M E M O R A N D U M

TO: Deans and Chairs

FROM: Heather Morgan, Assistant Registrar

DATE: September 30, 2025

SUBJECT: Minor Change Bulletin No. 2

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
ACCTG	**440**	**Revise**	**Advanced Auditing** 3 ~~Course Prerequisite: ACCTG 439.~~ Auditing theory application and data analysis. Typically offered Spring.	**Advanced Auditing** 3 Course Prerequisite: ACCTG 439 or concurrent enrollment. Auditing theory application and data analysis. Typically offered Spring.	**1-26**
COMJOUR	**433**	**Revise**	~~**Audio Journalism**~~ 3 (2-3) ~~Course Prerequisite: COMJOUR 333; admitted to a major in the College of Communication. Audio journalism designed to refine a range of skills including reporting; on-air presentation; podcasting; writing for audio; and sportscasting.~~	**Podcast Production and Audio Storytelling** 3 (2-3) Course Prerequisite: COMJOUR 333; admitted to a major or minor in the Murrow College of Communication. Refine a range of skills including podcast production, on-air presentation, writing for audio and entertainment audio production.	**1-26**
DATA	**115**	**Revise**	**[QUAN] Introduction to Data Analytics** 3 ~~Basic concepts, principles, and tools used in data analytics.~~	**[QUAN] Introduction to Data Analytics** 3 Foundational course in data analytics covering statistical and mathematical principles, computational tools (Excel, Python, R), and reproducible workflows for data wrangling, visualization, and communication.	**1-26**
ECE	**234**	**Revise**	**Microprocessor Systems** 3 (2-3) ~~Course Prerequisite: CS 251 or CS 261; ECE 214.~~ Microprocessor system architecture, instruction sets and	**Microprocessor Systems** 3 (2-3) Course Prerequisite: ECE 251 or CS 261; ECE 214. Microprocessor system architecture, instruction sets and	**1-26**

			interfacing; assembly language programming. Typically offered Spring.	interfacing; assembly language programming. Typically offered Spring.	
ECE	**302**	**Revise**	**Properties of Electronic Materials** 3 ~~Course Prerequisite: CHEM 105; PHYS 202.~~ Schrodinger's wave equation, potential barrier problems, crystal structure and bonds, band theory of solids, semiconductors, super conductor, dielectric and magnetic material properties. Typically offered Spring.	**Properties of Electronic Materials** 3 Course Prerequisite: CHEM 105; 4 credits of PHYSICS 202, or PHYSICS 202 and PHYSICS 212. Schrodinger's wave equation, potential barrier problems, crystal structure and bonds, band theory of solids, semiconductors, super conductor, dielectric and magnetic material properties. Typically offered Spring.	**1-26**
ECE	**316**	**Revise**	**Nanotechnology for Semiconductor and Renewable Energy Applications** 3 ~~Course Prerequisite: CHEM 105; PHYSICS 202.~~ Scaling laws, nanofabrication, nanomaterials, nanoscale characterization; nanotechnology in semiconductor industry, critical dimension, solar cells, fuel cells, energy storage, batteries, energy efficiency and energy savings. Typically offered Spring.	**Nanotechnology for Semiconductor and Renewable Energy Applications** 3 Course Prerequisite: CHEM 105; 4 credits of PHYSICS 202, or PHYSICS 202 and PHYSICS 212. Scaling laws, nanofabrication, nanomaterials, nanoscale characterization; nanotechnology in semiconductor industry, critical dimension, solar cells, fuel cells, energy storage, batteries, energy efficiency and energy savings. Typically offered Spring.	**1-26**
HBM	**490**	**Revise**	**Food and Beverage Operational Analysis** 3 ~~Course Prerequisite: FIN 325; HBM 358; MKTG 360; admitted to a major in College of Business or minor in Hospitality Business Management or Wine and Beverage Business Management; junior standing.~~ Theory and practice of new product/service innovation and process, beverage/brand marketing, logistics/distribution concerns, sales and marketing efforts, and legal and regulatory concerns for development of innovative beverage or food and beverage concepts. Typically offered Fall.	**Food and Beverage Operational Analysis** 3 Course Prerequisite: HBM 358; Admitted to WBBM or HBM major or minor in WBBM or HBM. Theory and practice of new product/service innovation and process, beverage/brand marketing, logistics/distribution concerns, sales and marketing efforts, and legal and regulatory concerns for development of innovative beverage or food and beverage concepts. Typically offered Fall.	**1-26**

MATH	**140**	**Revise**	**[QUAN] Calculus for Life Scientists** 4 (3-3) Course Prerequisite: MATH 106 with a C or better and MATH 108 with a C or better, or a minimum ALEKS math placement score of 80%. ~~Enrollment not allowed if credit already earned for MATH 171 or 202 except by department consent.~~ Differential and integral calculus with emphasis on life science applications. ~~By department consent, credit may be allowed for two of MATH 140, 171, or 202.~~ Typically offered Fall and Spring.	**[QUAN] Calculus for Life Scientists** 4 (3-3) Course Prerequisite: MATH 106 with a C or better and MATH 108 with a C or better, or a minimum ALEKS math placement score of 80%. Enrollment not allowed if credit already earned for MATH 171, 202 or DATA 121 except by department consent. Differential and integral calculus with emphasis on life science applications. By department consent, credit may be allowed for two of MATH 140, 171, 202, or DATA 121. Typically offered Fall and Spring.	**1-26**
MATH	**171**	**Revise**	**[QUAN] Calculus I** 4 (3-3) Course Prerequisite: MATH 106 with a C or better and MATH 108 with a C or better, or a minimum ALEKS math placement score of 83%. ~~Enrollment not allowed if credit already earned for MATH 140 or 202 except by department consent.~~ Differential and integral calculus of one variable with associated analytic geometry. ~~By department consent, credit may be allowed for two of MATH 140, 171, or 202.~~ Typically offered Fall, Spring, and Summer.	**[QUAN] Calculus I** 4 (3-3) Course Prerequisite: MATH 106 with a C or better and MATH 108 with a C or better, or a minimum ALEKS math placement score of 83%. Enrollment not allowed if credit already earned for MATH 140, 202 or DATA 121 except by department consent. Differential and integral calculus of one variable with associated analytic geometry. By department consent, credit may be allowed for two of MATH 140, 171, or 202. Typically offered Fall, Spring, and Summer.	**1-26**
MATH	**202**	**Revise**	**[QUAN] Calculus for Business and Economics** 3 Course Prerequisite: MATH 106 with a C or better, MATH 201 with a C or better, or a minimum ALEKS math placement score of 80%. ~~Enrollment not allowed if credit already earned for MATH 140 or 171 except by department consent.~~ Differential calculus of the polynomial, exponential, and logarithmic functions; focus on unconstrained and constrained optimization, single and partial differentiation. ~~By department~~	**[QUAN] Calculus for Business and Economics** 3 Course Prerequisite: MATH 106 with a C or better, MATH 201 with a C or better, or a minimum ALEKS math placement score of 80%. Enrollment not allowed if credit already earned for MATH 140,171 or DATA 121 except by department consent. Differential calculus of the polynomial, exponential, and logarithmic functions; focus on unconstrained and constrained optimization, single and partial	**1-26**

			~~consent, credit may be allowed for two of MATH 140, 171, or 202.~~ Typically offered Fall, Spring, and Summer.	differentiation. By department consent, credit may be allowed for two of MATH 140, 171, or 202. Typically offered Fall, Spring, and Summer.	
MATH	**216**	**Revise**	**Discrete Structures** 3 ~~Course Prerequisite: MATH 106 or 201 with a C or better, or MATH 140, 171, 202 or higher or concurrent enrollment, or a minimum ALEKS math placement score of 80%.~~ Discrete mathematics, trees, graphs, elementary logic, and combinatorics with application to computer science. Recommended preparation: Programming course. Typically offered Fall, Spring, and Summer.	**Discrete Structures** 3 Course Prerequisite: MATH 106 or 201 with a C or better, or MATH 140, 171, 202 or DATA 121 or higher or concurrent enrollment, or a minimum ALEKS math placement score of 80%. Discrete mathematics, trees, graphs, elementary logic, and combinatorics with application to computer science. Recommended preparation: Programming course. Typically offered Fall, Spring, and Summer.	**1-26**
MATH	**220**	**Revise**	**Introductory Linear Algebra** 2 ~~Course Prerequisite: MATH 106 or 201 with a C or better, or MATH 140, 171, 202 or higher or concurrent enrollment, or a minimum ALEKS math placement score of 80%.~~ Solving linear systems, matrices, determinants, subspaces, eigenvalues, orthogonality. Credit not granted for more than one of MATH 220, 225, and 230. Typically offered Fall, Spring, and Summer.	**Introductory Linear Algebra** 2 Course Prerequisite: MATH 106 or 201 with a C or better, or MATH 140, 171, 202 or DATA 121 or higher or concurrent enrollment, or a minimum ALEKS math placement score of 80%. Solving linear systems, matrices, determinants, subspaces, eigenvalues, orthogonality. Credit not granted for more than one of MATH 220, 225, and 230. Typically offered Fall, Spring, and Summer.	**1-26**
MATH / DATA	**225**	**Revise**	**Linear Algebra with Modern Applications** 3 ~~Course Prerequisite: MATH 106 or 201 with a C or better, or MATH 140, 171, 202 or higher or concurrent enrollment, or a minimum ALEKS math placement score of 80%.~~ Solving linear systems, matrices, determinants, subspaces, eigenvalues, orthogonality, machine learning, AI, computer graphics, and economic models. (Crosslisted course offered as	**Linear Algebra with Modern Applications** 3 Course Prerequisite: MATH 106 or 201 with a C or better, or MATH 140, 171, 202 or DATA 121 or higher or concurrent enrollment, or a minimum ALEKS math placement score of 80%. Solving linear systems, matrices, determinants, subspaces, eigenvalues, orthogonality, machine learning, AI, computer graphics, and economic models. (Crosslisted course offered as	**1-26**

			MATH 225, DATA 225.) Credit not granted for more than one of MATH 225, 220, and 230. Typically offered Fall and Spring.	MATH 225, DATA 225.) Credit not granted for more than one of MATH 225, 220, and 230. Typically offered Fall and Spring.	
MATH	**230**	**Revise**	**Honors Introductory Linear Algebra** 3 ~~Course Prerequisite: MATH 106 or 201 with a C or better, or MATH 140, 171, 202 or higher or concurrent enrollment, or a minimum ALEKS math placement score of 80%.~~ An introduction to linear algebra with an emphasis on conceptual development. Credit not granted for more than one of MATH 230, 220, and 225. Typically offered Spring.	**Honors Introductory Linear Algebra** 3 Course Prerequisite: MATH 106 or 201 with a C or better, or MATH 140, 171, 202 or DATA 121 or higher or concurrent enrollment, or a minimum ALEKS math placement score of 80%. An introduction to linear algebra with an emphasis on conceptual development. Credit not granted for more than one of MATH 230, 220, and 225. Typically offered Spring.	**1-26**
MATH	**416**	**Revise**	**Numerical Simulations for Probabilistic Models** 3 Course Prerequisite: STAT 360; CPT S 121, CPT S 215, or MATH 300. Efficient generation of random variables; statistical analysis and validation techniques; variance reduction; Markov Chain Monte Carlo methods; applications include complex systems, financial models, and Bayesian computation. Required preparation must include probability and statistics and programming experience. Credit not granted for both MATH 416 and MATH 516. ~~Offered at 400 and 500 level.~~ Typically offered Fall. Cooperative: Open to UI degree-seeking students.	**Numerical Simulations for Probabilistic Models** 3 Course Prerequisite: STAT 360; CPT S 121, CPT S 215, or MATH 300. Efficient generation of random variables; statistical analysis and validation techniques; variance reduction; Markov Chain Monte Carlo methods; applications include complex systems, financial models, and Bayesian computation. Required preparation must include probability and statistics and programming experience. Credit not granted for both MATH 416 and MATH 516. Typically offered Fall. Cooperative: Open to UI degree-seeking students.	**1-26**
MATH	**564**	**Revise**	**Convex and Nonlinear Optimization** 3 ~~Convex sets and functions; operations preserving convexity; linear, quadratic, and conic optimization; duality theory; unconstrained smooth optimization; interior point methods. Required preparation must include advanced~~	**Convex and Nonlinear Optimization** 3 Classical methods in constrained and unconstrained nonlinear optimization with applications. Line search; trust region; conjugate gradient; quasi-Newton; limited memory quasi-Newton; approximating	**1-26**

			~~multivariate calculus, and a programming language. Recommended preparation: Knowledge in linear optimization and numerical linear algebra.~~ Typically offered Odd Years - Fall. Cooperative: Open to UI degree-seeking students.	derivatives; KKT conditions; quadratic programming; augmented Lagrangian; sequential quadratic programming. Required preparation must include advanced multivariate calculus and competence in a programming language. Recommended preparation: Experience with computational linear algebra. Typically offered Odd Years - Fall. Cooperative: Open to UI degree-seeking students.	
MATH	**565**	**Revise**	~~**Nonsmooth Analysis and Optimization with Applications**~~ 3 ~~Course Prerequisite: MATH 564. Extended real-valued functions; continuity and convexity; subgradient, conjugate functions and optimality condition; alternating minimization; projected subgradient methods; alternating direction methods of multipliers; applications in statistical learning. Required preparation must include real analysis and command of a programming language.~~ Typically offered Even Years - Spring. Cooperative: Open to UI degree-seeking students.	**Optimization for Machine Learning** 3 Systematic treatment of optimization methods with a focus on applications in machine learning (ML). Stochastic gradient descent; Newton method in ML problems such as regression and support vector machines (SVM); Lagrangian relaxation and duality for SVM; penalty-based methods; optimization in computational graphs including neural networks. Required preparation must include advanced multivariate calculus and competence in a programming language. Recommended preparation: MATH 564 or equivalent and experience with computational linear algebra. Typically offered Even Years - Spring. Cooperative: Open to UI degree-seeking students.	**1-26**
MATH	**586**	**Drop**	**Mathematical Methods in Natural Sciences** 3 Introduction to mathematical modeling of natural processes; methods include dimensional and scaling analysis, perturbation theory, field theory of continuum mechanics, calculus of variations, and Markov chains; applications to physics,	**--N/A--**	**1-26**

			chemistry, biology, and engineering. Required preparation must include differential equations. Credit not granted for both MATH 486 and MATH 586. Offered at 400 and 500 level. Typically offered Fall. Cooperative: Open to UI degree-seeking students.		
MBIOS	**460**	**Revise**	**Advanced Interdisciplinary Molecular Biosciences (AIMS) Laboratory** 3 (1-6) ~~Course Prerequisite: MBIOS 201; MBIOS 304; MBIOS 360.~~ Authentic laboratory investigations of contemporary topics from Biochemistry, Molecular Genetics, and Microbiology using a variety of model organisms; topics vary by semester and may include (but are not limited to) cell culture, protein structure and function, protein purification, detection of viruses using immunoassays, DNA isolation and transformation, DNA sequence analysis, gene editing, microscopy, and bioinformatic tools for DNA, protein, and gene expression analysis. Typically offered Fall and Spring.	**Advanced Interdisciplinary Molecular Biosciences (AIMS) Laboratory** 3 (1-6) Course Prerequisite: MBIOS 304; MBIOS 360. Authentic laboratory investigations of contemporary topics from Biochemistry, Molecular Genetics, and Microbiology using a variety of model organisms; topics vary by semester and may include (but are not limited to) cell culture, protein structure and function, protein purification, detection of viruses using immunoassays, DNA isolation and transformation, DNA sequence analysis, gene editing, microscopy, and bioinformatic tools for DNA, protein, and gene expression analysis. Typically offered Fall and Spring.	**1-26**
MSE / CHEM	**571**	**Revise**	**Microscopic Analysis of Solid Surfaces** 3 Modern spectroscopic methods for microscopic analysis of solid surfaces; emphasizes electron, ion, laser, and x-ray techniques. Typically offered Spring.	**Microscopic Analysis of Solid Surfaces** 3 Modern spectroscopic methods for microscopic analysis of solid surfaces; emphasizes electron, ion, laser, and x-ray techniques. (Crosslisted course offered as MSE 571, CHEM 571.) Typically offered Spring.	**1-26**
SOC	**321**	**Revise**	~~**Quantitative Techniques in Sociology** I 4 Levels of measurement; measures of central tendency, dispersion and association; normal curve, statistical inference; logic of quantitative comparison and~~	**Understanding the Social World with Data** 4 Making sense of data and storytelling with numbers. Gain career-related skills in analyzing, interpreting, and reporting on	**1-26**

			~~decision making.~~ Typically offered Fall, Spring, and Summer.	social data. Typically offered Fall, Spring, and Summer.	
SOE	**314**	**Drop**	**Service Learning in Ecuador: Building Sustainable Local Solutions for Human and Environmental Health** 3 Experience working alongside local communities in Ecuador on projects that will improve rural access to sustainable energy, clean water, improved ecosystem health, and sustainable livelihoods. Spring break field trip required. Typically offered Spring.	**--N/A--**	**1-26**
SOE	**480**	**Revise**	**[CAPS] How to Build a Habitable Planet** ~~4 (3-3)~~ An introduction to the origin and evolution of Earth including the effects of water, CO2, and humans on the planet; exploration of radioactive decay, geochronology, radiogenic and stable isotope geochemistry, and chemical proxies in dynamic systems. Typically offered Spring.	**[CAPS] How to Build a Habitable Planet** 3 An introduction to the origin and evolution of Earth including the effects of water, CO2, and humans on the planet; exploration of radioactive decay, geochronology, radiogenic and stable isotope geochemistry, and chemical proxies in dynamic systems. Typically offered Spring.	**1-26**
STAT	**212**	**Revise**	**[QUAN] Introduction to Statistical Methods** 4 (3-2) ~~Course Prerequisite: MATH 103, 105, or 251, each with a C or better, or credit for MATH 106, 108, 140, 171, 201, 202, 252, or a minimum ALEKS math placement score of 45%, or transfer credit for Intermediate Algebra equivalent to MATH 101.~~ Introduction to descriptive and inferential statistics: t-tests, chi-square tests, one-way ANOVA, simple linear regression and correlation. Typically offered Fall, Spring, and Summer.	**[QUAN] Introduction to Statistical Methods** 4 (3-2) Course Prerequisite: MATH 103, 105, or 251, each with a C or better, or credit for MATH 106, 108, 140, 171, 201, 202, 252, or DATA 212, or a minimum ALEKS math placement score of 45%, or transfer credit for Intermediate Algebra equivalent to MATH 101. Introduction to descriptive and inferential statistics: t-tests, chi-square tests, one-way ANOVA, simple linear regression and correlation. Typically offered Fall, Spring, and Summer.	**1-26**
STAT / DATA	**360**	**Revise**	**Probability and Statistics** 3 ~~Course Prerequisite: MATH 140, 171, or 202, each with a C or~~	**Probability and Statistics** 3 Course Prerequisite: MATH 140, 171, 202, or DATA 121 each	**1-26**

			~~better, or MATH 172 or 182.~~ Probability models, sample spaces, random variables, distributions, moments, comparative experiments, tests, correlation and regression in engineering applications. Credit not granted for both STAT 360 and 370. (Crosslisted course offered as STAT 360, DATA 360.) Typically offered Fall, Spring, and Summer. Cooperative: Open to UI degree-seeking students.	with a C or better, or MATH 172 or 182. Probability models, sample spaces, random variables, distributions, moments, comparative experiments, tests, correlation and regression in engineering applications. Credit not granted for both STAT 360 and 370. (Crosslisted course offered as STAT 360, DATA 360.) Typically offered Fall, Spring, and Summer. Cooperative: Open to UI degree-seeking students.	
STAT	**370**	**Revise**	**Introductory Statistics for Engineers** 3 ~~Course Prerequisite: MATH 140, 171, or 202 with a C or better, or MATH 172 or 182.~~ Probability axioms, probability models, random variables, expectation, confidence intervals, hypothesis testing, analysis of variance, control charts. Credit not granted for both STAT 360 and 370. Typically offered Fall, Spring, and Summer.	**Introductory Statistics for Engineers** 3 Course Prerequisite: MATH 140, 171, 202 or DATA 121 each with a C or better, or MATH 172 or 182. Probability axioms, probability models, random variables, expectation, confidence intervals, hypothesis testing, analysis of variance, control charts. Credit not granted for both STAT 360 and 370. Typically offered Fall, Spring, and Summer.	**1-26**
STAT	**412**	**Revise**	**Statistical Methods in Research I** 3 ~~Course Prerequisite: STAT 212, MATH 140, 171, 202, or graduate standing.~~ Intermediate statistical methods, design and analysis of research studies: completely randomized and randomized block designs, multiple regression, categorical data analysis. Typically offered Fall, Spring, and Summer. Cooperative: Open to UI degree-seeking students.	**Statistical Methods in Research I** 3 Course Prerequisite: STAT 212, MATH 140, 171, 202, or DATA 121, or graduate standing. Intermediate statistical methods, design and analysis of research studies: completely randomized and randomized block designs, multiple regression, categorical data analysis. Typically offered Fall, Spring, and Summer. Cooperative: Open to UI degree-seeking students.	**1-26**
STAT	**423**	**Revise**	**Statistical Methods for Engineers and Scientists** 3 ~~Course Prerequisite: MATH 140, 171, or 202, each with a C or better, or MATH 172 or 182.~~ Hypothesis testing; linear, multilinear, and nonlinear	**Statistical Methods for Engineers and Scientists** 3 Course Prerequisite: MATH 140, 171, 202, or DATA 121, each with a C or better, or MATH 172 or 182. Hypothesis testing; linear, multilinear, and nonlinear	**1-26**

			regression; analysis of variance for designed experiments; quality control; statistical computing. Recommended preparation: One 3-credit 300-level STAT course. Credit not granted for both STAT 423 and STAT 523. Credit not normally granted for both STAT 423 and 430. Offered at 400 and 500 level. Typically offered Fall and Spring.	regression; analysis of variance for designed experiments; quality control; statistical computing. Recommended preparation: One 3-credit 300-level STAT course. Credit not granted for both STAT 423 and STAT 523. Credit not normally granted for both STAT 423 and 430. Offered at 400 and 500 level. Typically offered Fall and Spring.	