

## MEMORANDUM

TO: Deans and Chairs

FROM: Becky Bitter, Sr. Assistant Registrar

DATE: September 12, 2022

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	Revise Drop	Current	Proposed	Effective Date
AGTM	310	Revise	<b>Small Engine Maintenance and Repair 3</b> (2-3) Safety, operation, maintenance, and troubleshooting engines; understanding of engine systems and components including compression, carburetion, cooling, fuel, and lubrication. Typically offered Fall.	<b>Small Engine Maintenance and Repair 3</b> (2-3) Safety, operation, maintenance, and troubleshooting engines; understanding of engine systems and components including compression, carburetion, cooling, fuel, and lubrication. Typically offered Fall. <u>Cooperative: Open to UI degree-seeking students.</u>	8-22
AMER ST / <u>CES</u>	471 / <u>461</u>	Revise	<del>Cultural Politics Since World War II</del> 3 American popular culture, politics and culture of the 1960s, or topics in recent cultural politics.	<b><u>Race, Popular Culture, and Post-Civil Rights America</u></b> 3 <u>An examination of sports, television, film, music, and other examples of popular culture as resistance.</u> (Crosslisted course offered as AMER ST 471, CES 461.)	1-23
AMER ST / <u>CES</u>	472 / <u>462</u>	Revise	<del>Ecological Issues and American Nature Writing</del> 3 Course Prerequisite: Junior standing. Representation of nature in American fiction and nonfiction; role of culture in shaping environmental problems and solutions. (Crosslisted course offered as AMER ST 472, ENGLISH 472).	<b><u>Race, Justice, and Food Ecosystems</u></b> 3 Course Prerequisite: Junior standing. <u>Examines racial inequalities and injustice alongside of movements of change, highlighting the importance of food in a modern world.</u> (Crosslisted course offered as AMER ST 472, <u>CES 462</u> ).	1-23
AMER ST / <u>CES</u>	473 / <u>463</u>	Revise	<del>Arts in American Cultures</del> 3 Course Prerequisite: Junior standing. Exploration of visual culture, from fine arts to	<b><u>Art as Resistance</u></b> 3 Course Prerequisite: Junior standing. <u>Highlights artists and movements often erased within dominant</u>	1-23

			advertising, as a political, sociological, psychological, and philosophical influence in 20th-century American cultures.	narratives about art, and within galleries and museums. (Crosslisted course offered as AMER ST 473, CES 463.)	
AMER ST / <u>CES</u>	474 / <u>464</u>	Revise	<del><b>Social Movements and US Culture</b></del> 3 Course Prerequisite: Junior standing. <del>Cultural impact of selected social movements such as abolition, populism, labor, women's, ethnic power, gay/lesbian and anti-globalization.</del>	<b><u>Racial Justice Movements</u></b> 3 Course Prerequisite: Junior standing. <u>Examines racial justice movements since the 1960s, exploring the lessons, tactics, histories, and significance of movements across multiple communities.</u> (Crosslisted course offered as AMER ST 474, CES 464.)	1-23
ANIM SCI	166	Revise	<del><b>Young Horse Handling</b></del> 1 (0-3) Course Prerequisite: ANIM SCI 101. Effective horse handling skills and techniques; safety for both horse and human will be emphasized and prioritized throughout the course. Typically offered Fall and Spring. S, F grading.	<b><u>Horse Handling</u></b> 1 (0-3) Course Prerequisite: ANIM SCI 101. Effective horse handling skills and techniques; safety for both horse and human will be emphasized and prioritized throughout the course. Typically offered Fall and Spring. S, F grading.	8-22
ANIM SCI	345	Revise	<del><b>Introduction to Animal Growth and Development</b></del> 3 Course Prerequisite: BIOLOGY 106; BIOLOGY 107; junior standing. Animal structure, composition, whole body and cellular growth, prenatal and postnatal growth; emphasis on skeletal muscle, bone and adipose tissue. Typically offered Spring. Cooperative: Open to UI degree-seeking students.	<b><u>Animal Growth and Development</u></b> 3 Course Prerequisite: BIOLOGY 106; BIOLOGY 107; junior standing. Animal structure, composition, whole body and cellular growth, prenatal and postnatal growth; emphasis on skeletal muscle, bone and adipose tissue. Typically offered Spring. Cooperative: Open to UI degree-seeking students.	1-23
ANTH	280	Revise	<del>[BSCI] <b>Skeleton Keys: Introduction to Forensic Anthropology</b></del> 3 Examination of forensic anthropology techniques to identify human skeletal remains in a medicolegal context.	<b><u>[BSCI] Skeleton Keys: The Basics of Forensic Anthropology</u></b> 3 Examination of forensic anthropology techniques to identify human skeletal remains in a medicolegal context.	8-22
ANTH / <u>AIS</u>	334	Revise	<b>Time and Culture in the Northwest</b> 3 The archaeologically reconstructed environmental and cultural past of the Northwest including contemporary scientific and social approaches and issues. Recommended preparation:	<b>Time and Culture in the Northwest</b> 3 The archaeologically reconstructed environmental and cultural past of the Northwest including contemporary scientific and social approaches and issues.	8-22

			ANTH 101. Typically offered Spring.	Recommended preparation: ANTH 101. ( <u>Crosslisted course offered as ANTH 334, AIS 334.</u> ) Typically offered Spring.	
ARCH	564 / 464	Revise	<del>Architectural Structures IV 3 Course Prerequisite: ARCH 463 with a C or better; admitted to the major in Architectural Studies or Construction Management.</del> Deflection theory; classical and computer analysis for statically indeterminate architectural structure systems. <del>Credit not granted for both ARCH 464 and ARCH 564. Offered at 400 and 500 level.</del>	<b>Architectural Structures IV 3</b> Deflection theory; classical and computer analysis for statically indeterminate architectural structure systems.	1-23
B A	498	Revise	<del>Business Internship V 2-15</del> May be repeated for credit; cumulative maximum 15 hours. Course Prerequisite: By department permission; admitted to a major or minor in the College of Business. Cooperative educational internship with a business, government, or nonprofit organization. S, F grading.	<b>Business Internship V 1-15</b> May be repeated for credit; cumulative maximum 15 hours. Course Prerequisite: By department permission; admitted to a major or minor in the College of Business. Cooperative educational internship with a business, government, or nonprofit organization. S, F grading.	1-22
BIO ENG / CHE	455 / 474	Revise	<del>Metabolic Engineering 3 Course Prerequisite: BIO ENG 210 or CHE 211; CHE 201; MATH 220; MATH 315.</del> Understanding metabolic properties of organisms such that cells can be modified for use as biochemical plants to produce desired bioproducts. (Crosslisted course offered as BIO ENG 455, CHE 474). Typically offered Fall.	<b>Metabolic Engineering 3 Course</b> Prerequisite: <u>CHE 201 with a C or better; MATH 220 and MATH 315 with a C or better; BIO ENG 210 or CHE 211 with a C or better.</u> Understanding metabolic properties of organisms such that cells can be modified for use as biochemical plants to produce desired bioproducts. (Crosslisted course offered as BIO ENG 455, CHE 474). Typically offered Fall.	8-22
BIOLOGY	469	Revise	<del>[M] Ecosystem Ecology and Global Change 3</del> Historic and current factors controlling the function of ecosystems and their responses to natural and human caused global change. Credit not granted for both BIOLOGY 469 and 569. Offered at 400 and 500 level. Typically offered Odd	<b>[M] Ecosystem Ecology and Global Change 3 Course</b> Prerequisite: <u>BIOLOGY 370 with a C or better or BIOLOGY 372 with a C or better.</u> Historic and current factors controlling the function of ecosystems and their responses to natural and human caused global change. Credit not	8-23

			Years - Spring. Cooperative: Open to UI degree-seeking students.	granted for both BIOLOGY 469 and 569. Offered at 400 and 500 level. Typically offered Odd Years - Spring. Cooperative: Open to UI degree-seeking students.	
CE	431	Revise	<b>Structural Steel Design 3 Course</b> Prerequisite: <del>CE 330 with a C or better; CE 414; admitted to the major in Civil Engineering or Construction Engineering.</del> Design of steel structures by load and resistance factor design (LRFD); behavior and design of beams, columns, tension members and connections. Typically offered Spring. Cooperative: Open to UI degree-seeking students.	<b>Structural Steel Design 3 Course</b> Prerequisite: <u>CE 330 with a C or better; CE 414 or concurrent enrollment; admitted to the major in Civil Engineering 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. Typically offered Spring. Cooperative: Open to UI degree-seeking students.	8-22
CE	433	Revise	<b>Reinforced Concrete Design 3 Course</b> Prerequisite: <del>CE 330 with a C or better; CE 414; admitted to the major in Civil Engineering or Construction Engineering.</del> Behavior, analysis, and design of reinforced concrete structures; flexure; shear; bond; serviceability requirements; design of beams, columns, and slabs. Typically offered Fall and Summer. Cooperative: Open to UI degree-seeking students.	<b>Reinforced Concrete Design 3 Course</b> Prerequisite: <u>CE 330 with a C or better; CE 414 or concurrent enrollment; admitted to the major in Civil Engineering or Construction Engineering.</u> Behavior, analysis, and design of reinforced concrete structures; flexure; shear; bond; serviceability requirements; design of beams, columns, and slabs. Typically offered Fall and Summer. Cooperative: Open to UI degree-seeking students.	8-22
CE	434	Revise	<b>Masonry Design 3 Course</b> Prerequisite: <del>CE 330 with a C or better; CE 414; admitted to the major in Civil Engineering or Construction Engineering.</del> Behavior and design of masonry structures. Typically offered Spring. Cooperative: Open to UI degree-seeking students.	<b>Masonry Design 3 Course</b> Prerequisite: <u>CE 330 with a C or better; CE 414 or concurrent enrollment; admitted to the major in Civil Engineering or Construction Engineering.</u> Behavior and design of masonry structures. Typically offered Spring. Cooperative: Open to UI degree-seeking students.	8-22
CE	436	Revise	<b>Design of Timber Structures 3 Course</b> Prerequisite: <del>CE 330 with a C or better; CE 414; admitted to the major in Civil Engineering or Construction Engineering.</del>	<b>Design of Timber Structures 3 Course</b> Prerequisite: <u>CE 330 with a C or better; CE 414 or concurrent enrollment; admitted to the major in Civil Engineering</u>	8-22

			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.	or <u>Construction 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. Typically offered Fall. Cooperative: Open to UI degree-seeking students.	
CHE	110	Revise	<b>Introduction to Chemical Engineering 2 Course</b> Prerequisite: <del>CHE 101 with a C or better; CHEM 105 with a C or better or concurrent enrollment in CHEM 106, 331, 345, or 348; MATH 171 with a C or better or concurrent enrollment in MATH 172, 182, 273, or 315.</del> Introduction to chemical engineering; development of problem solving skills. Typically offered Spring.	<b>Introduction to Chemical Engineering 2 Course</b> Prerequisite: <u>CHE 101 with a C or better; CHEM 105 with a C or better or concurrent enrollment in CHEM 106, 345, or 348; MATH 171 with a C or better or concurrent enrollment in MATH 172, 182, 273, or 315.</u> Introduction to chemical engineering; development of problem solving skills. Typically offered Spring.	8-22
CHE	201	Revise	<b>Chemical Process Principles and Calculations 3 Course</b> Prerequisite: <del>CHE 110 with a C or better, or BIO ENG 140 with an S, or junior standing; CHEM 106 with a C or better or concurrent enrollment in CHEM 331, 345, or 348; MATH 172 or 182 with a C or better, or concurrent enrollment in MATH 273 or 315.</del> Fundamental concepts of chemical engineering; problem-solving techniques and applications in stoichiometry, material and energy balances, and phase equilibria. Typically offered Fall and Summer.	<b>Chemical Process Principles and Calculations 3 Course</b> Prerequisite: <u>CHE 110 with a C or better, or BIO ENG 140 with an S, or junior standing; CHEM 106 with a C or better or concurrent enrollment in CHEM 345 or 348; MATH 172 or 182 with a C or better, or concurrent enrollment in MATH 273 or 315.</u> Fundamental concepts of chemical engineering; problem-solving techniques and applications in stoichiometry, material and energy balances, and phase equilibria. Typically offered Fall and Summer.	8-22
CHE	301	Revise	<b>Chemical Engineering Thermodynamics 3 Course</b> Prerequisite: <del>CHE 101 with a C or better or concurrent enrollment; CHE 211 with a C or better or concurrent enrollment; CHEM 331 with a C or better or concurrent enrollment; admitted to</del>	<b>Chemical Engineering Thermodynamics 3 Course</b> Prerequisite: <u>CHE 101, CHE 211, and CHEM 345 each with a C or better or concurrent enrollment; PHYSICS 202 and 212 with a C or better; admitted to the major in Chemical Engineering.</u> Basic	8-22

			the major in <del>Chemical Engineering</del> . Basic concepts and laws; property relationships; compression and liquefaction; phase equilibria; reaction equilibria; applications in stagewise processing. Typically offered Fall.	concepts and laws; property relationships; compression and liquefaction; phase equilibria; reaction equilibria; applications in stagewise processing. Typically offered Fall.	
CHE / BIO ENG	310	Revise	<b>Introduction to Transport Processes</b> 3 Course Prerequisite: <del>MATH 315 and CHE 101 and CHE 211, each with a C or better or concurrent enrollment; OR MATH 315 with a C or better or concurrent enrollment and BIO ENG 205 with an S or concurrent enrollment; admitted major in Chem Engr or Bioengr.</del> Fundamentals of the phenomena governing the transport of momentum, energy, and mass. (Crosslisted course offered as CHE 310, BIO ENG 310). Typically offered Fall.	<b>Introduction to Transport Processes</b> 3 Course Prerequisite: <u>CHE 201 with a C or better; MATH 315 with a C or better or concurrent enrollment; BIO ENG 205 or both CHE 101 and CHE 211 with a C or better or concurrent enrollment; admitted to the major in Chem Engr or Bioengr.</u> Fundamentals of the phenomena governing the transport of momentum, energy, and mass. (Crosslisted course offered as CHE 310, BIO ENG 310). Typically offered Fall.	8-22
CHE	321	Revise	<b>Kinetics and Reactor Design</b> 3 Course Prerequisite: <del>CHE 301 with a C or better; CHEM 331 with a C or better; MATH 315 with a C or better; admitted to the major in Chemical Engineering.</del> Chemical reaction kinetics applied to the design of reactors, non-ideal flow, mixing, catalysis. Typically offered Spring.	<b>Kinetics and Reactor Design</b> 3 Course Prerequisite: <u>CHE 211 and 310 with a C or better; CHE 302 with a C or better or concurrent enrollment; admitted to the major in Chemical Engineering.</u> Chemical reaction kinetics applied to the design of reactors, non-ideal flow, mixing, catalysis. Typically offered Spring.	8-22
CHE	332	Revise	<b>Fluid Mechanics and Heat Transfer</b> 3 Course Prerequisite: <del>CHE 301 with a C or better; CHE 310 with a C or better; admitted to the major in Chemical Engineering.</del> Design calculations, operations, and evaluation of equipment used in fluid flow, heat transfer, and evaporation. Typically offered Spring.	<b>Fluid Mechanics and Heat Transfer</b> 3 Course Prerequisite: <u>CHE 302 with a C or better or concurrent enrollment; CHE 211 and 310 with a C or better; admitted to the major in Chemical Engineering.</u> Design calculations, operations, and evaluation of equipment used in fluid flow, heat transfer, and evaporation. Typically offered Spring.	8-22
CHE	334	Revise	<b>Chemical Engineering Separations</b> 3 Course	<b>Chemical Engineering Separations</b> 3 Course	8-22

			Prerequisite: <del>CHE 301 with a C or better; CHE 310 with a C or better; CHEM 345 with a C or better; admitted to the major in Chemical Engineering.</del> Design and evaluation of equipment used in continuous contacting. Typically offered Spring.	Prerequisite: <u>CHE 302 with a C or better or concurrent enrollment; CHE 211 and 310 with a C or better; CHEM 345 with a C or better; admitted to the major in Chemical Engineering.</u> Design and evaluation of equipment used in continuous contacting. Typically offered Spring.	
CHE	422	Revise	<b>Catalysis: From Fundamentals to Industrial Applications 3</b> Course Prerequisite: <del>CHE 301 with a C or better; CHE 321 with a C or better.</del> An introduction to modern catalysis systems for chemical engineers, with an emphasis on heterogeneous catalysis. Typically offered Spring.	<b>Catalysis: From Fundamentals to Industrial Applications 3</b> Course Prerequisite: <u>CHE 302 and 321 with a C or better.</u> An introduction to modern catalysis systems for chemical engineers, with an emphasis on heterogeneous catalysis. Typically offered Spring.	8-22
CHE	432	Revise	<b>[M] Chemical Engineering Lab I 3 (1-6)</b> Course Prerequisite: <del>CHE 321 and 334 with a C or better; CHE 332 with a C or better or concurrent; CHE 352 with a C or better or concurrent; ENGLISH 402 or 403 with a C or better or concurrent; STAT 423 with a C or better; admitted to Chemical Engr.</del> Statistical design and analysis of experiments; safety; experiments in heat and mass transfer; separations, other unit operations, kinetics, control; technical reports and presentations. Typically offered Fall.	<b>[M] Chemical Engineering Lab I 3 (1-6)</b> Course Prerequisite: <u>CHE 302, 321, 332 and 334 with a C or better; CHE 352 with a C or better or concurrent enrollment; ENGLISH 402 or 403 with a C or better or concurrent enrollment; admitted to the major in Chemical Engr.</u> Statistical design and analysis of experiments; safety; experiments in heat and mass transfer; separations, other unit operations, kinetics, control; technical reports and presentations. Typically offered Fall.	8-22
CHE	441	Revise	<b>Process Control 3</b> Course Prerequisite: <del>CHE 321 with a C or better; CHE 332 with a C or better; CHE 334 with a C or better; admitted to the major in Chemical Engineering.</del> Measuring instruments, automatic control, process and instrument characteristics and theory applied to industrial control problems. Typically offered Fall.	<b>Process Control 3</b> Course Prerequisite: <u>CHE 302, 321, 332, and 334 with a C or better; admitted to the major in Chemical Engineering.</u> Measuring instruments, automatic control, process and instrument characteristics and theory applied to industrial control problems. Typically offered Fall.	8-22

CHE	450	Revise	<b>Chemical Process Analysis and Design I</b> 3 Course Prerequisite: <del>CHE 321 with a C or better; CHE 332 with a C or better; CHE 334 with a C or better; CHE 352 with a C or better or concurrent; ENGLISH 402 or 403 with a C or better or concurrent; admitted to the major in Chemical Engineering.</del> Chemical engineering design; computer tools; safety and environmental constraints; cost and equipment optimization. Typically offered Fall.	<b>Chemical Process Analysis and Design I</b> 3 Course Prerequisite: <u>CHE 302, 321, 332, and 334 with a C or better; CHE 352 with a C or better or concurrent; ENGLISH 402 or 403 with a C or better or concurrent; admitted to the major in Chemical Engineering.</u> Chemical engineering design; computer tools; safety and environmental constraints; cost and equipment optimization. Typically offered Fall.	8-22
CHE	462	Revise	<b>Applied Electrochemistry</b> 3 Course Prerequisite: <del>CHE 301 with a C or better; CHE 310 with a C or better; CHE 321 with a C or better; CHEM 331 with a C or better; admitted to the major in Chemical Engineering.</del> Thermodynamics, kinetics, and transport processes that occur in a simple model electrochemical system and how to apply them into more complicated real systems. Typically offered Spring.	<b>Applied Electrochemistry</b> 3 Course Prerequisite: <u>CHE 302 and 321 with a C or better; admitted to the major in Chemical Engineering.</u> Thermodynamics, kinetics, and transport processes that occur in a simple model electrochemical system and how to apply them into more complicated real systems. Typically offered Spring.	8-22
CHE	463	Revise	<b>Introduction to Upstream/Midstream Technology</b> 3 Course Prerequisite: <del>CHE 301.</del> An introduction for chemical engineers to oil and gas exploration, production, transportation, and storage. Typically offered Fall.	<b>Introduction to Upstream/Midstream Technology</b> 3 Course Prerequisite: <u>CHE 301 with a C or better.</u> An introduction for chemical engineers to oil and gas exploration, production, transportation, and storage. Typically offered Fall.	8-22
CHEM	532	Revise	<b>Advanced Physical Chemistry II</b> 3 Introduction to quantum mechanics; postulates of quantum mechanics; exact solutions and approximation methods. Recommended preparation: CHEM 332 or equivalent. Typically offered Fall.	<b>Advanced Physical Chemistry II</b> 3 Introduction to quantum mechanics; postulates of quantum mechanics; exact solutions and approximation methods. Recommended preparation: CHEM 332 or equivalent. Typically offered Fall. <u>Cooperative: Open to UI degree-seeking students.</u>	8-22
CPT S	121	Revise	<b>Program Design and Development C/C++</b> 4 (3-3)	<b>Program Design and Development C/C++</b> 4 (3-3)	8-22

			<p>Course Prerequisite: <del>MATH 108, 171, 172, 182, 201, 202, 206, or 220, each with a C or better, or a minimum ALEKS math placement score of 80%, or adequate CPT S placement test score determined by the department.</del> Formulation of problems and top-down design of programs in a modern structured language (C/C++) for their solution on a digital computer. Typically offered Fall, Spring, and Summer.</p>	<p>Course Prerequisite: <u>MATH 108, 171, 172, 182, 201, 202, 206, or 220, each with a C or better, or CPT S 111 with a B+ or better, or a minimum ALEKS math placement score of 78%, or adequate CPT S placement test score determined by the department.</u> Formulation of problems and top-down design of programs in a modern structured language (C/C++) for their solution on a digital computer. Typically offered Fall, Spring, and Summer.</p>	
CPT S	131	Revise	<p><b>Program Design and Development Java 4 (3-3)</b>  Course Prerequisite: <del>Course Prerequisite: MATH 108, 171, 172, 182, 201, 202, 206, or 220, each with a C or better, or ALEKS math placement score of 80% or higher, or adequate CPT S placement test score determined by the department.</del> Formulation of problems and top-down design of programs in a modern structured language for their solution on a digital computer. Taught in Java programming language. Typically offered Fall and Spring.</p>	<p><b>Program Design and Development Java 4 (3-3)</b>  Course Prerequisite: <u>MATH 108, 171, 172, 182, 201, 202, 206, or 220, each with a C or better, or CPT S 111 with a B+ or better, or a minimum ALEKS math placement score of 78%, or adequate CPT S placement test score determined by the department.</u> Formulation of problems and top-down design of programs in a modern structured language for their solution on a digital computer. Taught in Java programming language. Typically offered Fall and Spring.</p>	8-22
CPT S / <u>CS</u>	515	Revise	<p><b>Advanced Algorithms 3</b>  Advanced algorithms and data structures, design and analysis, intractability.</p>	<p><b>Advanced Algorithms 3</b>  Advanced algorithms and data structures, design and analysis, intractability. (<u>Crosslisted course offered as CPT S 515, CS 515.</u>)</p>	8-22
ECE	424	Revise	<p><b>Computer Architecture and Design 3</b> Course Prerequisite: <del>ECE 234 or CS 264.</del> Architecture, organization and design of modern digital computers; instruction sets, computer arithmetic, pipelining, memory hierarchy, storage and input/output topics. Typically offered Fall.</p>	<p><b>Computer Architecture and Design 3</b> Course Prerequisite: <u>ECE 234 or CS 260.</u> Architecture, organization and design of modern digital computers; instruction sets, computer arithmetic, pipelining, memory hierarchy, storage and input/output topics. Typically offered Fall.</p>	8-23

ECE	461	Revise	<b>Power Systems Analysis and Design I</b> 3 Course Prerequisite: ECE 370. Basic components and their representations in power systems, power transformers, and transmission lines.	<b>Power Systems Analysis and Design 3</b> Course Prerequisite: ECE 370. Basic components and their representations in power systems, power transformers, and transmission lines.	8-23
ECE	462	Drop	<b>Power Systems Analysis and Design II</b> 3 (2-3) Course Prerequisite: ECE 461. Power flow, symmetrical faults, symmetrical components, unsymmetrical faults, and transient stability, the computer simulation software application in power systems analysis. Typically offered Spring.	--N/A--	8-23
ED RES	564	Revise	<b>Qualitative Research</b> 3 Course Prerequisite: ED RES 563. Theoretical underpinnings of qualitative research; familiarity with published qualitative research in education; practical research skills. Typically offered Fall and Spring.	<b>Qualitative Research 3 Course</b> Prerequisite: ED PSYCH 507; ED RES 563. Theoretical underpinnings of qualitative research; familiarity with published qualitative research in education; practical research skills. Typically offered Fall and Spring.	8-23
ED RES	566	Drop	<b>Research Seminar</b> 1 May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: Doctoral standing in Education. Presentation and analysis of research; professional development in research presentation. Typically offered Fall and Spring. S, F grading.	--N/A--	8-22
ED RES	572	Drop	<b>Survey Design and Development Research Methods</b> 3 Course Prerequisite: ED PSYCH 508. Introduction to survey and questionnaire design and research techniques. Typically offered Fall.	--N/A--	8-22
ED RES	573	Drop	<b>Psychophysiological Measurement I</b> 3 Overview of principles, theory, and applications of psychophysiological assessment. Typically offered Fall.	--N/A--	8-22

<b>ED RES</b>	<b>574</b>	<b>Drop</b>	<b>Psychophysiological Measurement II 3</b> Overview of principles, theory, and applications of psychophysiological assessment. Typically offered Spring.	--N/A--	<b>8-22</b>
<b>ED RES</b>	<b>575</b>	<b>Drop</b>	<b>Introduction to Neuroimaging and Electroencephalography 3</b> Overview of principles, theory, and applications of psychophysiological assessment using neuroimaging and electroencephalography. Recommended preparation: ED PSYCH 508 or equivalent. Typically offered Spring.	--N/A--	<b>8-22</b>
<b>ED RES</b>	<b>576</b>	<b>Drop</b>	<b>Neurocognition Science Laboratory Rotation V 1 (0-3) to 3 (0-9)</b> May be repeated for credit; cumulative maximum 3 hours. Hands on applications of principles and theory of psychophysiological assessment in a laboratory setting. Typically offered Fall and Spring.	--N/A--	<b>8-22</b>
<b>ENTRP</b>	<b>486</b>	<b>Revise</b>	<del>[M]</del> <b>Launching New Ventures 3</b> Course Prerequisite: ENTRP 485 with a C or better; junior standing. Focus on turning an idea into a serious business venture; research new business opportunities and become skilled in developing business tools and processes to carry out venture-launch strategies; compete in the WSU Business Plan Competition. Typically offered Spring.	<b>Launching New Ventures 3</b> Course Prerequisite: ENTRP 485 with a C or better; junior standing. Focus on turning an idea into a serious business venture; research new business opportunities and become skilled in developing business tools and processes to carry out venture-launch strategies; compete in the WSU Business Plan Competition. Typically offered Spring.	<b>8-22</b>
<b>ENTRP</b>	<b>496</b>	<b>Revise</b>	<del>[M]</del> <b>Special Topics V 1-3</b> May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Admitted to a major or minor in the College of Business. Course covers new or time-sensitive topics in entrepreneurship. Typically offered Fall and Spring.	<b>Special Topics V 1-3</b> May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Admitted to a major or minor in the College of Business. Course covers new or time-sensitive topics in entrepreneurship. Typically offered Fall and Spring.	<b>8-22</b>
<b>FS</b>	<b>201</b>	<b>Revise</b>	<del>[BSCI]</del> <b>Science on Your Plate 3</b> Applications of science, scientific	<b>[BSCI] Science on Your Plate 3</b> Overview of the basic science	<b>8-22</b>

			literacy, and critical thinking as related to the development and manufacture of modern food products and their use in modern civilizations. Typically offered Fall. Cooperative: Open to UI degree-seeking students.	<u>behind foods; explores the discoveries, inventions, myths, and misconceptions related to foods; examines the evolution of foods and government regulations for conventional and organic foods.</u> Typically offered Fall. Cooperative: Open to UI degree-seeking students.	
FS	402	Revise	<b>Industrial Fermentations 3</b> Course Prerequisite: <del>MBIOS 101 or 305</del> ; MBIOS 303. Science and technology associated with industrial-scale food fermentations. Typically offered Spring. Cooperative: Open to UI degree-seeking students.	<b>Industrial Fermentations 3</b> Course Prerequisite: <u>CHEM 370 or MBIOS 303</u> ; MBIOS 101 or 305. Science and technology associated with industrial-scale food fermentations. Typically offered Spring. Cooperative: Open to UI degree-seeking students.	8-22
FS / ANIM SCI	405	Revise	<b>Ciders and Other Fermented Foods 3 (2-3) Course</b> Prerequisite: BIOLOGY 106 and 107, or MBIOS 101, or MBIOS 304 and 305. Chemistry, microbiology, and technology associated with the production of cider, beer, and other food fermentations. <del>Two half-day field trips required.</del> (Crosslisted course offered as FS 405, ANIM SCI 405). Recommended preparation: FS 304 and 465. Typically offered Spring. Cooperative: Open to UI degree-seeking students.	<b>Ciders and Other Fermented Foods 3 (2-3) Course</b> Prerequisite: BIOLOGY 106 and 107, or MBIOS 101, or MBIOS 304 and 305. Chemistry, microbiology, and technology associated with the production of cider, beer, and other food fermentations. (Crosslisted course offered as FS 405, ANIM SCI 405). Recommended preparation: FS 304 and 465. Typically offered Spring. Cooperative: Open to UI degree-seeking students.	1-23
FS	418	Revise	<b>Oral Seminar in Food Science 1</b> May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: <del>FS 110 or 220</del> ; <del>admitted to the major in Food Science</del> ; junior standing. Development of skills and communication tools and techniques for oral presentations of current food science research. Typically offered Spring. Cooperative: Open to UI degree-seeking students.	<b>Oral Seminar in Food Science 1</b> May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: <u>Admitted to the major in Food Science</u> ; <u>junior standing</u> . Development of skills and communication tools and techniques for oral presentations of current food science research; <u>professional development and job preparation</u> . Cooperative: Open to UI degree-seeking students.	1-23
FS	460	Revise	<b>Food Chemistry 3 Course</b> Prerequisite: <del>CHEM 345</del> ; MBIOS	<b>Food Chemistry 3 Course</b> Prerequisite: <u>CHEM 345</u> ; <u>CHEM</u>	8-22

			303. Fundamentals of food chemistry; composition of foods and the changes that occur during processing. Typically offered Fall. Cooperative: Open to UI degree-seeking students.	<u>370 or MBIOS 303.</u> Fundamentals of food chemistry; composition of foods and the changes that occur during processing. Typically offered Fall. Cooperative: Open to UI degree-seeking students.	
FS	464	Revise	<b>Food Toxicology 3 Course</b> Prerequisite: <del>MBIOS 303</del> . General principles of toxicological evaluation of chemicals which enter the food chain; toxicology of food additives, colors, preservatives, drugs, pesticides and natural toxins in foods and risk characterization. Credit not granted for both FS 464 and FS 564. Offered at 400 and 500 level. Typically offered Fall. Cooperative: Open to UI degree-seeking students.	<b>Food Toxicology 3 Course</b> Prerequisite: <u>CHEM 370 or MBIOS 303</u> . General principles of toxicological evaluation of chemicals which enter the food chain; toxicology of food additives, colors, preservatives, drugs, pesticides and natural toxins in foods and risk characterization. Credit not granted for both FS 464 and FS 564. Offered at 400 and 500 level. Typically offered Fall. Cooperative: Open to UI degree-seeking students.	1-23
FS / VIT ENOL	465 / 565	Revise	<b>Wine Microbiology and Processing 3 Course</b> Prerequisite: <del>MBIOS 303; MBIOS 101 or 305</del> . Technical principles related to the processing and fermentation of wines with an emphasis on microbiology. (Crosslisted course offered as FS 465, VIT ENOL 465). Credit not granted for both FS/VIT ENOL 465 and FS 565. Recommended preparation for graduate students: MBIOS 303; MBIOS 304; MBIOS 101 or 305. Offered at 400 and 500 level. Typically offered Fall. Cooperative: Open to UI degree-seeking students.	<b>Wine Microbiology and Processing 3 Course</b> Prerequisite: <u>CHEM 370 or MBIOS 303; MBIOS 101 or 305</u> . Technical principles related to the processing and fermentation of wines with an emphasis on microbiology. (Crosslisted course offered as FS 465, VIT ENOL 465). Credit not granted for both FS/VIT ENOL 465 and FS 565. Recommended preparation for graduate students: <u>CHEM 370 or MBIOS 303; MBIOS 304; MBIOS 101 or 305</u> . Offered at 400 and 500 level. Typically offered Fall. Cooperative: Open to UI degree-seeking students.	8-22
FS	510	Revise	<b>Functional Foods and Health 3</b> <del>Benefits of foods beyond basic nutrition; bioactive compounds in functional foods and nutraceuticals relating to disease prevention and health promotion.</del> Recommended preparation: <del>BIOLOGY 101; BIOLOGY 102,</del>	<b>Functional Foods and Health 3</b> <u>Benefits of foods beyond basic nutrition; bioactive compounds in functional foods relating to health promotion.</u> Recommended preparation: <u>BIOLOGY 101; BIOLOGY 102, or BIOLOGY 106; BIOLOGY 107; CHEM 370</u>	1-23

			<del>or BIOLOGY 106; BIOLOGY 107; MBIOS 303.</del> Typically offered Spring. Cooperative: Open to UI degree-seeking students.	<del>or MBIOS 303.</del> Typically offered Spring. Cooperative: Open to UI degree-seeking students.	
<b>FS</b>	<b>515</b>	<b>Revise</b>	<b>Food Fermentations -- Microbiology and Technology 3</b> Fundamental understanding of food fermentation science and technology knowledge and principles; application of scientific knowledge to assess and solve food fermentation science and technology problems. Recommended preparation: <del>MBIOS 101 or 305; MBIOS 303.</del> Typically offered Spring and Summer. Cooperative: Open to UI degree-seeking students.	<b>Food Fermentations -- Microbiology and Technology 3</b> Fundamental understanding of food fermentation science and technology knowledge and principles; application of scientific knowledge to assess and solve food fermentation science and technology problems. Recommended preparation: <u>MBIOS 101 or 305; CHEM 370 or MBIOS 303.</u> Typically offered Spring and Summer. Cooperative: Open to UI degree-seeking students.	<b>1-23</b>
<b>HBM</b>	<b>375</b>	<b>Revise</b>	<b>Introduction to Senior Living Management 3</b> Introduction to the unique aspects of managing senior housing communities. Typically offered Fall and Spring.	<b>Introduction to Senior Living Management 3</b> Introduction to the unique aspects of managing senior housing communities. <u>Field trip required.</u> Typically offered Fall and Spring.	<b>8-22</b>
<b>HISTORY</b>	<b>313</b>	<b>Revise</b>	<del>[M]</del> <b>Early American History to 1750 3</b> The cultures and interactions of Native Americans, Europeans, and Africans; development of colonial American societies and institutions. (Formerly HISTORY 413.)	<b>Early American History to 1750 3</b> The cultures and interactions of Native Americans, Europeans, and Africans; development of colonial American societies and institutions. (Formerly HISTORY 413.)	<b>8-22</b>
<b>HISTORY</b>	<b>330</b>	<b>Revise</b>	<del>[M]</del> <b>History of Mexico 3</b> War of independence, 19th century Mexico and the liberal-conservative struggle; modern Mexico since the Revolution of 1910. (Formerly HISTORY 430.)	<b>History of Mexico 3</b> War of independence, 19th century Mexico and the liberal-conservative struggle; modern Mexico since the Revolution of 1910. (Formerly HISTORY 430.)	<b>8-22</b>
<b>HISTORY / ASIA</b>	<b>372</b>	<b>Revise</b>	<del>[M]</del> <b>The Middle East Since World War I 3</b> Course Prerequisite: Junior standing. Developments in the Middle East since World War I, including nationalism, fundamentalism, and revolution. (Crosslisted course offered as HISTORY 372, ASIA 372). (Formerly HISTORY 472, ASIA 472.)	<b>The Middle East Since World War I 3</b> Course Prerequisite: Junior standing. Developments in the Middle East since World War I, including nationalism, fundamentalism, and revolution. (Crosslisted course offered as HISTORY 372, ASIA 372). (Formerly HISTORY 472, ASIA 472.)	<b>8-22</b>

<b>HISTORY / ASIA</b>	<b>377</b>	<b>Revise</b>	<b>[DIVR] <del>[M]</del> Modern Japanese History 3</b> Examination of political, socioeconomic and cultural changes and the international crises in modern Japan since the 19th century. (Crosslisted course offered as HISTORY 377, ASIA 377). (Formerly HISTORY 477, ASIA 477.)	<b>[DIVR] Modern Japanese History 3</b> Examination of political, socioeconomic and cultural changes and the international crises in modern Japan since the 19th century. (Crosslisted course offered as HISTORY 377, ASIA 377). (Formerly HISTORY 477, ASIA 477.)	<b>8-22</b>
<b>HISTORY / ASIA</b>	<b>378</b>	<b>Revise</b>	<b><del>[M]</del> The Two Koreas in the Modern World 3</b> Course Prerequisite: Junior standing. Korean history, society, and culture with an emphasis on the two Koreas' standing within the global order. (Crosslisted course offered as HISTORY 378, ASIA 378.) (Formerly HISTORY 478, ASIA 478.) Typically offered Odd Years - Spring.	<b>The Two Koreas in the Modern World 3</b> Course Prerequisite: Junior standing. Korean history, society, and culture with an emphasis on the two Koreas' standing within the global order. (Crosslisted course offered as HISTORY 378, ASIA 378.) (Formerly HISTORY 478, ASIA 478.) Typically offered Odd Years - Spring.	<b>8-22</b>
<b>KIN ACTV</b>	<b>115</b>	<b>Revise</b>	<b>Jogging 1</b> (0-2) May be repeated for credit; cumulative maximum 4 credits. Typically offered Fall and Spring. S, F grading.	<b>Couch to 5K 1</b> (0-2) May be repeated for credit; cumulative maximum 4 credits. Typically offered Fall and Spring. S, F grading.	<b>8-22</b>
<b>KINES</b>	<b>470</b>	<b>Drop</b>	<b>Psychosocial Issues for Athletic Training 3</b> Course Prerequisite: KINES 365 with a C or better. An advanced look at psychology and its application in working with an athletic population. Typically offered Spring.	--N/A--	<b>8-22</b>
<b>MATH / <u>DATA</u></b>	<b>225</b>	<b>Revise</b>	<b>Linear Algebra with Modern Applications 3</b> Course Prerequisite: MATH 106 or higher. Enrollment not allowed if credit already earned for MATH 220 or 230. Solving linear systems, matrices, determinants, subspaces, eigenvalues, orthogonality, machine learning, AI, computer graphics, and economic models. Credit not granted for more than one of MATH 220, 225, and 230. Typically offered Fall and Spring.	<b>Linear Algebra with Modern Applications 3</b> Course Prerequisite: MATH 106 or higher. Enrollment not allowed if credit already earned for MATH 220 or 230. Solving linear systems, matrices, determinants, subspaces, eigenvalues, orthogonality, machine learning, AI, computer graphics, and economic models. Credit not granted for more than one of MATH 220, 225, and 230. (Crosslisted course offered as <u>MATH 225, DATA 225.</u> )	<b>8-22</b>

ME	348	Revise	<p><b>Dynamics Systems 3 Course</b>  Prerequisite: <del>ME 212; ME 313;</del>  <u>admitted to the major in Mechanical Engineering.</u>  Fundamentals of vibration analysis, control systems, system modeling and dynamics analysis. Typically offered Fall and Spring.</p>	<p><b>Dynamics Systems 3 Course</b>  Prerequisite: <u>MATH 315; ME 212; ME 241, CPT S 121, CPT S 131, or E E 221; all with a letter grade C or better; admitted to the major in Mechanical Engineering.</u>  Fundamentals of vibration analysis, control systems, system modeling and dynamics analysis. Typically offered Fall and Spring.</p>	8-22
MGMT	401	Revise	<p><b>Leading People and Organizations 3 Course</b>  Prerequisite: <del>B A 201, 202, and 203, or B A 211, or MGMT 301;</del>  <u>admitted to a major or minor in the College of Business or option of Personnel Psychology &amp; Human Resource Management;</u>  <del>junior standing.</del> Leadership, motivation, team building, group dynamics, interpersonal and group conflict, and job design. Typically offered Fall, Spring, and Summer.</p>	<p><b>Leading People and Organizations 3 Course</b>  Prerequisite: <u>B A 201, 202, and 203, or B A 211, or MGMT 301; admitted to a major or minor in the College of Business, Personnel Psychology &amp; Human Resource Management option, or Biomedical Business option;</u>  <u>junior standing.</u> Leadership, motivation, team building, group dynamics, interpersonal and group conflict, and job design. Typically offered Fall, Spring, and Summer.</p>	8-22
MGMT	483	Revise	<p><b>[M] Management of Innovation and Change 3 Course</b>  Prerequisite: <del>Admitted to a major or minor in the College of Business, major in Economic Sciences, or option of Personnel Psychology &amp; Human Resource Management;</del>  <del>junior standing.</del> Analysis of innovation and change theories in organizations; managing innovation in networks and teams; technology, structure, culture, and environment.</p>	<p><b>[M] Management of Innovation and Change 3 Course</b>  Prerequisite: <u>Admitted to a major or minor in the College of Business, major in Economic Sciences, Personnel Psychology &amp; Human Resource Management option, or Biomedical Business option;</u>  <u>junior standing.</u> Analysis of innovation and change theories in organizations; managing innovation in networks and teams; technology, structure, culture, and environment.</p>	8-22
MGTOP	470	Revise	<p><b>Business Modeling with Spreadsheets 3 Course</b>  Prerequisite: <del>B A 204 or 212; MATH 202, 140, 171, 172, 182, or 220;</del>  <del>junior standing.</del> Use of advanced spreadsheet tools and Visual Basic programming to build and analyze mathematical</p>	<p><b>Business Modeling with Spreadsheets 3 Course</b>  Prerequisite: <u>MATH 202, 140, 171, 172, 182, or 220;</u>  <u>junior standing.</u> Use of advanced spreadsheet tools and Visual Basic programming to build and analyze mathematical models of</p>	8-22

			models of business problems. Typically offered Fall and Spring.	business problems. Typically offered Fall and Spring.	
NURS	308	Revise	<del><b>Professional Development I: Professional Roles and Responsibilities</b> 3 Course Prerequisite: Admitted to the major in Nursing. <u>First of professional development series; roles of nurses as professional caregivers and advocates, based on core values of nursing, incorporating therapeutic use of self, ethical comportment, and scope of practice.</u> Typically offered Fall and Spring.</del>	<b>Professional Development I: Evidence Based Practice 3</b> Course Prerequisite: Admitted to the major in Nursing. <u>First of professional development series; focus on nursing and health care research, information management, informatics, and development of nursing research.</u> Typically offered Fall and Spring.	8-22
NURS	508	Revise	<del><b>Diagnostics and Procedures for Primary Care Practice 2 (1-4)</b> Course Prerequisite: <u>NURS 562 or concurrent enrollment; NURS 563; NURS 581; admission to FNP program.</u> Introduction to the selection and interpretation of diagnostic tests, and performance of minor procedures for primary care practice.</del>	<b>Diagnostics and Procedures for Primary Care Practice 2 (1-4)</b> Course Prerequisite: <u>NURS 562 or concurrent enrollment; NURS 563 or concurrent enrollment; NURS 581; admission to FNP program.</u> Introduction to the selection and interpretation of diagnostic tests, and performance of minor procedures for primary care practice.	5-22
NURS	509	Revise	<del><b>Clinical Decision Making: Essential Concepts and Diagnostic Reasoning 3</b> Course Prerequisite: <u>NURS 562 or concurrent enrollment; NURS 563; NURS 581; admission to the FNP program.</u> A primary care framework for conducting systematic clinical encounters, developing differential diagnoses, and planning care for individuals and families.</del>	<b>Clinical Decision Making: Essential Concepts and Diagnostic Reasoning 3</b> Course Prerequisite: <u>NURS 562 or concurrent enrollment; NURS 563 or concurrent enrollment; NURS 581; admission to the FNP program.</u> A primary care framework for conducting systematic clinical encounters, developing differential diagnoses, and planning care for individuals and families.	5-22
POL S	400	Revise	<del><b>Political Science Issues 3</b> May be repeated for credit; cumulative maximum 6 hours. Current issues in political science. Typically offered Spring and Summer.</del>	<b>Political Science Issues V 1-3</b> May be repeated for credit; cumulative maximum 6 hours. Current issues in political science. Typically offered Spring and Summer.	8-22
SOC	341	Revise	<del><b>Inclusive Workplace Leadership 3</b> Hands-on development of leadership skills for diverse</del>	<b>Inclusive Workplace Leadership 3</b> For upper-division students, development of	8-22

			workplaces. Typically offered Fall.	<u>leadership skills necessary for careers in a diverse workplace.</u> Typically offered Fall.	
<b>SPEC ED</b>	<b>440 / 540</b>	<b>Drop</b>	<b>Methods in Intensive Educational Supports 3 Course</b> Prerequisite: SPEC ED 301 or concurrent enrollment, or SPEC ED 420 or concurrent enrollment. Assessment, curriculum development and modification, and instructional methods for students with severe disabilities. Credit not granted for both SPEC ED 440 and SPEC ED 540. Required preparation must include completion of an introductory special education course, or SPEC ED 520. Offered at 400 and 500 level. Typically offered Spring.	--N/A--	<b>8-22</b>