M E M O R A N D U M

Faculty Senate approved April 11, 2019

TO: Deans and Chairs

FROM: Becky Bitter, Sr. Assistant Registrar

DATE: April 2, 2019

SUBJECT: Minor Change Bulletin No. 12

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
AFS / HORT	505	Revise	**Topics in Computational and Analytical Methods for Scientists** V 1-6 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Graduate standing in agricultural, life, environmental, and economic science or engineering. Applied computational methods for researchers processing, managing, and analyzing data in scientific and engineering fields. Typically offered Fall, Spring, and Summer.	**Topics in Computational and Analytical Methods for Scientists** V 1-6 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Graduate standing in agricultural, life, environmental, and economic science or engineering. Applied computational methods for researchers processing, managing, and analyzing data in scientific and engineering fields. (Crosslisted course offered as AFS 505, HORT 505). Typically offered Fall, Spring, and Summer.	8-19
CHE	110	Revise	**Introduction to Chemical Engineering** 2 Course Prerequisite: CHEM 105 with a C or better or concurrent enrollment; MATH 171 with a C or better or concurrent enrollment. Introduction to chemical engineering, development of problem solving skills. Typically offered Spring.	**Introduction to Chemical Engineering** 2 Course Prerequisite: 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. Introduction to chemical engineering, development of problem solving skills. Typically offered Spring.	8-19
CHE	201	Revise	**Chemical Process Principles and Calculations** 3 Course Prerequisite: CHEM 106 with a C	**Chemical Process Principles and Calculations** 3 Course Prerequisite: CHE 110 with a C or	8-19

			or better or concurrent enrollment, or CHEM 331, ~~CHEM~~ 345, or ~~CHEM~~ 348; MATH 172 or 182 with a C or better or concurrent enrollment, or MATH 273 or ~~MATH~~ 315. Fundamental concepts of chemical engineering; problem-solving techniques and applications in stoichiometry, material and energy balances, and phase equilibria. Typically offered Fall and Summer.	better, or BIO ENG 140 with an S, or junior standing; CHEM 106 with a C or better or concurrent enrollment <u>in</u> CHEM 331, 345, or 348; MATH 172 or 182 with a C or better<u>,</u> or <u>concurrent enrollment in</u> MATH 273 or 315. Fundamental concepts of chemical engineering; problem-solving techniques and applications in stoichiometry, material and energy balances, and phase equilibria. Typically offered Fall and Summer.	
CHE	**211**	**Revise**	**Process Simulation** 3 Course Prerequisite: MATH 315 with a C or better or concurrent enrollment. Computer solutions to problems in chemical engineering processing. Typically offered Spring and Summer.	**Process Simulation** 3 Course Prerequisite: <u>CHE 201 with a C or better;</u> MATH 315 with a C or better or concurrent enrollment. Computer solutions to problems in chemical engineering processing. Typically offered Spring and Summer.	**8-19**
CHE	**301**	**Revise**	**Chemical Engineering Thermodynamics** 3 Course Prerequisite: CHE ~~201~~ with a C or better; CHE 211 with a C or better or concurrent enrollment; CHEM 331 with a C or better or concurrent enrollment; certified Chemical Engineering ~~major~~. Basic concepts and laws; property relationships; compression and liquefaction; phase equilibria; reaction equilibria; applications in stagewise processing. Typically offered Fall.	**Chemical Engineering Thermodynamics** 3 Course Prerequisite: CHE <u>101</u> with a C or better <u>or concurrent enrollment</u>; CHE 211 with a C or better or concurrent enrollment; CHEM 331 with a C or better or concurrent enrollment; certified <u>major in</u> Chemical Engineering. Basic concepts and laws; property relationships; compression and liquefaction; phase equilibria; reaction equilibria; applications in stagewise processing. Typically offered Fall.	**8-19**
CHE / BIO ENG	**310**	**Revise**	**Introduction to Transport Processes** 3 Course Prerequisite: ~~CHE 201 with a C or better; MATH 315 with a C or better or concurrent enrollment; certified major in Chemical Engineering or Bioengineering.~~ Fundamentals of the phenomena governing the transport of momentum, energy, and mass. (Crosslisted course	**Introduction to Transport Processes** 3 Course Prerequisite: <u>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; certified major in Chem Engr or Bioengr.</u> Fundamentals of the phenomena	**8-19**

				offered as CHE 310, BIO ENG 310). Typically offered Fall.	governing the transport of momentum, energy, and mass. (Crosslisted course offered as CHE 310, BIO ENG 310). Typically offered Fall.	
CHE	**332**		**Revise**	**Fluid Mechanics and Heat Transfer** 3 Course Prerequisite: CHE 310 with a C or better; certified Chemical Engineering ~~major~~. Design calculations, operations, and evaluation of equipment used in fluid flow, heat transfer, and evaporation. Typically offered Spring.	**Fluid Mechanics and Heat Transfer** 3 Course Prerequisite: <u>CHE 301 with a C or better;</u> CHE 310 with a C or better<u>;</u> certified <u>major in</u> Chemical Engineering. Design calculations, operations, and evaluation of equipment used in fluid flow, heat transfer, and evaporation. Typically offered Spring.	**8-19**
CHE	**334**		**Revise**	**Chemical Engineering Separations** 3 Course Prerequisite: CHE 301 with a C or better; CHE 310 with a C or better; ~~CHE 332~~ with a C or better ~~or concurrent enrollment~~; certified Chemical Engineering ~~major~~. Design and evaluation of equipment used in continuous contacting. Typically offered Spring.	**Chemical Engineering Separations** 3 Course Prerequisite: CHE 301 with a C or better; CHE 310 with a C or better; <u>CHEM 345</u> with a C or better; certified <u>major in</u> Chemical Engineering. Design and evaluation of equipment used in continuous contacting. Typically offered Spring.	**8-19**
CHE	**352**		**Revise**	**Chemical Process Safety** 3 Course Prerequisite: CHE ~~301~~ with a C or better; CHE 332 with a C or better ~~or concurrent enrollment~~; certified major in Chemical Engineering. Introduction to technical fundamentals of chemical process safety. Typically offered Spring.	**Chemical Process Safety** 3 Course Prerequisite: CHE <u>321</u> with a C or better; CHE 332 with a C or better; certified major in Chemical Engineering. Introduction to technical fundamentals of chemical process safety. Typically offered Spring.	**8-19**
CHE	**432**		**Revise**	**[M] Chemical Engineering Lab I** 3 (1-6) Course Prerequisite: ~~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.~~ 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.	**[M] Chemical Engineering Lab I** 3 (1-6) Course Prerequisite: <u>CHE 321 and 334 with a C or better; CHE 332 with a C or better or concurrent enrollment; CHE 352 with a C or better or concurrent enrollment; ENGLISH 402 or 403 with a C or better; STAT 423 with a C or better; certified Chem Engr.</u> Statistical design and analysis of experiments; safety; experiments in heat and mass transfer;	**8-19**

				separations, other unit operations, kinetics, control; technical reports and presentations. Typically offered Fall.	
CHE	**450**	**Revise**	**Chemical Process Analysis and Design I** 3 Course Prerequisite: 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. Chemical engineering design; computer tools; safety and environmental constraints; cost and equipment optimization. Typically offered Fall.	**Chemical Process Analysis and Design I** 3 Course Prerequisite: 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 <u>or concurrent enrollment; ENGLISH 402 or 403 with a C or better; certified major in Chemical Engineering</u>. Chemical engineering design; computer tools; safety and environmental constraints; cost and equipment optimization. Typically offered Fall.	**8-19**
E M	**540**	**Revise**	**Operations Research for Managers** 3 Applying linear, integer, goal programming; network optimization; queuing analysis; dynamic programming; simulation; Markov analysis; and forecasting to engineering management decisions.	**Operations Research <u>and Analytics</u> for Managers** 3 Applying linear, integer, goal programming; network optimization; queuing analysis; dynamic programming; simulation; Markov analysis; and forecasting to engineering management decisions.	**8-19**
HONORS	**298**	**Revise**	**Global Leadership** 2 Course Prerequisite: Must be an Honors student; by permission only. ~~Exploration of critical issues in a global context through a global case team challenge~~. Typically offered Spring. S, F grading.	**<u>Approaches to</u> Global Leadership** 2 Course Prerequisite: Must be an Honors student; by permission only. <u>Leadership in a global context through</u> exploration of critical issues<u>, case studies, and team projects</u>. Typically offered Spring. S, F grading.	**8-19**