

NOTICE OF CURRICULUM CHANGES 2018-19

BASIC SKILLS: FOREIGN LANGUAGE AND BEYOND PROFICIENCY REQUIREMENTS

The following changes are applicable to all current students.

The Arabic language (ARB 110 Elementary Arabic-I and ARB 120 Elementary Arabic-II) was added and will count for the foreign language basic skills requirement starting in the 2019-2020 academic year and the beyond proficiency requirement (ARB 210 Intermediate Arabic-I) starting in the 2020-2021 academic year.

GENERAL EDUCATION: FUNDAMENTAL QUESTIONS REQUIREMENT

The following changes are applicable to all current students.

REL 130 (Asian Religions) will count as one of the three options for the “first” fundamental questions requirement.

The philosophy program added a new course that may fulfill the “second” fundamental questions requirement.

PHI 143 Politics and Philosophy

ASIAN STUDIES MINOR

The following change is applicable to all current students.

The Arabic language (ARB 110 Elementary Arabic-I and ARB 120 Elementary Arabic-II) was added and will count as one of the options for the foreign language requirement in the Asian Studies minor.

BIOCHEMISTRY & MOLECULAR BIOLOGY MAJOR

The following change is applicable to all current students.

The math requirement has changed to:

MAT 165 (Modern Calculus-I) OR placement in MAT 185 (Modern Calculus-II) or higher OR placement in MAT 171 (Calculus-II) for students entering in the fall of 2019 or prior.

** MAT 145 (Mathematical Modeling and Applied Calculus) and MAT 170 (Calculus-I) will meet the math requirement for students who have already taken those classes.

BIOLOGY MAJOR

The following change is applicable to all current students.

The major requirement of “One of PHY 110 (Introduction to Physics) OR CSC 117 (Introduction to Computer Science OR CSC 261 (Introduction to Computational Science)” has changed to “One of PHY 110 (Introduction to Physics) OR CSC 160 (Web, Data, and Design) OR CSC 220 (Programming and Problem Solving).” CSC 117 and CSC 261 will meet the requirement for students who have taken those classes.

CHEMICAL PHYSICS MAJOR

The following change is applicable to all current students.

The math requirements have changed to:

MAT 165 (Modern Calculus-I) and MAT 185 (Modern Calculus-II) and MAT 235 (Modern Calculus-III)

** MAT 170 (Calculus-I) and MAT 171 (Calculus-II) and MAT 230 (Calculus-III) will meet the math requirements for students who have already taken or who are taking those classes.

CHEMISTRY MAJOR

The following changes are applicable to all current students.

CHE 135 (Accelerated General Chemistry) OR both CHE 131 (General Chemistry-I) and CHE 132 (General Chemistry-II)
CHE 241 (Organic Chemistry-I)

CHE 250 (Introduction to Inorganic and Analytical Chemistry)

MAT 165 (Modern Calculus-I)

** MAT 170 (Calculus-I) will meet the math requirement for students who have already taken the class.

MAT 185 (Modern Calculus-II)

** MAT 171 (Calculus-II) will meet the math requirement for students who have already taken or who are taking the class.

PHY 210 (General Physics-I)

PHY 230 (General Physics-II) OR both PHY 120 (Intro Physics for the Life Sciences) and MAT 235 (Modern Calculus-III)

** MAT 230 (Calculus-III) will meet the math requirement for students who have already taken or who are taking the class.

CHE 332 (Inorganic Chemistry)

CHE 362 (Quantum Chemistry and Spectroscopy)

CHE 370 (Biological Chemistry)

** BMB 310 (Macromolecules) or CHE 370 (Biological Chemistry) will count for this requirement for students declaring a chemistry major in Spring 2019 or prior.

Two of the following:

CHE 242 (Organic Chemistry-II)

CHE 350 (Instrumental Analysis)

CHE 361 (Thermodynamics and Kinetics)

An additional three hours of 300-level or 400-level CHE course(s), or CHE 242 (Organic Chemistry-II) if not used to satisfy the previous requirement

CHE 500

COMPUTER SCIENCE MAJOR AND MINOR

The following changes to the computer science major and minor requirements are applicable to students graduating in 2021 and later. Students graduating in in 2020 may choose either the old or new requirements.

Requirements of the Major

MAT 200 (Discrete Math) OR MAT 300 (Foundations of Mathematics)

CSC 160 (Web, Data, and Design)

** CSC 265 (Web, Data, and Design) OR CSC 265 (Interactive Data Visualization) will meet the requirement for students who have already taken the class.

CSC 220 (Programming and Problem Solving)

** CSC 117 (Introduction to Computer Science) will meet the requirement for students who have already taken the class.

CSC 270 (Data Structures)

** CSC 223 (Intermediate Programming and Data Structures) will meet the requirement for students who have already taken the class.

CSC 280 (Systems Programming)

** CSC 221 (Computer Organization) will meet the requirement for students who have already taken the class.

CSC 360 (Software Design)

** CSC 300 (Software Development) will meet the requirement for students who have already taken the class.

CSC 362 (Database Programming and Design)

** CSC 410 (Database Systems) will meet the requirement for students who have already taken the class.

CSC 370 (Design and Analysis of Algorithms)

** CSC 332 (Design and Analysis of Algorithms) will meet the requirement for students who have already taken the class.

Any two additional CSC courses numbered 300 or more (excluding internships and research).

Requirements of the Minor

MAT 200 (Discrete Math) OR MAT 300 (Foundations of Mathematics)

CSC 160 (Web, Data, Design)

** CSC 265 (Web, Data, and Design) OR CSC 265 (Interactive Data Visualization) will meet the requirement for students who have already taken the class.

CSC 220 Programming and Problem Solving

** CSC 117 (Introduction to Computer Science) will meet the requirement for students who have already taken the class.

CSC 270 Data Structures

** CSC 223 (Intermediate Programming and Data Structures) will meet the requirement for students who have already taken the class.

CSC 370 Algorithms

** CSC 332 (Design and Analysis of Algorithms) will meet the requirement for students who have already taken the class.

One of the following:

CSC 280 (Systems Programming)

** CSC 221 (Computer Organization) will meet the requirement for students who have already taken the class.

CSC 360 (Software Design)

** CSC 300 (Software Development) will meet the requirement for students who have already taken the class.

CSC 362 (Database Programming and Design)

** CSC 410 (Database Systems) will meet the requirement for students who have already taken the class.

Additional Computer Science Courses that were Re-numbered and/or Re-named

CSC 372 (Artificial Intelligence) – previously CSC 339 (Topics in Artificial Intelligence)

CSC 374 (Theory of Computation) – previously CSC 334 (Theoretical Foundations of Computer Science)

CSC 380 (Operating Systems) – previously CSC 343 (Operating Systems)

CSC 382 (Computer Networks) – previously CSC 250 (Introduction to Networking Fundamentals)

CSC 386 (Parallel Computing) – previously CSC 350 (Parallel Computing)

ECONOMICS AND FINANCE MAJOR

The following change is applicable to all current students.

The math requirement has changed to:

MAT 165 (Modern Calculus-I) OR placement in MAT 185 (Modern Calculus-II) or higher OR placement in MAT 171 (Calculus-II) for students entering in the fall of 2019 or prior.

** MAT 145 (Mathematical Modeling and Applied Calculus) and MAT 170 (Calculus-I) will meet the math requirement for students who have already taken those classes.

INTERNATIONAL STUDIES MAJOR

The following change is applicable to all current students.

The Arabic language (ARB 220 Intermediate Arabic-II) was added and will count as one of the options for the foreign language requirement in the International Studies major.

MATHEMATICS MAJOR AND MINOR

The following changes are applicable to all current students.

Requirements of the Major

CSC 220 (Programming and Problem Solving)

** CSC 117 (Intro to Computer Science) will meet the requirement for students who have already taken the class.

MAT 165 (Modern Calculus-I)

** MAT 170 (Calculus-I) will meet the requirement for students who have already taken the class.

MAT 185 (Modern Calculus-II)

** MAT 171 (Calculus-II) will meet the requirement for students who have already taken or who are taking the class.

MAT 235 (Modern Calculus-III)

** MAT 230 (Calculus-III) will meet the requirement for students who have already taken or who are taking the class.

MAT 240 (Linear Algebra)

MAT 300 (Foundations of Mathematics)

MAT 330 (Abstract Algebra-I) OR MAT 380 (Real Analysis)

MAT 360 (Differential Equations) OR MAT 370 (Numerical Analysis)

Four additional MAT courses numbered 301 or higher. Only one course numbered MAT 400, MAT 401, MAT 402, or greater than MAT 491 will be allowed to count toward the major.

Requirements of the Minor

MAT 165 (Modern Calculus-I)

** MAT 170 (Calculus-I) will meet the requirement for students who have already taken the class.

MAT 185 (Modern Calculus-II)

** MAT 171 (Calculus-II) will meet the requirement for students who have already taken or who are taking the class.

MAT 200 (Discrete Mathematics) OR MAT 205 (Statistical Modeling) OR MAT 235 (Modern Calculus-III)

** MAT 230 (Calculus-III) will meet the requirement for students who have already taken or who are taking the class.

MAT 240 (Linear Algebra) OR MAT 300 (Foundations of Mathematics)

Three additional MAT courses numbered 301 or higher. Only one course numbered MAT 400, MAT 401, MAT 402, or greater than MAT 491 will be allowed to count toward the minor.

PHILOSOPHY MAJOR AND MINOR

The following change is applicable to all current students.

Requirement of the Major

PHI 143 (Politics and Philosophy) was added as an option to the major requirement:

One of PHI 110, PHI 130, PHI 140, PHI 145, PHI 160, or PHI 170

Requirement of the Minor

PHI 143 (Politics and Philosophy) was added as an option to the minor requirement:

One of PHI 110, PHI 130, PHI 140, PHI 145, PHI 160, or PHI 170

PHYSICS MAJOR AND MINOR

The following changes are applicable to all current students.

Requirements of the Major

CHE 131 (General Chemistry-I) OR CHE 135 (Accelerated General Chemistry)

MAT 165 (Modern Calculus-I)

** MAT 170 (Calculus-I) will meet the math requirement for students who have already taken the class.

MAT 185 (Modern Calculus-II)

** MAT 171 (Calculus-II) will meet the math requirement for students who have already taken or who are taking the class.

MAT 235 (Modern Calculus-III)

** MAT 230 (Calculus-III) will meet the math requirement for students who have already taken or who are taking the class.

MAT 360 (Differential Equations)

PHY 210 (General Physics-I)

PHY 230 (General Physics-II)

** The course title of PHY 230 has changed starting with the fall of 2019. The title for PHY 230 will appear as General Physics-III for any student who took the course prior to the fall of 2019.

PHY 240 (Oscillations and Waves)

** PHY 220 (General Physics-II) will meet the requirement for students who have already taken the class.

PHY 310 (Modern Physics-I)

PHY 320 (Modern Physics-II)

PHY 340 (Advanced Mechanics)

PHY 350 (Advanced Electricity and Magnetism)

PHY 300 (Introduction to Electronics) OR PHY 380 (Optics)

One additional PHY course 300 or higher

Requirements of the Minor

CHE 131 (General Chemistry-I) OR CHE 135 (Accelerated General Chemistry)

MAT 235 (Modern Calculus-III)

** MAT 230 (Calculus-III) will meet the math requirement for students who have already taken or who are taking the class.

MAT 360 (Differential Equations)

PHY 210 (General Physics-I)

PHY 230 (General Physics-II)

** The course title of PHY 230 has changed starting with the fall of 2019. The title for PHY 230 will appear as General Physics-III for any student who took the course prior to the fall of 2019.

PHY 240 (Oscillations and Waves)

** PHY 220 (General Physics-II) will meet the requirement for students who have already taken the class.

PHY 310 (Modern Physics I)

One additional PHY course 300 or higher

POLITICS MAJOR AND MINOR

The following changes are applicable to all current students.

Requirements of the Major

POL 120 (Introduction to Political Ideologies)

POL 130 (Introduction to Comparative Politics)

POL 205 (Introduction to Political Analysis)

POL 210 (American Politics and Institutions)

POL 260 (Introduction to International Relations)

One POL course chosen from courses numbered 300-309

One POL course chosen from courses numbered 320-339

One POL course chosen from courses numbered 340-349

One additional POL course chosen from: POL 300-309, 320-349, 360-379

One additional POL course numbered 300 or higher

POL 500 (Senior Seminar)

Requirements of the Minor

Three of the following:

POL 120 (Introduction to Political Ideologies)

POL 130 (Introduction to Comparative Politics)

POL 210 (American Politics and Institutions)

POL 260 (Introduction to International Relations)

Two POL courses drawn from at least two of the following four areas:

POL 300-309

POL 320-339

POL 340-349

POL 360-379

One additional POL course numbered 300 or higher

NEW MAJOR AND MINOR (available to 2020 graduates and later)

DATA SCIENCE

Data science is an emerging, interdisciplinary field that sits at the intersection of computer science, statistics, and mathematics. Data science is the process of transforming raw, unorganized data into useful information and then presenting that information in a clear, concise way. In the past, students who were interested in data science pursued studies in both mathematics and computer science. However, while data science requires fluency in those fields, it has a unique perspective. At its core, data science is about critical thinking: utilizing information in order to understand the world more deeply.

Students who pursue a degree in data science take foundational courses in mathematics and programming, but also learn to how to work with clients to model and analyze data with methods that are appropriate for the analytic problem. Students gain experience working with data sets from many different fields, including the humanities and the social, physical, and biological sciences. In each data science course, students also gain experience communicating their ideas visually, orally, and in writing with the help of data visualization tools, in a way that non-experts can understand. Data

scientists are in high demand, and our students will find themselves well-prepared for a wide range of pursuits after college.

Requirements of the Major

Computing Core

CSC 160 (Web, Data, and Design)

** CSC 265 (Web, Data, and Design) OR CSC 265 (Interactive Data Visualization) will meet the requirement for students who have already taken the class.

CSC 220 (Programming and Problem Solving)

** CSC 117 (Introduction to Computer Science) will meet the requirement for students who have already taken the class.

CSC 270 (Data Structures and Intermediate Programming)

** CSC 223 (Intermediate Programming and Data Structures) will meet the requirement for students who have already taken the class.

Mathematics Core

MAT 165 (Modern Calculus-I)

** MAT 170 (Calculus-I) will meet the math requirement for students who have already taken the class.

MAT 185 (Modern Calculus-II)

** MAT 171 (Calculus-II) will meet the math requirement for students who have already taken or who are taking the class.

MAT 235 (Modern Calculus-III)

** MAT 230 (Calculus-III) will meet the math requirement for students who have already taken or who are taking the class.

MAT 240 (Linear Algebra)

MAT 310 (Probability Theory)

Data Science Core

DSC 205 Statistical Modeling

** MAT 205 (Statistical Modeling) will meet the requirement for students who have already taken the class.

DSC 305 Data Science and Analytics

DSC 395 Machine Learning

DSC 500 Data Science Capstone

Requirements of the Minor

Computing Core

CSC 160 (Web, Data, and Design)

** CSC 265 (Web, Data, and Design) OR CSC 265 (Interactive Data Visualization) will meet the requirement for students who have already taken the class.

CSC 220 (Programming and Problem Solving)

** CSC 117 (Introduction to Computer Science) will meet the requirement for students who have already taken the class.

Mathematics Core

MAT 130 (Introduction to Statistics) OR MAT 311 (Mathematical Statistics)

Data Science Core

DSC 205 (Statistical Modeling)

** MAT 205 (Statistical Modeling) will meet the requirement for students who have already taken the class.

DSC 305 (Data Science and Analytics)

Analytics Elective

One of the following:

- ANT 301/SOC 301 (Qualitative Field Methods)
- ANT 305/SOC 305 (Research Methods)
- ANT 307/SOC 307 (Feminist Ethnography and Methodology)
- BIO 390 (Biostatistics)
- ECO 390 (Econometrics)
- DSC 395 (Machine Learning)
- PSY 205 (Introduction to Research Methods)

Visual Communication Elective

One of the following:

- ANT 360 (GIS and the Environment)
- ARH 117 (Introduction to Visual Studies)
- ARS 110 (Introduction to Drawing)
- DRA 356 (C.A.D.D. for the Stage)
- DRA 363 (Multi-Media Storytelling)

Additional Recommended Courses for Students Interested in Data Science

Students should consider taking additional electives in analysis or visualization from the lists above or classes that build on these such as ECO 392 (Economic Forecasting) or ECO 395 (Empirical Analysis in Economics and Finance). For students wishing to expand their computing capabilities, CSC 270 (Data Structures)*, CSC 362 (Design and Analysis of Algorithms), and CSC 362 (Database Programming and Design) are all relevant to data science. For students wishing to expand their mathematical capabilities, MAT 240 (Linear Algebra)* and MAT 311 (Mathematical Statistics) are relevant to data science.

* Required for data science majors