOIL SCI 441 or concurrent enrollment. Laboratory exercises and methodology for characterization of soil fertility and chemistry including CEC, acidity, carbon, nitrogen, and plant nutrients. Recommended preparation: CHEM 220. Typically offered Spring.	1-17
SOIL SCI	531	Revise	<b>Soil Microbiology</b> 3 (2-3) Biology and significance of organisms inhabiting soil and their	<b>Soil Microbiology</b> 3 (2-3) Biology and significance of organisms inhabiting soil and their	8-16

			role in nutrient cycling, ecosystem function, agriculture, and bioremediation. Typically offered Even Years - Fall.	role in nutrient cycling, ecosystem function, agriculture, and bioremediation. Typically offered Even Years - Fall. <u>Cooperative: Open to UI degree-seeking students.</u>	
SOIL SCI	547	Revise	<b>Soil Fertility Management 3</b> Philosophy of fertilizer recommendations based on soil and plant tissue testing; principles of fertilizer manufacture, placement and use. Required preparation must include introductory soils and upper-division soil fertility courses. Typically offered Even Years - Fall.	<b>Soil Fertility Management 3</b> Philosophy of fertilizer recommendations based on soil and plant tissue testing; principles of fertilizer manufacture, placement and use. Required preparation must include introductory soils and upper-division soil fertility courses. Typically offered Even Years - Fall. <u>Cooperative: Open to UI degree-seeking students.</u>	8-16
TCH LRN	551	Revise	<b>Psychology of Reading <del>2-3</del></b> Psychological, perceptual, motivational, developmental and physiological aspects of reading. Typically offered Fall.	<b>Psychology of Reading 3</b> <u>Enrollment not allowed if credit already earned for TCH LRN 441.</u> Psychological, perceptual, motivational, developmental and physiological aspects of reading. <u>Credit not allowed for students who have earned credit for TCH LRN 441.</u> Typically offered Fall and Spring.	1-17
TCH LRN	558	Revise	<b>Improving Reading Comprehension (K-12) 3</b> Enrollment not allowed if credit already earned for TCH LRN 448. Key theoretical concepts and their implications for improved comprehension instruction, for K-12. <u>Credit not granted for both TCH LRN 448 and TCH LRN 558.</u> Typically offered Spring.	<b>Improving Reading Comprehension (K-12) 3</b> Enrollment not allowed if credit already earned for TCH LRN 448. Key theoretical concepts and their implications for improved comprehension instruction, for K-12. <u>Credit not allowed for students who have earned credit for TCH LRN 558.</u> Typically offered Spring.	1-17
UNIV	303	Revise	<b>Composing and Evaluation Strategies 1</b> Strategies of <del>writing evaluation and composing strategies for writing-intensive courses.</del> By instructor permission. Typically offered Fall and Spring.	<b>Composing and Evaluation Strategies for Writing Professional Documents 1</b> Strategies of <u>composition and evaluation for writing-intensive courses, and for creating brief professional documents (personal statements/letters of intent).</u> By instructor permission. Typically offered Fall and Spring.	1-17

VET MED	513	Revise	<b>Veterinary Cell Physiology 4</b> Course Prerequisite: Veterinary Medicine student. Cell physiology focusing on endocrine, paracrine, and neurotransmission signaling processes, transcriptional and translational control, and methodologies relevant to medicine. Typically offered Fall. S, M, F grading.	<b>Veterinary Physiology I 4</b> Course Prerequisite: Veterinary Medicine student. Cell physiology focusing on endocrine, paracrine, and neurotransmission signaling processes, transcriptional and translational control, and methodologies relevant to medicine. Typically offered Fall. S, M, F grading.	5-16
VET MED	520	Revise	<b>Veterinary Physiology 5 (4-3)</b> Course Prerequisite: VET MED 510. Physiology of domestic animals. Typically offered Spring. Cooperative: Open to UI degree-seeking students. S, M, F grading.	<b>Veterinary Physiology II 5 (4-3)</b> Course Prerequisite: VET MED 510. Physiology of domestic animals. Typically offered Spring. Cooperative: Open to UI degree-seeking students. S, M, F grading.	5-16
VET MED	553	Revise	<b>Small Animal Surgery 3</b> Course Prerequisite: Veterinary Medicine student. <del>Principles of surgical techniques and small animal surgery.</del> Typically offered Fall. S, M, F grading.	<b>Small Animal Surgical Diseases and Traumatology 3</b> Course Prerequisite: Veterinary Medicine student. <u>Diagnosis and medical management of small animal patients with surgical conditions, including determining if/when surgery is indicated.</u> Typically offered Fall. S, M, F grading.	5-16
VET MED	554	Revise	<b>Small Animal Surgery-Lab 1 (0-3)</b> Course Prerequisite: Concurrent enrollment in VET MED 553. <del>Surgical exercises using small animals.</del> Typically offered Fall. S, M, F grading.	<b>Small Animal Anesthesia and Surgery 1 (0-3)</b> Course Prerequisite: <u>VET MED 586; VET MED 587;</u> concurrent enrollment in VET MED 553. <u>Work professionally as a team to anesthetize, spay, and provide peri-operative care for surgical patients.</u> Typically offered Fall. S, M, F grading.	8-16