

MEMORANDUM

Faculty Senate Approved October 19, 2017

TO: Deans and Chairs
 FROM: Becky Bitter, Sr. Assistant Registrar
 DATE: October 10, 2017
 SUBJECT: Minor Change Bulletin No. 3

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	Current	Proposed	Effective Date
CE	302	Revise	Introduction to Surveying 2 (1-3) Course Prerequisite: MATH 171; certified Civil Engineering or Construction Management major . Surveying data collection, analysis and application; measuring distances and angles using total stations and global positioning systems; analysis of errors in measurements.	Introduction to Surveying 2 (1-3) Course Prerequisite: MATH 171; certified <u>major in Civil Engineering or Construction Engineering or Construction Management</u> . Surveying data collection, analysis and application; measuring distances and angles using total stations and global positioning systems; analysis of errors in measurements.	1-18
CE	303	Revise	Civil Engineering Computer Applications 2 (1-3) Course Prerequisite: Certified major in Civil Engineering. Advanced civil engineering computer applications including Geographical Information Systems, Revit, and Excel.	Civil Engineering Computer Applications 2 (1-3) Course Prerequisite: Certified major in Civil Engineering <u>or Construction Engineering</u> . Advanced civil engineering computer applications including Geographical Information Systems, Revit, and Excel.	1-18
CE	315	Revise	Fluid Mechanics 3 Course Prerequisite: ME 212; certified major in Civil Engineering. Fluid statics, laminar and turbulent flow, similitude, pipe flow,	Fluid Mechanics 3 Course Prerequisite: ME 212; certified major in Civil Engineering <u>or Construction Engineering</u> . Fluid statics, laminar and turbulent flow,	1-18

			boundary layer, lift and drag and measurement techniques.	similitude, pipe flow, boundary layer, lift and drag and measurement techniques.	
CE	317	Revise	[M] Geotechnical Engineering I 4 (3-3) Course Prerequisite: CE 215 with a C or better; CE 315 or concurrent enrollment; certified major in Civil Engineering. Structure, index properties, and classification of soils; compaction; effective stress; seepage; consolidation and shear strength.	[M] Geotechnical Engineering I 4 (3-3) Course Prerequisite: CE 215 with a C or better; CE 315 or concurrent enrollment; certified major in Civil Engineering <u>or Construction Engineering</u> . Structure, index properties, and classification of soils; compaction; effective stress; seepage; consolidation and shear strength.	1-18
CE	322	Revise	Transportation Engineering 3 Course Prerequisite: STAT 360 or concurrent enrollment or STAT 370 or concurrent enrollment; certified major in Civil Engineering. Road-vehicle interaction, geometric design, traffic flow and queuing theory, highway capacity and level of service, and introduction to pavement design and materials. Cooperative: Open to UI degree-seeking students.	Transportation Engineering 3 Course Prerequisite: STAT 360 or concurrent enrollment or STAT 370 or concurrent enrollment; certified major in Civil Engineering <u>or Construction Engineering</u> . Road-vehicle interaction, geometric design, traffic flow and queuing theory, highway capacity and level of service, and introduction to pavement design and materials. Cooperative: Open to UI degree-seeking students.	1-18
CE	330	Revise	Introduction to Structural Engineering 3 Course Prerequisite: CE 215 with a C or better; certified major in Civil Engineering. Introduction to structural analysis and design; structural modeling; design philosophies; deflections; indeterminate analysis by the Force Method.	Introduction to Structural Engineering 3 Course Prerequisite: CE 215 with a C or better; certified major in Civil Engineering <u>or Construction Engineering</u> . Introduction to structural analysis and design; structural modeling; design philosophies; deflections; indeterminate analysis by the Force Method.	1-18
CE	341	Revise	Introduction to Environmental Engineering 3 Course Prerequisite: CHEM 105; certified major in Civil Engineering. Impact of pollutants on the environment;	Introduction to Environmental Engineering 3 Course Prerequisite: CHEM 105; certified major in Civil Engineering <u>or Construction Engineering</u> . Impact of	1-18

			pollution sources and sinks; engineering aspects of air and water quality; introduction to pollution control.	pollutants on the environment; pollution sources and sinks; engineering aspects of air and water quality; introduction to pollution control.	
CE	351	Revise	Water Resources Engineering 3 Course Prerequisite: CE 315 with a C or better; certified major in Civil Engineering. Application of fluid mechanics to hydraulic infrastructure, principles of open channel flow, and introduction to surface and ground water hydrology. Cooperative: Open to UI degree-seeking students.	Water Resources Engineering 3 Course Prerequisite: CE 315 with a C or better; certified major in Civil Engineering <u>or</u> <u>Construction Engineering</u> . Application of fluid mechanics to hydraulic infrastructure, principles of open channel flow, and introduction to surface and ground water hydrology. Cooperative: Open to UI degree-seeking students.	1-18
CE	400	Revise	Highway Materials Engineering 3 (2-3) Course Prerequisite: STAT 360 or concurrent enrollment or STAT 370 or concurrent enrollment; ME 220; senior standing; certified major in Civil Engineering. Basic properties and mix designs of aggregates, asphalt, concrete and recycled materials; quality assurance, quality control. Cooperative: Open to UI degree-seeking students.	Highway Materials Engineering 3 (2-3) Course Prerequisite: STAT 360 or concurrent enrollment or STAT 370 or concurrent enrollment; ME 220; senior standing; certified major in Civil Engineering <u>or</u> <u>Construction Engineering</u> . Basic properties and mix designs of aggregates, asphalt, concrete and recycled materials; quality assurance, quality control. Cooperative: Open to UI degree-seeking students.	8-18
CE	414	Revise	Structural Design Laboratory 3 Course Prerequisite: CE 330 with a C or better; STAT 360 or concurrent enrollment, or STAT 370 or concurrent enrollment; certified major in Civil Engineering. Understanding of load, load path determination techniques, performance of various materials, and the interface between material design	Structural Design <u>Loads and Load Paths</u> 3 Course Prerequisite: CE 330 with a C or better; STAT 360 or concurrent enrollment, or STAT 370 or concurrent enrollment; certified major in Civil Engineering <u>or</u> <u>Construction Engineering</u> . Understanding of load, load path determination techniques, performance of various materials, and the interface	1-18

			standards and building codes. Typically offered Fall and Spring. Cooperative: Open to UI degree-seeking students.	between material design standards and building codes. Typically offered Fall and Spring. Cooperative: Open to UI degree-seeking students.	
CE	431	Revise	Structural Steel Design 3 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. Cooperative: Open to UI degree-seeking students.	Structural Steel Design 3 Course Prerequisite: CE 330 with a C or better; CE 414; certified major in Civil Engineering <u>or Construction Engineering</u> . Design of steel structures by load and resistance factor design (LRFD); behavior and design of beams, columns, tension members and connections. Cooperative: Open to UI degree-seeking students.	8-18
CE	433	Revise	Reinforced Concrete Design 3 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. Cooperative: Open to UI degree-seeking students.	Reinforced Concrete Design 3 Course Prerequisite: CE 330 with a C or better; CE 414; certified major in Civil Engineering <u>or Construction Engineering</u> . Behavior, analysis, and design of reinforced concrete structures; flexure; shear; bond; serviceability requirements; design of beams, columns, and slabs. Cooperative: Open to UI degree-seeking students.	8-18
CE	435	Revise	Foundations 3 Course Prerequisite: CE 317 with a C or better; certified major in Civil Engineering. Site investigation; bearing capacity, settlement and design of shallow foundations, piles and piers; design of retaining walls. Cooperative: Open to UI degree-seeking students.	Foundations 3 Course Prerequisite: CE 317 with a C or better; certified major in Civil Engineering <u>or Construction Engineering</u> . Site investigation; bearing capacity, settlement and design of shallow foundations, piles and piers; design of retaining walls. Cooperative: Open to UI degree-seeking students.	8-18
CE	436	Revise	Design of Timber Structures 3 Course Prerequisite: CE 330 with a C or better; CE 414; certified major in Civil Engineering. Engineering	Design of Timber Structures 3 Course Prerequisite: CE 330 with a C or better; CE 414; certified major in Civil Engineering <u>or Construction</u>	8-18

			properties of wood materials; analysis and design of members, connections, trusses, shearwalls and structural diaphragms; durability and moisture effects on engineered wood products. Cooperative: Open to UI degree-seeking students.	<u>Engineering</u> . Engineering properties of wood materials; analysis and design of members, connections, trusses, shearwalls and structural diaphragms; durability and moisture effects on engineered wood products. Cooperative: Open to UI degree-seeking students.	
CE	442	Revise	Water and Wastewater Treatment Design 3 Course Prerequisite: CE 341 with a C or better; certified major in Civil Engineering or Environmental Science. Water and wastewater treatment processes and design. Cooperative: Open to UI degree-seeking students.	Water and Wastewater Treatment Design 3 Course Prerequisite: CE 341 with a C or better; certified major in Civil Engineering, <u>Construction Engineering</u> , or Environmental Science. Water and wastewater treatment processes and design. Cooperative: Open to UI degree-seeking students.	8-18
CE	465	Revise	[CAPS] [M] Integrated Civil Engineering Design 3 (1-6) Course Prerequisite: CE 303; certified major in Civil Engineering; senior standing . Civil engineering applications to planning and design; problem synthesis, data analysis, decision making and reporting; design of complete projects that include local and world-wide problems through interdisciplinary teams.	[CAPS] [M] Integrated Civil Engineering Design 3 (1-6) Course Prerequisite: CE 303; certified major in Civil Engineering or <u>Construction Engineering</u> . Civil engineering applications to planning and design; problem synthesis, data analysis, decision making and reporting; design of complete projects that include local and world-wide problems through interdisciplinary teams.	8-18
CE	466	Revise	Fundamentals of Engineering Examination Review 1 Course Prerequisite: Senior standing; certified major in Civil Engr, Electrical Engr, Bioengineering, Chemical Engr, Mechanical Engr, Computer Science, Materials Science Engr, or Computer Engr. Review of topics to prepare for the Fundamentals of Engineering Examination. S, F grading.	Fundamentals of Engineering Examination Review 1 Course Prerequisite: Senior standing; certified major in Civil Engr, <u>Construction Engr</u> , Electrical Engr, Bioengineering, Chemical Engr, Mechanical Engr, Computer Science, Materials Science Engr, or Computer Engr. Review of topics to prepare for the	8-18

				Fundamentals of Engineering Examination. S, F grading.	
CE	473	Revise	Pavement Design 3 Course Prerequisite: CE 317; ECONS 101 or 102; CE 322 or concurrent enrollment; certified major in Civil Engineering. Pavement performance evaluation, material characterization, traffic analysis, pavement structural response analysis, transfer function application, and pavement design procedures for both flexible and rigid pavements. Cooperative: Open to UI degree-seeking students.	Pavement Design 3 Course Prerequisite: CE 317; ECONS 101 or 102; CE 322 or concurrent enrollment; certified major in Civil Engineering <u>or Construction Engineering</u> . Pavement performance evaluation, material characterization, traffic analysis, pavement structural response analysis, transfer function application, and pavement design procedures for both flexible and rigid pavements. Cooperative: Open to UI degree-seeking students.	8-18
CE	480	Revise	[M] Ethics and Professionalism 1 Course Prerequisite: Certified major in Civil Engineering; senior standing. Professional aspects of civil engineering.	[M] Ethics and Professionalism 1 Course Prerequisite: Certified major in Civil Engineering <u>or Construction Engineering</u> ; senior standing. Professional aspects of civil engineering.	8-18
CES / WOMEN ST	235	Revise	[HUM] African American History 3 History of African Americans in the US with emphasis upon major themes of the Black experience. (Crosslisted course offered as CES 235, HISTORY 235; WOMEN ST 235).	[HUM] African American History 3 History of African Americans in the US with emphasis upon major themes of the Black experience. (Crosslisted course offered as CES 235, HISTORY 235).	8-18
CES	255	Revise	Chicana/o History 3 The historical development of the Chicano/a community in relation to the dynamics of race relations, class structure, ethnic identity, gender, and sexuality in American society from 1521 to the 20th century.	<u>Latina/o Diasporic Communities in the U.S.</u> 3 <u>Exploration of historical movements, settlement, and interactions within the United States of different Latina/o groups.</u>	8-18
CES / WOMEN ST/ ANTH	372 / 312	Revise	Indigenous Women in Traditional and Contemporary Societies 3 Course Prerequisite: One of ANTH 101, 214, CES 101, 171, WOMEN ST 101, or	Indigenous Women in Traditional and Contemporary Societies 3 Course Prerequisite: One of ANTH 101, 214, CES 101, 171. Exploration of roles and	8-18

			201. Exploration of roles and activities of women in indigenous societies; how traditional gender roles have developed and changed. (Crosslisted course offered as CES 372, ANTH 312; WOMEN-ST-372).	activities of women in indigenous societies; how traditional gender roles have developed and changed. (Crosslisted course offered as CES 372, ANTH 312).	
CES / WOMEN-ST	435	Revise	African American Women in US Society 3 Course Prerequisite: Junior standing. Critical terms and models for understanding the experiences of African American women in antebellum America to the present; an interdisciplinary forum concerned with the national experience of the African American woman experience. (Crosslisted course offered as CES 435; WOMEN-ST-435).	African American Women in US Society 3 Course Prerequisite: Junior standing. Critical terms and models for understanding the experiences of African American women in antebellum America to the present; an interdisciplinary forum concerned with the national experience of the African American woman experience.	8-18
CES / WOMEN-ST	454	Revise	La Chicana in US Society 3 Course Prerequisite: Junior standing. Intersections of race, class, gender and sexual orientation in the experience of a marginalized group - Chicanas. (Crosslisted course offered as CES 454; WOMEN-ST-454).	Latinas in U.S. Culture and Society 3 Course Prerequisite: Junior standing. Intersections of race, class, gender and sexual orientation in the experience of a marginalized group - Chicanas.	8-18
CES / WOMEN-ST	489	Revise	[CAPS] Everyday Struggles for Justice and Equality 3 Course Prerequisite: CES 201 or WOMEN-ST-201 ; junior standing. Investigation of everyday realities of racism, sexism, and heterosexism; applied research; communication of findings through new and/or creative media. (Crosslisted course offered as CES 489; WOMEN-ST-489).	[CAPS] Everyday Struggles for Justice and Equality 3 Course Prerequisite: CES 201; junior standing. Investigation of everyday realities of racism, sexism, and heterosexism; applied research; communication of findings through new and/or creative media.	8-18
COMSTRAT	485	Revise	[M] Public Relations Management and Campaigns 3 Course Prerequisite: COMSTRAT	[M] Public Relations Management and Campaigns 3 Course Prerequisite: COMSTRAT	8-18

			309 or 409; COMSTRAT 312; COMSTRAT 381 or 383; certified in any major in the College of Communication; senior standing. Application of public relations principles, management, persuasion theory and research methods to public relations issues. Typically offered Fall, Spring, and Summer.	309 or 409; COMSTRAT 312; COMSTRAT 383; certified in any major in the College of Communication; senior standing. Application of public relations principles, management, persuasion theory and research methods to public relations issues. Typically offered Fall, Spring, and Summer.	
CON E	360	Revise	Heavy Construction Estimating I 3 (2-3) Course Prerequisite: CON E 252; certified major in Construction Engineering. Fundamentals of heavy civil estimating with emphasis on plan reading, specification reading, and quantity takeoff.	Heavy Construction Estimating I 3 (2-3) Course Prerequisite: CON E 252 <u>or concurrent enrollment</u> ; certified major in Construction Engineering. Fundamentals of heavy civil estimating with emphasis on plan reading, specification reading, and quantity takeoff.	1-18
CS	121	Revise	Program Design and Development 4 (3-3) Course Prerequisite: MATH 106 with a C or better, MATH 107 with a C or better, MATH 171 with a C or better, MATH 172 with a C or better, or a minimum ALEKS math placement score of 80% . Formulation of problems and top-down design of programs in a modern structured language for their solution on a digital computer. Typically offered Fall.	Program Design and Development 4 (3-3) Course Prerequisite: MATH 171 with a C or better <u>or concurrent enrollment</u> . Formulation of problems and top-down design of programs in a modern structured language for their solution on a digital computer. Typically offered Fall.	8-18
CS	166	Revise	Discrete Mathematics 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 171 with a C or better, or ALEKS math placement score of 80% . Introduction to the theoretical foundations of computing. Combinatorics, relations,	Discrete Mathematics 3 Course Prerequisite: CS 122 with a C or better or concurrent enrollment; <u>MATH 171 with a C or better or concurrent enrollment</u> . Introduction to the theoretical foundations of computing. Combinatorics, relations, trees, graphs, Boolean algebra, proof methods, and discrete	8-18

			trees, graphs, Boolean algebra, proof methods, and discrete probability as applied to computer science.	probability as applied to computer science.	
CS	223	Revise	Advanced Data Structures 3 Course Prerequisite: CS 122 with a C or better; CS 166 with a C or better. Advanced data structures, object oriented programming concepts, concurrency , and program design principles. Typically offered Fall.	Advanced Data Structures 3 Course Prerequisite: CS 122 with a C or better; CS 166 with a C or better. Advanced data structures, object oriented programming concepts, and program design principles. Typically offered Fall.	8-18
CST M	356	Revise	Earthwork and Equipment 3 Course Prerequisite: CE 322; certified major in Construction Management or Civil Engineering. Methods and procedures for site work, excavation, dewatering, building foundation and equipment, productivity, finance and safety requirements. Typically offered Fall and Spring.	Earthwork and Equipment 3 Course Prerequisite: CE 322; certified major in Construction Management, <u>Civil Engineering, or Construction Engineering.</u> Methods and procedures for site work, excavation, dewatering, building foundation and equipment, productivity, finance and safety requirements. Typically offered Fall and Spring.	1-18
CST M	368	Revise	Safety and Health 3 Course Prerequisite: Certified major in Construction Management; junior standing. Role and function of safety and health in the construction industry including OSHA compliance, requirements and regulations. Typically offered Fall and Spring.	Safety and Health 3 Course Prerequisite: Certified major in Construction Management <u>or Construction Engineering;</u> junior standing. Role and function of safety and health in the construction industry including OSHA compliance, requirements and regulations. Typically offered Fall and Spring.	8-18
CST M	460	Revise	Construction Cost Accounting 3 (2-3) Course Prerequisite: CST M 371; certified major in Construction Management. Examination of cost accounting utilized for specific project control as well as overall company control. Typically offered Fall.	Construction Cost Accounting 3 (2-3) Course Prerequisite: <u>CON E 361 or</u> CST M 371; certified major in Construction Management <u>or Construction Engineering.</u> Examination of cost accounting utilized for specific project control as well as overall company control. Typically offered Fall.	8-18

CST M	462	Revise	Planning and Scheduling 3 (2-3) Course Prerequisite: CST M 371, or CE 322 and 347 ; certified major in Construction Management or Civil Engineering. Methods, principles, and concepts required to plan and schedule construction projects; introduction to scheduling software. Typically offered Fall and Summer.	Planning and Scheduling 3 (2-3) Course Prerequisite: <u>CE 317, CON E 361, or CST M 371</u> ; certified major in Construction Management, <u>Civil Engineering, or Construction Engineering</u> . Methods, principles, and concepts required to plan and schedule construction projects; introduction to scheduling software. Typically offered Fall and Summer.	8-18
CST M	473	Revise	Human Productivity in Construction 3 Course Prerequisite: CST M 301 or MGMT 301; certified major in Construction Management. Leadership and management concepts and methods applied to human behavior to enhance motivation, productivity and safety in construction. Typically offered Spring.	Human Productivity in Construction 3 Course Prerequisite: <u>CON E 252, CST M 301, or MGMT 301</u> ; certified major in Construction Management <u>or Construction Engineering</u> . Leadership and management concepts and methods applied to human behavior to enhance motivation, productivity and safety in construction. Typically offered Spring.	8-18
DTC	491	Revise	Digital Cinema 3 Course Prerequisite: DTC 201. Exploration of advanced techniques, theories, and aesthetic strategies of cinema in the age of digital media, including video remix, mobile cinema, webisodes, cinematic games, hyperlinked video, and database cinema.	Digital Cinema 3 Course Prerequisite: DTC 201 <u>or 208</u> . Exploration of advanced techniques, theories, and aesthetic strategies of cinema in the age of digital media, including video remix, mobile cinema, webisodes, cinematic games, hyperlinked video, and database cinema.	8-18
E E	492	Revise	Renewable Energy Sources 3 (2-3) Course Prerequisite: E E 361 with a C or better; E E 362 with a C or better or concurrent enrollment; STAT 360 with a C or better or STAT 443 with a C or better ; certified major in Electrical Engineering, Computer Science, or Computer Engineering. Design of electrical generation plants	Renewable Energy Sources 3 (2-3) Course Prerequisite: E E 361 with a C or better; certified major in Electrical Engineering, Computer Science, or Computer Engineering. Design of electrical generation plants using wind, solar and other renewable energy sources including technical,	1-18

			using wind, solar and other renewable energy sources including technical, environmental and economic aspects.	environmental and economic aspects.	
ECE	101	Revise	Introduction to Electrical Engineering 2 (1-3) Course Prerequisite: MATH 106; MATH 171 or concurrent enrollment , or a minimum ALEKS math placement score of 80%. Introduction to the field of electrical engineering and the fundamental concepts behind electronic devices and systems. Typically offered Fall.	Introduction to Electrical Engineering 2 (1-3) Course Prerequisite: MATH 106 or a minimum ALEKS math placement score of 80%. Introduction to the field of electrical engineering and the fundamental concepts behind electronic devices and systems. Typically offered Fall.	8-18
ECE	214	Revise	Design of Logic Circuits 3 (2-3) Course Prerequisite: ECE 101; MATH 106, MATH 171 or concurrent enrollment , or a minimum ALEKS math placement score of 80%. Design and application of combinational logic circuits with exposure to modern methods and design tools; introduction to sequential logic circuits. Typically offered Fall.	Design of Logic Circuits 3 (2-3) Course Prerequisite: ECE 101; MATH 106 or a minimum ALEKS math placement score of 80%. Design and application of combinational logic circuits with exposure to modern methods and design tools; introduction to sequential logic circuits. Typically offered Fall.	8-18
ECE	321	Revise	Circuit Modeling and Analysis II 3 Course Prerequisite: ECE 260; MATH 315. Laplace transforms, Fourier analysis, state space analysis , two port networks. Typically offered Fall.	Circuit Modeling and Analysis II 3 Course Prerequisite: ECE 260; MATH 315. <u>Magnetically coupled circuits, frequency response</u> , Laplace transforms, Fourier analysis, <u>and</u> two port networks. Typically offered Fall.	8-18
ECE	324	Revise	Digital Systems Design 3 (2-3) Course Prerequisite: ECE 214. Implementation of datapaths and controllers, use of hardware description languages and automated synthesis tools, field programmable gate arrays and simulation; integrated circuit	Digital Systems Design 3 (2-3) Course Prerequisite: ECE 214. Implementation of datapaths and controllers, use of hardware description languages and automated synthesis tools, field programmable gate arrays and	8-18

			layout. Typically offered Spring.	simulation. Typically offered Spring.	
ECE	341	Revise	Signals and Systems 3 (2-3) Course Prerequisite: ECE 321. Discrete and continuous systems, sampling, convolution, Fourier and Z transforms, modulation; introduction to distributed parameter systems. Typically offered Spring.	Signals and Systems 3 (2-3) Course Prerequisite: ECE 321. Discrete and continuous systems, sampling, convolution, Fourier and Z transforms, <u>random signals.</u> Typically offered Spring.	8-18
ECE	461	Revise	Power Systems Analysis and Design I 3 Course Prerequisite: ECE 370. Basic components and their representations in power systems, power transformers, synchronous machines, loads, and transmission lines. Typically offered Fall.	Power Systems Analysis and Design I 3 Course Prerequisite: ECE 370. Basic components and their representations in power systems, power transformers, and transmission lines. Typically offered Fall.	8-18
<u>MPS / CHE / MBIOS</u>	574	Revise	Protein Biotechnology 3 Biotechnology related to the isolation, modification and large scale commercial production, patenting and marketing of useful recombinant proteins and products. (Crosslisted course offered as MBIOS 574, CHE 574). Recommended preparation: MBIOS 513. Typically offered Even Years - Spring.	Protein Biotechnology 3 Biotechnology related to the isolation, modification and large scale commercial production, patenting and marketing of useful recombinant proteins and products. (Crosslisted course offered as <u>MPS 574, CHE 574, MBIOS 574</u>). Recommended preparation: MBIOS 513. Typically offered Even Years - Spring.	1-18
MUS	364	Revise	Introduction to Sound Recording Technology 3 Music, audio and recording technology throughout history and its influence on society and culture. Typically offered Summer Session.	<u>Audio Engineering I 3</u> Course Prerequisite: <u>MUS 164. Software, equipment, and techniques used in studio recording and live sound reinforcement; includes both theoretical foundations and practical application.</u> <u>Typically offered Fall.</u>	8-18
MUS	452	Revise	Electronic Music 2 Course Prerequisite: MUS 353 or concurrent enrollment. Introduction to computer-controlled digital, analog, and sampling synthesis; topics	<u>Electronic Music Techniques 2 Course</u> Prerequisite: <u>MUS 264.</u> <u>Composition and performance using computer-controlled digital, analog, and sampling</u>	8-18

			include sequencing, waveform editing, and creative projects. Typically offered Odd Years - Spring.	synthesis; topics include sequencing, waveform editing, <u>signal processing</u> , <u>spatialization</u> , and <u>performance</u> . Typically offered Fall.	
MUS	487	Revise	String Techniques 2 (0-6) String techniques, materials and methods for music education majors. Typically offered Even Years - Spring.	String Techniques II 1 (0-2) Course Prerequisite: MUS 190; MUS 486. Second level of performance and pedagogy of string instruments for music educators. Typically offered Odd Years - Spring.	8-18
MUS	493	Revise	Wind and Percussion Techniques I 2 (0-6) Brass, woodwind, and percussion techniques for music education majors. Typically offered Odd Years - Fall.	Brass Techniques II 1 (0-2) Course Prerequisite: MUS 190; MUS 492. Second level of performance and pedagogy of brass instruments for music educators. Typically offered Even Years - Spring.	8-18
MUS	494	Revise	Wind and Percussion Techniques II 2 (0-6) Course Prerequisite: MUS 493. Brass, woodwind and percussion techniques; elementary instrument conducting for music education majors. Typically offered Even Years - Spring.	Percussion Techniques I 1 (0-2) Course Prerequisite: MUS 190. Performance and pedagogy of percussion instruments for music educators. Typically offered Odd Years - Fall.	8-18
WOMEN ST	101	Revise	[DIVR] Gender and Power: Introduction to Women's Studies 3 Analysis of gender and power in contemporary society from perspectives of different racial, ethnic and socioeconomic groups.	[DIVR] Introduction to Women's Gender and Sexuality Studies 3 Analysis of gender and power in contemporary society from perspectives of different racial, ethnic and socioeconomic groups.	8-18
WOMEN ST /CES	120	Revise	[DIVR] Sex, Race, and Reproduction in Global Health Politics 3 Examination of how cultures, institutions, states, and economies influence reproductive health inequalities around gender, sexuality, race, class, and national identity. (Crosslisted	[DIVR] Sex, Race, and Reproduction in Global Health Politics 3 Examination of how cultures, institutions, states, and economies influence reproductive health inequalities around gender, sexuality, race, class, and national identity.	8-18

			course offered as WOMEN ST 120, CES 120).		
WOMEN ST / CES / SOC	302/305/302	Revise	Contemporary Masculinities 3 Analysis of the development of masculinity in its biological and cultural forms. (Crosslisted course offered as WOMEN ST 302, CES 305, SOC 302).	Contemporary Masculinities 3 Analysis of the development of masculinity in its biological and cultural forms. (Crosslisted course offered as WOMEN ST 302, SOC 302).	8-18
WOMEN ST / CES	369/309	Revise	[ARTS] Queer Identities in Contemporary Cultures 3 Course Prerequisite: CES 101, CES 201, WOMEN ST 101, or WOMEN ST 201. Analysis of roots/legacies of creative resistance writing by Queer communities of color; students learn to produce creative resistance work. (Crosslisted course offered as WOMEN ST 369, CES 309).	[ARTS] Queer Identities in Contemporary Cultures 3 Course Prerequisite: CES 101, CES 201, WOMEN ST 101, or WOMEN ST 201. Analysis of roots/legacies of creative resistance writing by Queer communities of color; students learn to produce creative resistance work.	1-18
WOMEN ST / CES	408	Revise	Introduction to Critical Race Feminism 3 Course Prerequisite: Junior standing. Studies structural inequalities in the US through historically grounded analysis of social systems, race, gender, and the law. (Crosslisted course offered as WOMEN ST 408, CES 408).	Introduction to Critical Race Feminism 3 Course Prerequisite: Junior standing. Studies structural inequalities in the US through historically grounded analysis of social systems, race, gender, and the law.	8-18