

# ADDENDA TO THIS CATALOG

The Undergraduate Catalog is published each academic year in June prior to the fall semester. The provisions of the Undergraduate Catalog are not to be regarded as a contract between the student and the University of Maryland. The university reserves the right to change its policies, rules, regulations, requirements for graduation, course offerings, tuition, fees, other charges, or any other contents of this catalog at any time.

When necessary, the university will track changes to the Undergraduate Catalog in this addenda section:

- For addenda related to policies, rules, regulations, tuition, fees and general information, see **General Addenda**
- For addenda related to curricula (i.e., descriptions, learning outcomes, and requirements for majors, minors, and certificates), see **Curriculum Addenda**

*Note: Updates to course offerings (e.g., course description changes), will be reflected in the following year's catalog and are not tracked in this addenda section.*

## GENERAL ADDENDA

This section contains addenda related to policies, rules, regulations, tuition, fees and general information. Each addendum contains an excerpt from the catalog as it was originally published as well as the change that was made. To view the full original text, see the catalog page referenced in the addendum.

## Division of University Relations

**Under** Division of University Relations (<https://academiccatalog.umd.edu/about-university/campus-administration-deans/university-relations/>)

1. The office location was updated and an Interim Vice President was appointed (*published September 13, 2023*).
2. The Interim Vice President for University Relations was appointed as Vice President for University Relations (*published November 15, 2023*).

### Original

(1) 1132 Thomas V. Miller, Jr. Administration Building  
Phone: 301-405-4680  
<http://urhome.umd.edu> (<http://urhome.umd.edu/>)

**Vice President:** Matthew Hodge

### Change

(1) 0132 Thomas V. Miller, Jr. Administration Building  
Phone: 301-405-4680  
<http://urhome.umd.edu> (<http://urhome.umd.edu/>)

**Vice President:** Matthew Hodge (through July 13, 2023)

**Interim Vice President:** James F. Harris (effective July 14, 2023)

(2) **Vice President:** James F. Harris (effective November 6, 2023)

## University Administration and Deans

**Under** University Administration and Deans (<https://academiccatalog.umd.edu/about-university/campus-administration-deans/>)

1. An Interim Vice President for University Relations was appointed (*published September 13, 2023*).
2. The Interim Vice President for University Relations was appointed as Vice President for University Relations (*published November 15, 2023*).

### Original

(1) Vice President for University Relations **Matthew Hodge, Ph.D.**

### Change

(1) Vice President for University Relations **Matthew Hodge, Ph.D. (through July 13, 2023)**

Interim Vice President for University Relations **James F. Harris (effective July 14, 2023)**

(2) Vice President for University Relations **James F. Harris (effective November 6, 2023)**

## University Career Center & The President's Promise

**Under** University Career Center & The President's Promise (UCC/TPP) (<https://academiccatalog.umd.edu/undergraduate/campus-administration-resources-student-services/student-programs-services/university-career-center-presidents-promise/>)

- The College of Information Studies was added to "A Network of Support" (*published September 5, 2023*).
- Handshake, Vault, and Big Interview replaced Careers4Terps, FirstHand, and InterviewStream in the "Careers4Terps & Other Online Resources" (*published September 5, 2023*).

### Original

#### A NETWORK OF SUPPORT

Located in the South Wing of Hornbake Library, the Center serves as a campus hub of career-related activities. We also distribute staff to locations in the following schools and colleges:

- College of Agriculture and Natural Resources (<https://agnr.umd.edu/student-opportunities/internships-careers/>)
- College of Arts and Humanities (<https://arhu.umd.edu/careers/>)
- College of Behavioral and Social Sciences, Feller Center for Advising & Career Planning (<https://fellercenter.umd.edu/>)
- College of Computer, Mathematical and Natural Sciences (<https://cmns.umd.edu/undergraduate/research-internships/careerservices/>)
- School of Public Health (<https://sph.umd.edu/content/university-career-center-sph/>)
- The Graduate School (<https://gradschool.umd.edu/professionaldevelopment/>)

Distributed staff provide advising and programming that targets industries and professional fields related to majors in their respective host school or college. Students may access resources, services, and programs based on their career interests and immediate needs.

The Center partners with other campus career operations, including:

- Robert H. Smith School of Business Career Services (<https://rhsmith.umd.edu/office-career-services/>)
- A. James Clark School of Engineering Career Services (<https://eng.umd.edu/careers/>)
- School of Public Policy Career Services (<https://spp.umd.edu/career-connections/>)

**CAREERS4TERPS & OTHER ONLINE RESOURCES**

Update your Careers4Terps (C4T) (<https://careers.umd.edu/careers4terps/>) profiles to manage your career. C4T is the Center's online career management database and your gateway to:

- **Applying** to 1,000+ internships, part-time job, and full-time job postings
- **Scheduling** career advising appointments and signing up for workshops, panels, and employer programs
- **Accessing** virtual resources: Focus2 (self-assessment), FirstHand (industry guides), InterviewStream (virtual interviewing practice), and more.

**Change****A NETWORK OF SUPPORT**

Located in the South Wing of Hornbake Library, the Center serves as a campus hub of career-related activities. We also distribute staff to locations in the following schools and colleges:

- College of Agriculture and Natural Resources (<https://agnr.umd.edu/student-opportunities/internships-careers/>)
- College of Arts and Humanities (<https://arhu.umd.edu/careers/>)
- College of Behavioral and Social Sciences, Feller Center for Advising & Career Planning (<https://fellercenter.umd.edu/>)
- College of Computer, Mathematical and Natural Sciences (<https://cmns.umd.edu/undergraduate/research-internships/careerservices/>)
- College of Information Studies (<http://ischool.umd.edu/academics/career-resources/>)
- School of Public Health (<https://sph.umd.edu/content/university-career-center-sph/>)
- The Graduate School (<https://gradschool.umd.edu/professionaldevelopment/>)

Distributed staff provide advising and programming that targets industries and professional fields related to majors in their respective host school or college. Students may access resources, services, and programs based on their career interests and immediate needs.

The Center partners with other campus career operations, including:

- Robert H. Smith School of Business Career Services (<https://rhsmith.umd.edu/office-career-services/>)
- A. James Clark School of Engineering Career Services (<https://eng.umd.edu/careers/>)
- School of Public Policy Career Services (<https://spp.umd.edu/career-connections/>)

**HANDSHAKE & OTHER ONLINE RESOURCES**

Update your Handshake (<https://careers.umd.edu/handshake/>) profile to manage your career. Handshake is the Center's online career management database and your gateway to:

- **Applying** to 1,000+ internships, part-time job, and full-time job postings
- **Scheduling** career advising appointments and signing up for workshops, panels, and employer programs
- **Accessing** virtual resources: Focus2 (self-assessment), Vault (industry guides), Big Interview (virtual interviewing practice), and more.

**CURRICULUM ADDENDA**

This section contains a list of addenda related to undergraduate program changes. Each listing has a summary of the modifications (i.e., changes to descriptions, learning outcomes, and requirements for majors, minors, and certificates) or indicates if the program is new. To view a program's addendum in full detail, please visit the program's catalog page as referenced in the summary below.

- Aerospace Engineering Major (p. 2)
- Animal Sciences Major (p. 3)
- Astronomy Major (p. 5)
- Biochemistry Major (p. 6)
- Bioengineering Major (p. 7)
- Chemical Engineering Major (p. 7)
- Civil Engineering Major (p. 7)
- Communication Major (p. 7)
- Computational Finance Minor (p. 11)
- Computer Engineering Major (p. 7)
- Cyber-Physical Systems Engineering Major (p. 12)
- Economics Major (p. 12)
- Electrical Engineering Major (p. 13)
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- Fire Protection Engineering Major (p. 16)
- French Language and Literature Major (p. 17)
- Global Terrorism Studies Minor (p. 17)
- Kinesiology: Biomechanics and Motor Control Minor (p. 18)
- Kinesiology: Exercise Physiology Minor (p. 19)
- Kinesiology: Sport, Commerce, & Culture Minor (p. 19)
- Information Science Major (p. 20)
- Information Science Major at Shady Grove (p. 20)
- Materials Science and Engineering Major (p. 21)
- Mechanical Engineering Major (p. 21)
- The Robert H. Smith School of Business (p. 21)
- Robotics and Autonomous Systems Minor (p. 22)
- Technology and Information Design Major (p. 23)

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**Aerospace Engineering Major**

**Under** Aerospace Engineering Major (<https://academiccatalog.umd.edu/undergraduate/colleges-schools/engineering/aerospace-engineering/aerospace-engineering-major/>)

- The accreditation statement in the program description changed (*published September 7, 2023*).

**Original**

The Bachelor of Science in Aerospace Engineering degree program at the University of Maryland is accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>, under the General Criteria and the Aerospace Engineering Program Criteria.

**Change**

The Bachelor of Science in Aerospace Engineering degree program at the University of Maryland is accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>, under the General Criteria

and Program Criteria for Aerospace and Similarly Named Engineering Programs.

## Animal Sciences Major

**Under** Animal Sciences Major (<https://academiccatalog.umd.edu/undergraduate/colleges-schools/agriculture-natural-resources/animal-sciences/animal-sciences-major/>)

- Effective Spring 2024, the program description, learning outcomes, and course requirements changed (*published December 19, 2023*).

### Original

See Animal Sciences Major (<https://academiccatalog.umd.edu/undergraduate/colleges-schools/agriculture-natural-resources/animal-sciences/animal-sciences-major/>).

### Change

The Department of Animal and Avian Sciences provides a challenging program for academically talented students interested in the application of biology and technology to the care, management and study of domestic and aquatic animals. In addition to emphasizing the traditional farm species of dairy and beef cattle, sheep, swine and poultry, our program includes options for courses in equine science, animal biotechnology, and sciences which prepare students for veterinary or graduate school. Animal sciences majors explore a wide range of subjects - from fundamental biology to animal nutrition, physiology and genetics - while integrating science and economics into animal management. Courses offered by this department may be found under the following acronym: ANSC.

Our department offers B.S., M.S., and Ph.D. degrees. Many students in our Science/Pre-Professional option choose to continue their education in a variety of professional schools, ranging from veterinary school and MS/PhD graduate programs to things like human medical school or higher education. Our graduates also pursue industry and hands-on careers, such as research technicians, animal care specialists, sales or marketing representatives, and animal producers.

## Program Learning Outcomes

Graduates of the ANSC undergraduate program will be able to:

1. Animal husbandry requirements- Graduates of the ANSC undergraduate program will be able to apply animal science knowledge and research to the creation of rational, feasible, and legal animal management programs that take into consideration appropriate nutrition, husbandry, health, reproduction, and welfare considerations.
2. Safely handle animals- Graduates of the ANSC undergraduate program will be able to safely approach, restrain, and move horses, sheep, dairy cows, pigs, chickens and other species specific to their curricula.
3. Animal Science literacy- Graduates of the ANSC undergraduate program will be able to select, understand, and critically evaluate scientific studies in animal sciences disciplines such that they employ research that is applicable, timely, accurate, and useful for their animal care and management needs.
4. Knowledge of major issues in ANSC- Graduates of the animal sciences program will be well-versed in the issues related to animal agriculture such that they contribute to societal debates around the future of farming, the use of antibiotics in animal agriculture,

sustainability of our animal farms, animal welfare, farm worker needs, and scaling agricultural enterprises up and down to meet our growing population's protein needs.

5. Careers and opportunities in ANSC- Graduates of the ANSC undergraduate program will be able to describe at least five career options available to them with the knowledge, skills, and experience they receive as undergraduates and identify specific job opportunities that match their abilities, experience, and interests.
6. Animal structure and function- Graduates of the ANSC undergraduate program will be able to correctly apply their knowledge of anatomy and physiology of domestic animals to explain normal homeostatic functioning of program-specific domestic species at the organismal, tissue, cellular, and molecular levels. Students will be able to adapt that knowledge to address abnormalities in at least one body system.
7. Communication- Graduates of the ANSC program will be able to communicate effectively with the public, producers, and the scientific community through oral, written, and visual means in print and on-line.

## Requirements

Animal Sciences prepares students for veterinary school, graduate school, and careers in research, sales and marketing, biotechnology, aquaculture, and animal production. The curricula apply the principles of biology and technology to the care, management, and study of dairy and beef cattle, horses, fish, sheep, swine, and poultry. Students complete the Animal Sciences core courses and choose between two broad tracks: Animal Care and Management, for students interested in going directly into a career, or Sciences/Professional Option to prepare for admission to graduate, veterinary, pharmacy, nursing or medical school. Students can customize their program based on their area of interest (emphasis area (<https://ansc.umd.edu/undergraduate/prospective-students/>)) by selecting courses from that area to fulfill major requirements.

Students pursuing the major should review the academic benchmarks established for this program. See [www.4yearplans.umd.edu](http://www.4yearplans.umd.edu) (<http://www.4yearplans.umd.edu>) or visit the ANSC Program Requirements (<https://ansc.umd.edu/undergraduate/current-students/academics-advising/>) website. Students will be periodically reviewed to ensure they are meeting benchmarks and progressing to the degree. Students who fall behind program benchmarks are subject to special advising requirements and other interventions.

**Please note:** there is a \$50 per course fee for Animal Science Laboratory courses.

*All undergraduates majoring in Animal Sciences must complete the following course requirements:*

Course	Title	Credits
<b>Animal Sciences Core</b>		
ANSC101 & ANSC103	Principles of Animal Science and Principles of Animal Science Laboratory	4
ANSC204 & ANSC205	Anatomy of Domestic Animals and Anatomy of Domestic Animals Laboratory	4
ANSC212 & ANSC214	Applied Animal Physiology and Applied Animal Physiology Laboratory	4
ANSC314	Comparative Animal Nutrition	3
ANSC315	Applied Animal Nutrition	3
BSCI160 & BSCI161	Principles of Ecology and Evolution and Principles of Ecology and Evolution Lab	4

BSCI170 & BSCI171	Principles of Molecular & Cellular Biology and Principles of Molecular & Cellular Biology Laboratory	4
BSCI223	General Microbiology	4
CHEM131 & CHEM132	Chemistry I - Fundamentals of General Chemistry and General Chemistry I Laboratory	4
AREC250 or ECON200	Elements of Agricultural and Resource Economics Principles of Microeconomics	3
BIOM301	Introduction to Biometrics	3
<b>Select one of the following specializations:</b>		<b>31-36</b>
Animal Care and Management		
Sciences & Combined AG and Vet Sci		
<b>Total Credits</b>		<b>71-76</b>

## Specializations:

### Animal Care and Management

Course	Title	Credits
<b>Required Courses</b>		
ANSC327 or ANSC450	Molecular and Quantitative Animal Genetics Animal Breeding Plans	3
ANSC446 & ANSC447	Physiology of Mammalian Reproduction and Physiology of Mammalian Reproduction Laboratory	4
AREC306 or ANSC270 or INAG204	Farm Management and Sustainable Food Production Animal Enterprise Management Agricultural Business Management	3
CHEM231 or PLSC275 or AGST275	Organic Chemistry I Fundamentals of Agricultural and Environmental Chemistry	3
ANSC359	Internship Experience in Animal and Avian Sciences	3-6
<b>Advanced ANSC Electives</b>		
Select 9 credits of the following:		9
ANSC330	Equine Science	
ANSC340	Health Management of Animal Populations	
ANSC410	The Gut Microbiome and its Roles in Health and Disease	
ANSC417	Regulatory Issues in Animal Care and Management	
ANSC435	Experimental Embryology	
ANSC437	Animal Biotechnology	
ANSC440	Zoonotic Diseases and Control	
ANSC443	Physiology of Lactation	
ANSC444	Domestic Animal Endocrinology	
ANSC450	Animal Breeding Plans	
ANSC452	Avian Physiology	
ANSC453	Animal Welfare and Bioethics	
ANSC455	Applied Animal Behavior	
ANSC460	Comparative Vertebrate Immunology	
ANSC497	Animal Biotechnology Recombinant DNA Laboratory	

### Management Courses

Select 9 credits of the following:		9
ANSC220	Livestock Management	
ANSC232	Horse Management	
ANSC237	Equine Reproductive Management	
ANSC242	Dairy Cattle Management	
ANSC245	Sheep Management	
ANSC246	Beef Management	
ANSC250	Companion Animal Care and Management	
ANSC255	Introduction to Aquaculture	
ANSC260	Laboratory Animal Management	
ANSC262	Commercial Poultry Management	
ANSC282	Grazing Animal Management	
<b>Total Credits</b>		<b>34-37</b>

### Science/Professional & Combined Ag-Veterinary Medicine

Course	Title	Credits
<b>Required Courses</b>		
ANSC327	Molecular and Quantitative Animal Genetics	3
BCHM463 or BSCI330	Biochemistry of Physiology Cell Biology and Physiology	3-4
CHEM231 & CHEM232	Organic Chemistry I and Organic Chemistry Laboratory I	4
CHEM241 & CHEM242	Organic Chemistry II and Organic Chemistry Laboratory II	4
CHEM271 & CHEM272	General Chemistry and Energetics and General Bioanalytical Chemistry Laboratory	4
PHYS121 or PHYS131	Fundamentals of Physics I Fundamentals of Physics for Life Sciences I	4
PHYS122 or PHYS132	Fundamentals of Physics II Fundamentals of Physics for Life Sciences II	4
<b>Advanced ANSC Electives</b>		
Select 9 credits of the following:		9
ANSC330	Equine Science	
ANSC340	Health Management of Animal Populations	
ANSC359	Internship Experience in Animal and Avian Sciences	
ANSC410	The Gut Microbiome and its Roles in Health and Disease	
ANSC417	Regulatory Issues in Animal Care and Management	
ANSC435	Experimental Embryology	
ANSC437	Animal Biotechnology	
ANSC440	Zoonotic Diseases and Control	
ANSC443	Physiology of Lactation	
ANSC444	Domestic Animal Endocrinology	
ANSC446	Physiology of Mammalian Reproduction	
ANSC447	Physiology of Mammalian Reproduction Laboratory	
ANSC450	Animal Breeding Plans	
ANSC452	Avian Physiology	
ANSC453	Animal Welfare and Bioethics	

ANSC455	Applied Animal Behavior
ANSC460	Comparative Vertebrate Immunology
ANSC497	Animal Biotechnology Recombinant DNA Laboratory

#### Management Courses

Select 3 credits of the following: 3

ANSC220	Livestock Management
ANSC232	Horse Management
ANSC237	Equine Reproductive Management
ANSC242	Dairy Cattle Management
ANSC245	Sheep Management
ANSC246	Beef Management
ANSC250	Companion Animal Care and Management
ANSC255	Introduction to Aquaculture
ANSC260	Laboratory Animal Management
ANSC262	Commercial Poultry Management
ANSC282	Grazing Animal Management

**Total Credits** 38-39

\*A complete listing of all currently approved Management and Advanced ANSC Elective courses is available from our ANSC Course Listing (<https://ansc.umd.edu/undergraduate/current-students/academics-advising/courses/>) page.

## Other Requirements for the Major

Animal sciences majors select one of two options to guide their coursework. Program requirements (<https://ansc.umd.edu/undergraduate/program-overview/>) for all options are available on our website, along with a list of all ANSC courses (<https://ansc.umd.edu/undergraduate/current-students/courses/>) and when they are offered.

**Animal Care & Management (0104A)** - Is designed for students whose career plans include animal management, production and the marketing of animal products. The curriculum provides basic courses in genetics, nutrition, physiology and reproduction while allowing students to focus on the management of one particular livestock species. You are required to supplement academic work with practical experience by completing an internship. Dairy science students, for example, intern at local farms where they participate in decisions about breeding, feeding, health practices, milk production and other aspects of herd management. This option will prepare you for ownership or management positions with dairy, livestock or poultry production enterprises; positions with marketing and processing organizations; breed associations; and positions in agribusiness fields such as sales of feed, pharmaceutical products and agricultural equipment. Graduates also work with state and federal agencies.

**Science/Professional (0104E)** - Prepares students for admission to veterinary, medical, and/or graduate school. Graduate study can open the door to an exciting research career in specialty areas of animal or biological sciences such as genetics, nutrition, physiology or cell biology. The curriculum emphasizes advanced courses in the biological and physical sciences and includes all the pre-veterinary and pre-medicine requirements.

**Combined Ag & Vet Sci (1299D)** - A combined degree program available to students who gain admission to veterinary school prior to completing their bachelor's degree. College of Agriculture and Natural Resources students who have completed at least ninety hours, including all college

and university requirements, are awarded a bachelor of science degree upon successful completion of at least thirty semester hours at any accredited veterinary college. Early planning with your advisor is encouraged if you choose this option.

Minimum Grade Policy:

ANSC has a minimum grade policy which states that **ANSC students must earn a "C-" or better in all major required courses, including ANSC courses and required supporting courses in other departments.** Students must also have both a cumulative GPA of at least a 2.0 and a 2.0 cumulative GPA in all major requirements in order to graduate. More information on this policy is available on the ANSC Minimum Grade Policy (<https://ansc.umd.edu/undergraduate/current-students/academics-advising/#policies>) page.

## Astronomy Major

**Under** Astronomy Major (<https://academiccatalog.umd.edu/undergraduate/colleges-schools/computer-mathematical-natural-sciences/astronomy/astronomy-major/>)

- Effective Spring 2024, the program learning outcomes and course requirements changed (*published December 19, 2023*).

### Original

See Astronomy Major (<https://academiccatalog.umd.edu/undergraduate/colleges-schools/computer-mathematical-natural-sciences/astronomy/astronomy-major/>)

### Change Program Learning Outcomes

1. Identify basic concepts from the many areas of astronomy, including motions in the sky, gravity, electromagnetic radiation, solar system, stars, and galaxies.
2. Develop mathematical skills, acquire physics knowledge, and practice applying these skills and knowledge in astrophysical situations.
3. Use astronomical telescopes/instruments and reduce astronomical data using modern computational methods.
4. Demonstrate advanced level knowledge in several different areas of astronomy.
5. Describe the current demographic composition of people working in the field of astronomy and how this affects its practice and presents barriers to broader inclusion.

## Requirements

Course	Title	Credits
<b>Required Basic Astronomy Courses</b>		
ASTR120	Introductory Astrophysics - Solar System	3
ASTR121	Introductory Astrophysics II - Stars and Beyond	4
ASTR310	Observational Astronomy	4
ASTR320	Theoretical Astrophysics	3
<b>Advanced Astronomy Courses</b>		
Select any two 400 level Astronomy courses of the following:		6
ASTR406	Stellar Structure and Evolution	
ASTR410	Radio Astronomy	
ASTR415	Computational Astrophysics	
ASTR421	Galaxies	

ASTR422	Cosmology
ASTR430	The Solar System
ASTR435	Astrophysics of Exoplanets
ASTR450	Orbital Dynamics
ASTR480	High Energy Astrophysics

## Optional Astronomy Seminars:

ASTR288	Special Projects in Astronomy (ASTR288C-Astronomy Research Techniques)
ASTR288	Special Projects in Astronomy (ASTR288M-Current Events in Astronomy Research)
ASTR288	Special Projects in Astronomy (ASTR288I Introduction to the Astronomy Major)
ASTR288	Special Projects in Astronomy (ASTR288P-Introduction to Astronomical Programming)

**Required Introductory Physics Courses**<sup>1</sup>

PHYS165	Introduction to Programming in the Physical Sciences	3
PHYS171	Introductory Physics: Mechanics	3
PHYS272	Introductory Physics: Fields	3
PHYS273	Introductory Physics: Waves	3
PHYS275	Experimental Physics I: Mechanics and Heat	2
PHYS276	Experimental Physics II: Electricity and Magnetism	2

**Advanced Physics Courses**

PHYS371	Modern Physics	3
PHYS373	Mathematical Methods for Physics II	3
PHYS401	Quantum Physics I	4
PHYS404	Introduction to Statistical Thermodynamics	3

**Supporting Mathematics/Mathematical Methods Courses**

MATH140	Calculus I	4
MATH141	Calculus II	4
MATH241	Calculus III	4
PHYS274	Mathematical Methods for Physics I	3

**Total Credits**      **64**<sup>1</sup> Also accepted with consent of advisor: PHYS161, PHYS165, PHYS260, PHYS261, PHYS270, PHYS271 (14 credits)<sup>2</sup> For students with experience with computer programming this course can be replaced by PHYS474 Computational Physics or ASTR415 Computational Astrophysics. If students complete ASTR415 for this requirement, it cannot be counted as an advanced astronomy course (400-level course) requirement.<sup>3</sup> Completion of both MATH246 and either MATH240 or MATH461 will be accepted in place of PHYS274.*Grades in all of the above required courses must be "C-" or better.*

## Biochemistry Major

**Under** Biochemistry Major (<https://academiccatalog.umd.edu/undergraduate/colleges-schools/computer-mathematical-natural-sciences/chemistry-biochemistry/biochemistry-major/>)

- Effective Spring 2024, the course requirements changed (*published December 19, 2023*).

**Original**See Biochemistry Major (<https://academiccatalog.umd.edu/undergraduate/colleges-schools/computer-mathematical-natural-sciences/chemistry-biochemistry/biochemistry-major/>).**Change**

All required chemistry, biochemistry, and upper-level biological sciences courses must be passed with a minimum grade of "C-". Required supporting courses, including BSCI170 &amp; BSCI171, must be passed with a 2.0 grade point average.

Course	Title	Credits
UNIV100	The Student in the University	1

**Lower-Level CHEM Courses**

CHEM146 & CHEM177	Principles of General Chemistry and Introduction to Laboratory Practices and Research in the Chemical Sciences	5
CHEM237	Principles of Organic Chemistry I	4
CHEM247	Principles of Organic Chemistry II	4
CHEM276 & CHEM277	General Chemistry and Energetics - Majors and Fundamentals of Analytical and Bioanalytical Chemistry Laboratory	5

**Supporting Courses**

BSCI170 & BSCI171	Principles of Molecular & Cellular Biology and Principles of Molecular & Cellular Biology Laboratory	4
PHYS161 & PHYS260 & PHYS261	General Physics: Mechanics and Particle Dynamics and General Physics: Vibration, Waves, Heat, Electricity and Magnetism and General Physics: Mechanics, Vibrations, Waves, Heat (Laboratory)	7
MATH140	Calculus I	4
MATH141	Calculus II	4
MATH241	Calculus III	4

**Required Upper Level CHEM/BCHM Courses**

CHEM395	Professional Issues in Chemistry and Biochemistry	1
CHEM425	Instrumental Methods of Analysis	4
CHEM481 & CHEM483	Physical Chemistry I and Physical Chemistry Laboratory I	5
BCHM461	Biochemistry I	3
BCHM462	Biochemistry II	3
BCHM464	Biochemistry Laboratory	3
BCHM465	Biochemistry III	3
BCHM485	Physical Biochemistry	3
Approved biological science courses		6

**Total Credits**      **73**<sup>1</sup> **Note:** All majors and potential majors are encouraged to take MATH241 prior to beginning Physical Chemistry.

- Specific information about course requirements can be obtained in the undergraduate office.
- Students who enroll in the chemistry or biochemistry program at any time following the first semester of study typically will complete all or part of the non-majors introductory sequence (CHEM131, CHEM132, CHEM231/CHEM232, CHEM241/CHEM242 and CHEM271/CHEM272;

CHEM132, CHEM232, CHEM242 and CHEM272 are co-requisite laboratory courses). In this situation, completion of an additional approved upper level CHEM or BCHM course may be required to fulfill the lower-level departmental major requirements. Transfer students who wish to pursue chemistry or biochemistry majors will have their previous chemistry course work carefully evaluated for placement in the appropriate courses.

- More information about and requirements for the Biochemistry major can be found at: <http://www.chem.umd.edu/undergraduateprogram/current-students/majoradvising> (<http://www.chem.umd.edu/undergraduateprogram/current-students/majoradvising/>).

## Bioengineering Major

**Under** Bioengineering Major (<https://academiccatalog.umd.edu/undergraduate/colleges-schools/engineering/bioengineering/bioengineering-major/>)

- The accreditation statement in the program description changed (*published September 7, 2023*).

### Original

The Bachelor of Science in Bioengineering degree program at the University of Maryland is accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>, under the General Criteria and the Bioengineering and Biomedical Engineering Program Criteria.

### Change

The Bachelor of Science in Bioengineering degree program at the University of Maryland is accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>, under the General Criteria and Program Criteria for Bioengineering and Biomedical and Similarly Named Engineering Programs.

## Chemical Engineering Major

**Under** Chemical Engineering Major (<https://academiccatalog.umd.edu/undergraduate/colleges-schools/engineering/chemical-biomolecular-engineering/chemical-biomolecular-engineering-major/>)

- The accreditation statement in the program description changed (*published September 7, 2023*).

### Original

The Bachelor of Science in Chemical Engineering degree program at the University of Maryland is accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>, under the General Criteria and the Chemical, Biochemical, and Biomolecular Program Criteria.

### Change

The Bachelor of Science in Chemical Engineering degree program at the University of Maryland is accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>, for the General Criteria and Program Criteria for Chemical, Biochemical, Biomolecular and Similarly Named Engineering Programs.

## Civil Engineering Major

**Under** Civil Engineering Major (<https://academiccatalog.umd.edu/undergraduate/colleges-schools/engineering/civil-environmental-engineering/civil-environmental-engineering-major/>)

- The accreditation statement in the program description changed (*published September 7, 2023*).

### Original

The Bachelor of Science in Civil Engineering degree program at the University of Maryland is accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>, under the General Criteria and the Civil Engineering Program Criteria.

### Change

The Bachelor of Science in Civil Engineering degree program at the University of Maryland is accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>, under the General Criteria and Program Criteria for Civil and Similarly Named Engineering Programs.

## Computer Engineering Major

**Under** Computer Engineering Major (<https://academiccatalog.umd.edu/undergraduate/colleges-schools/engineering/electrical-and-computer-computer-engineering-major/>)

- The accreditation statement in the program description changed (*published September 7, 2023*).

### Original

The Bachelor of Science degree in Computer Engineering degree program at the University of Maryland is accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>, under the General Criteria and the Computer Engineering Program Criteria.

### Change

The Bachelor of Science degree in Computer Engineering degree program at the University of Maryland is accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>, under the General Criteria and Program Criteria for Electrical, Computer, Communications, Telecommunication(s) and Similarly Named Engineering Programs.

## Communication Major

**Under** Communication Major (<https://academiccatalog.umd.edu/undergraduate/colleges-schools/arts-humanities/communication/communication-major/>)

- Effective Spring 2024, the course requirements changed (*published December 19, 2023*).

### Original

See Communication Major (<https://academiccatalog.umd.edu/undergraduate/colleges-schools/arts-humanities/communication/communication-major/>).

### Change

The course of study for a Communication major must satisfy all of the following requirements:

Course	Title	Credits
College Requirements ( <a href="https://academiccatalog.umd.edu/undergraduate/colleges-schools/arts-humanities/#collegerequirementstext">https://academiccatalog.umd.edu/undergraduate/colleges-schools/arts-humanities/#collegerequirementstext</a> )		
<b>Oral Communication</b>		
Select one of the following:		3
COMM107	Oral Communication: Principles and Practices	
COMM200	Critical Thinking and Speaking	
COMM230	Argumentation and Debate	
<b>Modes of Communication Inquiry</b>		
COMM250	Introduction to Communication Inquiry	3
<b>Fundamentals of Communication Skills</b>		
COMM130	Professional Communication and Writing	1
Select one of the following:		3
BMGT230	Business Statistics	
STAT100	Elementary Statistics and Probability	
EDMS451	Introduction to Educational Statistics	
CCJS200	Statistics for Criminology and Criminal Justice	
PSYC200	Statistical Methods in Psychology	
SOCY201	Introductory Statistics for Sociology	
Select one of the following specializations:		36
Communication Studies		
Health and Science Communication		
Media and Digital Communication		
Political Communication and Public Advocacy		
Public Relations		
<b>Total Credits</b>		<b>46</b>

## Communication Studies

Course	Title	Credits
<b>Communication Theory &amp; Principles</b>		
Select two of the following:		6
COMM201	Introduction to Public Relations	
COMM301	Rhetorical Theories	
COMM302	Communication Science Theories	
COMM303	Media Theory	
<b>Research Methods</b>		
COMM304	Communication Research Literacy	3
Select one of the following:		3
COMM305	Qualitative Communication Research Methods	
COMM306	Rhetorical Methods in Communication	
COMM307	Quantitative Methods in Communication	
<b>Communication &amp; Society</b>		
Select one of the following Leadership & Social Change courses:		3
COMM330	Argumentation and Public Policy	
COMM385	Influence	
COMM420	Theories of Group Discussion	
COMM421	Communicating Leadership	
COMM422	Communication Management	
COMM424	Communication in Complex Organizations	
COMM425	Negotiation and Conflict Management	

COMM428	Special Topics Seminar in Dialogues and Deliberation	
COMM436	Interpersonal Arguing	
COMM448	Special Topics in Public Relations	
COMM449	Special Topics in Digital Communication	
COMM455	Speechwriting	
COMM459	Special Topics in Science Communication	
COMM461	Voices of Public Leadership in the Twentieth Century	
COMM462	Visual Communication	
COMM469	The Discourse of Social Movements	
COMM470	Listening	
COMM475	Persuasion	
Select one of the following Diversity & Inclusion courses:		3
COMM324	Communication and Gender	
COMM360	The Rhetoric of Black America	
COMM382	Essentials of Intercultural Communication	
COMM454	Rhetoric of the 1960s	
COMM460	Public Life in American Communities, 1634-1900	
<b>Applied</b>		
Select one of the following:		3
COMM311	Peer Consulting in Oral Communication	
COMM386	Experiential Learning	
COMM388	Communication Practicum	
COMM498	Seminar	
Select one of the following:		3
COMM311	Peer Consulting in Oral Communication	
COMM330	Argumentation and Public Policy	
COMM331	News Writing and Reporting for Public Relations	
COMM370	Mediated Communication	
COMM371	Communication and Digital Media	
COMM375	Documentary Theory and Practice	
COMM386	Experiential Learning	
COMM388	Communication Practicum	
COMM425	Negotiation and Conflict Management	
COMM426	Conflict Management	
COMM455	Speechwriting	
COMM471		
COMM498	Seminar	
<b>Electives</b>		
3xx or 4xx-Level COMM Electives		12
<b>Total Credits</b>		<b>36</b>

## Health and Science Communication

Course	Title	Credits
<b>Communication Theory &amp; Principles</b>		
COMM302	Communication Science Theories	3
Select one of the following:		3
COMM201	Introduction to Public Relations	
COMM301	Rhetorical Theories	
COMM303	Media Theory	
<b>Research Methods</b>		

COMM304	Communication Research Literacy	3
Select one of the following Research Methods courses:		3
COMM305	Qualitative Communication Research Methods	
COMM306	Rhetorical Methods in Communication	
COMM307	Quantitative Methods in Communication	
<b>Communication &amp; Society</b>		
Select one of the following Leadership & Social Change courses:		3
COMM330	Argumentation and Public Policy	
COMM385	Influence	
COMM420	Theories of Group Discussion	
COMM421	Communicating Leadership	
COMM422	Communication Management	
COMM424	Communication in Complex Organizations	
COMM425	Negotiation and Conflict Management	
COMM428	Special Topics Seminar in Dialogues and Deliberation	
COMM436	Interpersonal Arguing	
COMM448	Special Topics in Public Relations	
COMM449	Special Topics in Digital Communication	
COMM455	Speechwriting	
COMM459	Special Topics in Science Communication	
COMM461	Voices of Public Leadership in the Twentieth Century	
COMM462	Visual Communication	
COMM469	The Discourse of Social Movements	
COMM470	Listening	
COMM475	Persuasion	
Select one of the following Diversity & Inclusion courses:		3
COMM324	Communication and Gender	
COMM360	The Rhetoric of Black America	
COMM382	Essentials of Intercultural Communication	
COMM454	Rhetoric of the 1960s	
COMM460	Public Life in American Communities, 1634-1900	
<b>Applied</b>		
Select one of the following:		3
COMM311	Peer Consulting in Oral Communication	
COMM386	Experiential Learning	
COMM388	Communication Practicum	
COMM498	Seminar	
Select one of the following:		3
COMM311	Peer Consulting in Oral Communication	
COMM330	Argumentation and Public Policy	
COMM331	News Writing and Reporting for Public Relations	
COMM370	Mediated Communication	
COMM371	Communication and Digital Media	
COMM375	Documentary Theory and Practice	
COMM386	Experiential Learning	
COMM388	Communication Practicum	
COMM425	Negotiation and Conflict Management	
COMM426	Conflict Management	
COMM455	Speechwriting	
COMM471		

COMM498	Seminar	
Select four of the following specialization electives: <sup>1</sup>		12
<b>Specialization Electives</b>		
COMM398	Selected Topics in Communication (COMM398E: Health Communication)	
COMM419	Special Topics in Health Communication	
COMM422	Communication Management	
COMM424	Communication in Complex Organizations	
COMM426	Conflict Management	
COMM427	Crisis Communication	
COMM435	Theories of Interpersonal Communication	
COMM459	Special Topics in Science Communication	
<b>Total Credits</b>		<b>36</b>

<sup>1</sup> The same course cannot be used to fulfill more than one requirement.

## Media and Digital Communication

Course	Title	Credits
<b>Communication Theory &amp; Principles</b>		
COMM303	Media Theory	3
Select one of the following:		3
COMM201	Introduction to Public Relations	
COMM301	Rhetorical Theories	
COMM302	Communication Science Theories	
<b>Research Methods</b>		
COMM304	Communication Research Literacy	3
Select one of the following Research Methods courses:		3
COMM305	Qualitative Communication Research Methods	
COMM306	Rhetorical Methods in Communication	
COMM307	Quantitative Methods in Communication	
<b>Communication &amp; Society</b>		
Select one of the following Leadership & Social Change courses:		3
COMM330	Argumentation and Public Policy	
COMM385	Influence	
COMM420	Theories of Group Discussion	
COMM421	Communicating Leadership	
COMM422	Communication Management	
COMM424	Communication in Complex Organizations	
COMM425	Negotiation and Conflict Management	
COMM428	Special Topics Seminar in Dialogues and Deliberation	
COMM448	Special Topics in Public Relations	
COMM449	Special Topics in Digital Communication	
COMM455	Speechwriting	
COMM459	Special Topics in Science Communication	
COMM461	Voices of Public Leadership in the Twentieth Century	
COMM462	Visual Communication	
COMM469	The Discourse of Social Movements	
COMM470	Listening	
COMM475	Persuasion	
Select one of the following Diversity & Inclusion courses:		3

COMM324	Communication and Gender	
COMM360	The Rhetoric of Black America	
COMM382	Essentials of Intercultural Communication	
COMM454	Rhetoric of the 1960s	
COMM460	Public Life in American Communities, 1634-1900	
<b>Applied</b>		
Select one of the following:		3
COMM311	Peer Consulting in Oral Communication	
COMM386	Experiential Learning	
COMM388	Communication Practicum	
COMM498	Seminar	
Select one of the following:		3
COMM311	Peer Consulting in Oral Communication	
COMM330	Argumentation and Public Policy	
COMM331	News Writing and Reporting for Public Relations	
COMM370	Mediated Communication	
COMM371	Communication and Digital Media	
COMM375	Documentary Theory and Practice	
COMM386	Experiential Learning	
COMM388	Communication Practicum	
COMM425	Negotiation and Conflict Management	
COMM426	Conflict Management	
COMM455	Speechwriting	
COMM471		
COMM498	Seminar	
<b>Specialization Electives</b>		
Select four of the following specialization electives: <sup>1</sup>		12
COMM370	Mediated Communication	
COMM371	Communication and Digital Media	
COMM372	Communication, Meaning, and Digital Media	
COMM373	Communication and Digital Visual Narrative	
COMM374	Communicating Visually: Message Production and Digital Media	
COMM375	Documentary Theory and Practice	
COMM376	Communication through Advocacy Short Film	
COMM449	Special Topics in Digital Communication	
COMM468	Seminar in Mediated Communication	
<b>Total Credits</b>		<b>36</b>

<sup>1</sup> The same course cannot be used to fulfill more than one requirement.

## Political Communication and Public Advocacy

Course	Title	Credits
<b>Communication Theory &amp; Principles</b>		
COMM301	Rhetorical Theories	3
Select one of the following:		3
COMM201	Introduction to Public Relations	
COMM302	Communication Science Theories	
COMM303	Media Theory	
<b>Research Methods</b>		
COMM304	Communication Research Literacy	3

Select one of the following Research Methods courses:		3
COMM305	Qualitative Communication Research Methods	
COMM306	Rhetorical Methods in Communication	
COMM307	Quantitative Methods in Communication	

<b>Communication &amp; Society</b>		
Select one of the following Leadership & Social Change courses:		3
COMM330	Argumentation and Public Policy	
COMM385	Influence	
COMM420	Theories of Group Discussion	
COMM421	Communicating Leadership	
COMM422	Communication Management	
COMM424	Communication in Complex Organizations	
COMM425	Negotiation and Conflict Management	
COMM428	Special Topics Seminar in Dialogues and Deliberation	
COMM436	Interpersonal Arguing	
COMM448	Special Topics in Public Relations	
COMM449	Special Topics in Digital Communication	
COMM455	Speechwriting	
COMM459	Special Topics in Science Communication	
COMM461	Voices of Public Leadership in the Twentieth Century	
COMM462	Visual Communication	
COMM469	The Discourse of Social Movements	
COMM470	Listening	
COMM475	Persuasion	

Select one of the following Diversity & Inclusion courses:		3
COMM324	Communication and Gender	
COMM360	The Rhetoric of Black America	
COMM382	Essentials of Intercultural Communication	
COMM454	Rhetoric of the 1960s	
COMM460	Public Life in American Communities, 1634-1900	

<b>Applied</b>		
Select one of the following:		3
COMM311	Peer Consulting in Oral Communication	
COMM386	Experiential Learning	
COMM388	Communication Practicum	
COMM498	Seminar	

Select one of the following:		3
COMM311	Peer Consulting in Oral Communication	
COMM330	Argumentation and Public Policy	
COMM331	News Writing and Reporting for Public Relations	
COMM370	Mediated Communication	
COMM371	Communication and Digital Media	
COMM375	Documentary Theory and Practice	
COMM386	Experiential Learning	
COMM388	Communication Practicum	
COMM425	Negotiation and Conflict Management	
COMM426	Conflict Management	
COMM455	Speechwriting	
COMM471		
COMM498	Seminar	

**Specialization Electives**

Select four of the following specialization electives: <sup>1</sup>	12
COMM330	Argumentation and Public Policy
COMM340	Communicating the Narrative
COMM360	The Rhetoric of Black America
COMM428	Special Topics Seminar in Dialogues and Deliberation
COMM450	Ancient and Medieval Rhetorical Theory
COMM456	Freedom of Speech & the First Amendment
COMM458	Seminar in Political Communication
COMM460	Public Life in American Communities, 1634-1900
COMM461	Voices of Public Leadership in the Twentieth Century
COMM469	The Discourse of Social Movements
<b>Total Credits</b>	<b>36</b>

<sup>1</sup> The same course cannot be used to fulfill more than one requirement.

**Public Relations**

Course	Title	Credits
<b>Communication Theory &amp; Principles</b>		
COMM201	Introduction to Public Relations	3
Select one of the following:		3
COMM301	Rhetorical Theories	
COMM302	Communication Science Theories	
COMM303	Media Theory	
<b>Research Methods</b>		
COMM304	Communication Research Literacy	3
Select one of the following Research Methods courses:		3
COMM305	Qualitative Communication Research Methods	
COMM306	Rhetorical Methods in Communication	
COMM307	Quantitative Methods in Communication	
<b>Communication &amp; Society</b>		
Select one of the following Leadership & Social Change courses:		3
COMM330	Argumentation and Public Policy	
COMM385	Influence	
COMM420	Theories of Group Discussion	
COMM421	Communicating Leadership	
COMM422	Communication Management	
COMM424	Communication in Complex Organizations	
COMM425	Negotiation and Conflict Management	
COMM428	Special Topics Seminar in Dialogues and Deliberation	
COMM436	Interpersonal Arguing	
COMM448	Special Topics in Public Relations	
COMM449	Special Topics in Digital Communication	
COMM455	Speechwriting	
COMM459	Special Topics in Science Communication	
COMM461	Voices of Public Leadership in the Twentieth Century	
COMM462	Visual Communication	
COMM469	The Discourse of Social Movements	

COMM470	Listening	
COMM475	Persuasion	
Select one of the following Diversity & Inclusion courses:		3
COMM324	Communication and Gender	
COMM360	The Rhetoric of Black America	
COMM382	Essentials of Intercultural Communication	
COMM454	Rhetoric of the 1960s	
COMM460	Public Life in American Communities, 1634-1900	
<b>Applied</b>		
COMM331	News Writing and Reporting for Public Relations	3
COMM386	Experiential Learning	3-6
<b>Specialization Electives</b>		
COMM351	Public Relations Techniques	3
COMM353	New Media Writing for Public Relations	3
COMM483	Senior Seminar in Public Relations	3
COMM476	Language, Communication, and Action	3
<b>Total Credits</b>		<b>36-39</b>

**Computational Finance Minor**

- Effective Spring 2024, the Computational Finance Minor was established (*published December 19, 2023*).

**Program Directors:** Albert S. Kyle, Ph.D. and Louiqa Raschid, Ph.D.

The Minor in Computational Finance will provide students with proficiency in applying analytical models and machine learning methods to solve challenging financial tasks. The Minor will introduce students to (pseudo) realistic tasks faced by financial analysts and researchers, as well as the real world datasets that are widely used across the financial industry and by financial regulators (e.g., SEC, FINRA, etc.). The Minor, which is only open to Computer Science majors, will equip students with the domain specific skills needed for positions in the financial industry (banking and investment) or with financial regulators (SEC, FINRA, Fannie Mae, etc.) or to explore innovative opportunities in the Financial Technology (FinTech) industry.

**Program Learning Outcomes**

- Develop proficiency in manipulating financial datasets.
- Apply analytical models to solve challenging financial tasks.
- Apply machine learning methods to analyze financial datasets.
- Engage with academic and industry mentors in a capstone project.
- Engage in experiential learning projects that are designed to solve real world problems with real datasets.
- Demonstrate analytical thinking skills through the use and application of analytical and machine learning methods.

**Requirements**

Admitted Computer Science majors will begin the minor in their junior year and MATH240, MATH241, and STAT400 (or equivalent courses) should be completed prior to entering the program. CMSC320 (or an equivalent course) should be completed either prior to beginning the minor or during a student's first semester in the minor.

Course	Title	Credits
BUFN400	Introduction to Financial Markets and Financial Datasets	3
CMSC320	Introduction to Data Science	3
BUFN403	Capstone Computational Finance Projects	3
One course from the following:		3
BUFN401	Option Theory and Derivatives	
BUFN402	Portfolio Management	
One course from the following:		3
CMSC421	Introduction to Artificial Intelligence	
CMSC422	Introduction to Machine Learning	
CMSC470	Introduction to Natural Language Processing	
CMSC471	Introduction to Data Visualization	
CMSC472	Introduction to Deep Learning	
CMSC474	Introduction to Computational Game Theory	
<b>Total Credits</b>		<b>15</b>

## Cyber-Physical Systems Engineering Major

**Under** Cyber-Physical Systems Engineering Major (<https://academiccatalog.umd.edu/undergraduate/colleges-schools/engineering/electrical-and-computer/cyber-physical-systems-engineering-major/>) **and** Cyber-Physical Systems Engineering Major at Shady Grove (<https://academiccatalog.umd.edu/undergraduate/colleges-schools/universities-shady-grove/engineering/cyber-physical-systems-engineering/>)

- The Student Learning Outcomes were modified (*published September 7, 2023*).

### Original

#### STUDENT LEARNING OUTCOMES

1. An ability to apply knowledge of computing, engineering, science, and mathematics to identify, analyze and solve complex engineering problems.
2. An ability to design, implement, and evaluate a computer-based system, process, component, or program that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3. An ability to communicate effectively with a range of audiences.
4. An understanding of professional, ethical, legal, security, and social issues and responsibilities.
5. An ability to analyze the local and global impact of computing on individuals, organizations, and society.
6. An ability to function effectively on teams to accomplish a common goal.
7. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
8. An ability to acquire and apply new knowledge, using appropriate learning strategies.

### Change

#### STUDENT LEARNING OUTCOMES

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3. An ability to communicate effectively with a range of audiences.
4. The ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments that must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

## Economics Major

**Under** Economics Major (<https://academiccatalog.umd.edu/undergraduate/colleges-schools/behavioral-social-sciences/economics/economics-major/>)

- Effective Spring 2024, course and credit requirements changed (*published December 19, 2023*).

### Original

See Economics Major (<https://academiccatalog.umd.edu/undergraduate/colleges-schools/behavioral-social-sciences/economics/economics-major/>).

### Change

In addition to the university's general education requirements, students must earn a minimum of 41 credits via a combination of foundation and elective courses in economics and math as listed below. Both the Bachelor of Arts and the Bachelor of Science tracks require a sequence of courses starting with introductory micro and macroeconomics, as well as calculus. Students then proceed to intermediate level courses in theory and statistics. Finally, students take at least one upper-level course focused on quantitative analysis plus several upper-level courses where you explore specific topics in more depth. Both tracks require the same number of courses.

All courses must be passed with a grade of "C-" or better to count towards the foundation and elective requirements. Students must have a minimum 2.0 cumulative grade point average across all courses used to satisfy major degree requirements. A course used to fulfill one requirement for the major may not count towards any other economics major requirement.

## Bachelor of Arts

Course	Title	Credits
College Requirements ( <a href="https://academiccatalog.umd.edu/undergraduate/colleges-schools/behavioral-social-sciences/#collegerequirementstext">https://academiccatalog.umd.edu/undergraduate/colleges-schools/behavioral-social-sciences/#collegerequirementstext</a> )		

Foundation Courses		
ECON200	Principles of Microeconomics	3
ECON201	Principles of Macroeconomics	3
MATH120	Elementary Calculus I	3-4
or MATH140	Calculus I	
ECON230	Applied Economic Statistics	3
or BMGT230	Business Statistics	
ECON305	Intermediate Macroeconomic Theory and Policy	4
ECON306	Intermediate Microeconomic Theory & Policy	4
Economics Courses of Choice		
Select one of the following: <sup>1</sup>		3
ECON402	Macroeconomic Models and Forecasting	
ECON414	Game Theory	
ECON424	Applied Econometrics	
ECON425	Mathematical Economics	
ECON426	Economics of Cost-Benefit Analysis	
Select two 300 or 400 level ECON courses designated for B.A.		6
Select three 400 level ECON courses designated for B.A.		9
Select one of the following:		3
ECON386	Experiential Learning	
Other experiential learning course(s)		
300 or 400 level ECON course designated for the B.A.		
<b>Total Credits</b>		<b>41-42</b>

*The Economics curriculum may be updated over time, given college and campus approval. Students will be notified as other appropriate courses are approved that fulfill the requirements for the major.*

## Bachelor of Science

Course	Title	Credits
College Requirements ( <a href="https://academiccatalog.umd.edu/undergraduate/colleges-schools/behavioral-social-sciences/#collegerequirementstext">https://academiccatalog.umd.edu/undergraduate/colleges-schools/behavioral-social-sciences/#collegerequirementstext</a> )		
Foundation Courses		
ECON200	Principles of Microeconomics	3
ECON201	Principles of Macroeconomics	3
MATH140	Calculus I	4
ECON300	Methods and Tools for Economic Analysis	3
or MATH241	Calculus III	
Note: Students who take MATH241 must also take another statistics course		
ECON321	Economic Statistics	3
or STAT401	Applied Probability and Statistics II	
ECON325	Intermediate Macroeconomic Analysis	4
ECON326	Intermediate Microeconomic Analysis	4
ECON422	Econometrics	3
Economics Courses of Choice		
Select three 400 level ECON courses designated for the B.S.		9
Select one 400 level ECON course designated for the B.S. or B.A.		3
Select one 300 or 400 level ECON course designated for the B.S. or B.A.		3
<b>Total Credits</b>		<b>42</b>

*The Economics curriculum may be updated over time, given college and campus approval. Students will be notified as other appropriate courses are approved that fulfill the requirements for the major.*

## Other Requirements for the Major Study Sequences and Plans of Study

Those students planning to pursue graduate study in economics must begin to prepare themselves analytically for graduate work by focusing on theory, statistics, and mathematics in their undergraduate curriculum. These students should consider the full econometrics sequence of ECON422 and ECON423. Mastery of advanced calculus and linear algebra is essential for entrance into graduate schools, and therefore students must take MATH140, MATH141, MATH240, MATH241 and MATH246. Students should also plan on taking MATH410 and MATH411.

### Benchmarks

In accordance with the university's policies, the Department of Economics expects students to make timely progress towards graduation. To help measure progress during the early stages of a student's studies in economics, students will have to complete courses designated as benchmarks within a specified number of semesters in order to continue in their major.

### Bachelor of Arts

Students must complete the following five courses within two semesters of entering the major:

- ECON200, ECON201, and MATH120 or MATH140 with grades of C- or higher
- One additional GenEd course with a D- or higher
- Academic Writing with a C- or higher

### Bachelor of Science

Students must complete the following six courses within two semesters of entering the major:

- ECON200, ECON201, MATH140, and ECON300 with grades of C- or higher
- One additional GenEd course with a D- or higher
- Academic Writing with a C- or higher

These benchmark deadlines may not be appropriate for all incoming students (depending upon credit earned prior to entering the major and math placement). All students complete an individualized benchmark contract with an ECON advisor, either at orientation or in the process of declaring the major. Freshmen wishing to declare an Economics major should see an advisor as soon as possible in order to set appropriate benchmarks and establish a coherent graduation plan.

## Electrical Engineering Major

*Under* Electrical Engineering Major (<https://academiccatalog.umd.edu/undergraduate/colleges-schools/engineering/electrical-and-computer/electrical-engineering-major/>)

- The accreditation statement in the program description changed (*published September 7, 2023*).

**Original**

The Bachelor of Science degree in Electrical Engineering degree program at the University of Maryland is accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>, under the General Criteria and the Electrical and Electronics Engineering Program Criteria.

**Change**

The Bachelor of Science degree in Electrical Engineering degree program at the University of Maryland is accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>, under the General Criteria and Program Criteria for Electrical, Computer, Communications, Telecommunication(s) and Similarly Named Engineering Programs.

## Environmental Science and Technology Major

**Under** Environmental Science and Technology Major (<https://academiccatalog.umd.edu/undergraduate/colleges-schools/agriculture-natural-resources/environmental-science-technology/environmental-science-technology-major/#requirementstext>)

- Effective Spring 2024, the course requirements changed (*published December 19, 2023*).

**Original**

See Environmental Science and Technology Major (<https://academiccatalog.umd.edu/undergraduate/colleges-schools/agriculture-natural-resources/environmental-science-technology/environmental-science-technology-major/#requirementstext>).

**Change**

This program requires a total of 120 credits for a Bachelor of Science, including the general education program course credits, required major credits; Technology and Ecosystem elective credits, and free elective credits. All courses counted toward the major must be completed with a C- or better. An overall GPA of 2.0 in major courses is required for graduation.

Course	Title	Credits
ENST Core for all Areas of Concentration		
BSCI170 & BSCI171	Principles of Molecular & Cellular Biology and Principles of Molecular & Cellular Biology Laboratory	4
MATH120	Elementary Calculus I	3
BSCI160 & BSCI161	Principles of Ecology and Evolution and Principles of Ecology and Evolution Lab	4
CHEM131 & CHEM132	Chemistry I - Fundamentals of General Chemistry and General Chemistry I Laboratory	4
ENST200	Fundamentals of Soil Science	4
ENST233	Introduction to Environmental Health	4
CHEM231 & CHEM232	Organic Chemistry I and Organic Chemistry Laboratory I	4
PHYS121	Fundamentals of Physics I	4
GEOG306	Introduction to Quantitative Methods for the Geographical Environmental Sciences	3
or BIOM301	Introduction to Biometrics	
ENST360	Ecosystem Ecology	4

ENST389	Internship	3
<b>Concentration (See list below)</b>		<b>33-36</b>
<b>Senior Integrative Experience - Choose one course from list below</b>		<b>3</b>
ENST388	Honors Thesis Research	
ENST470	Ideas into Impact	
ENST486	Senior Professional Experience	
ENST472	Capstone	
<b>Total Credits</b>		<b>77-80</b>

## Concentrations: Ecological Technology Design

Course	Title	Credits
<b>Concentration Core</b>		
ENST281	Computer Aided Design in Ecology	2
ENST481	Ecological Design	4
MATH121	Elementary Calculus II	3
<b>Concentration Depth - Ecology (2 Courses)</b>		<b>6</b>
ENST410	Ecosystem Services: An Integrated Analysis	
ENST422	Soil Microbial Ecology	
ENST450	Wetland Ecology	
ENST453	Watershed Science: Water Balance, Open Channel Flow, and Near Surface Hydrology	
GEOL453	Ecosystem Restoration	
<b>Concentration Depth - Design (3 Courses)</b>		<b>9</b>
ENST282	Ecological Innovation and Entrepreneurship	
ENST405	Energy and Environment	
ENST415	Renewable Energy	
ENST443		
ENST485	Water Management in Urban Environment	
ENST456	Spatial Analysis and Ecological Sampling	
	or GEOG272 Introduction to Earth Observation Science	
	or GEOG373 Geographic Information Systems	
	or INAG237 GPS & Drone Applications in Surveying	
<b>Ecological Technology Design Technical Electives<sup>1</sup></b>		<b>12</b>
Urban Ecosystems and Human Dimensions:		
ENST461	Urban Wildlife Management	
GEOG331	Introduction to Human Dimensions of Global Change	
LARC452	Green Infrastructure and Community Greening	
PLSC480	Urban Ecology	
Sustainable Technology:		
ENST432	Environmental Microbiology	
ENST441	Sustainable Agriculture	
GEOL453	Ecosystem Restoration	
INAG250	Fundamentals of Agricultural Mechanics	
PLSC425	Green Roofs and Urban Sustainability	
Wetlands:		
ENST430	Wetland Soils	
ENST450	Wetland Ecology	
ENST452	Wetland Restoration	
GEOL452	Watershed and Wetland Hydrology	
Ecology and Ecosystem Management:		

BSCI467	Freshwater Biology
ENST373	Natural History of the Chesapeake Bay
ENST460	Principles of Wildlife Management
PLSC471	Forest Ecology

**Total Credits** 36

## Ecosystem Health

Course	Title	Credits
<b>Concentration Core</b>		
ENST333	Ecosystem Health and Protection	3
ENST334	Environmental Toxicology	3
ENST436	Emerging Environmental Threats	3
BSCI207	Principles of Biology III - Organismal Biology	3
BSCI222	Principles of Genetics	4
or BSCI223	General Microbiology	
<b>Concentration Depth (2 Courses)</b> 6		
ENST403	Invasive Species Ecology	
ENST423	Soil-Water Pollution	
ENST432	Environmental Microbiology	
ENST445	Ecological Risk Assessment	
<b>Ecosystem Health Technical Electives</b> <sup>1</sup> 12		
Environmental Health:		
ENST403	Invasive Species Ecology	
ENST423	Soil-Water Pollution	
ENST434	Toxic Contaminants: Sources, Fate, and Effects	
ENST436	Emerging Environmental Threats	
ENST445	Ecological Risk Assessment	
Environmental Science and Management:		
ENST405	Energy and Environment	
GEOG415	Land Use, Climate Change, and Sustainability	
GEOL452	Watershed and Wetland Hydrology	
ENST432	Environmental Microbiology	
LARC450	Environmental Resources	
Ecological Processes:		
ENST422	Soil Microbial Ecology	
ENST450	Wetland Ecology	
ENST460	Principles of Wildlife Management	
PLSC400	Plant Physiology	
BSCI467	Freshwater Biology	
Human Health:		
BSCI424	Pathogenic Microbiology	
BSCI425	Advanced Cell Biology Lab Practices	
BSCI437	General Virology	
BSCI450	Mammalian Systems Physiology	
Chemistry Depth:		
CHEM241	Organic Chemistry II	
CHEM242	Organic Chemistry Laboratory II	
Cultural or Social Dimensions:		
ENST410	Ecosystem Services: An Integrated Analysis	
GEOG331	Introduction to Human Dimensions of Global Change	
GEOG431	Culture and Natural Resource Management	

PLCY301	Sustainability
SOCY405	Scarcity and Modern Society
<b>Total Credits</b>	<b>34</b>

## Natural Resources Management

Course	Title	Credits
<b>Concentration Core</b>		
BSCI222	Principles of Genetics	4
ENST214	Introduction to Fish and Wildlife Sciences	3
ENST487	Environmental Conflicts and Decision Making	2
<b>Concentration Depth (4 Courses)</b> 12		
ENST456	Spatial Analysis and Ecological Sampling	
or GEOG272	Introduction to Earth Observation Science	
or GEOG373	Geographic Information Systems	
or INAG237	GPS & Drone Applications in Surveying	
ENST450	Wetland Ecology	
or ENST453	Watershed Science: Water Balance, Open Channel Flow, and Near Surface Hydrology	
AREC240	Introduction to Economics and the Environment	
or AREC241	Environment, Economics and Policy	
or ENST410	Ecosystem Services: An Integrated Analysis	
or AREC250	Elements of Agricultural and Resource Economics	
ENST424		
or ENST430	Wetland Soils	
or ENST441	Sustainable Agriculture	
or ENST462	Field Techniques in Wildlife Management	
or GEOG418	Field and Laboratory Techniques in Environmental Science	
<b>Natural Resources Management Technical Electives</b> <sup>1</sup> 12		
Wildlife:		
ENST460	Principles of Wildlife Management <sup>2</sup>	
ENST461	Urban Wildlife Management <sup>2</sup>	
BSCI334	Mammalogy	
& BSCI335	and Mammalogy Laboratory <sup>2</sup>	
ENSP102	Introduction to Environmental Policy <sup>2</sup>	
PLSC254	Woody Plants for Mid-Atlantic Landscape II	
ENSP330	Introduction to Environmental Law <sup>2</sup>	
or GVPT273	Introduction to Environmental Politics	
Fisheries:		
ENST314	Fisheries Management and Sustainability <sup>3</sup>	
COMM250	Introduction to Communication Inquiry <sup>3</sup>	
COMM382	Essentials of Intercultural Communication <sup>3</sup>	
GEOG331	Introduction to Human Dimensions of Global Change <sup>3</sup>	
GEOG416	Conceptualizing and Modeling Human-Environmental Interactions <sup>3</sup>	
ENSP102	Introduction to Environmental Policy <sup>3</sup>	
ENSP330	Introduction to Environmental Law <sup>3</sup>	
GVPT273	Introduction to Environmental Politics <sup>3</sup>	
Wetlands:		
ENST430	Wetland Soils <sup>4</sup>	
ENST450	Wetland Ecology <sup>4</sup>	
ENST452	Wetland Restoration <sup>4</sup>	

GEOL452	Watershed and Wetland Hydrology <sup>4</sup>	
PLSC489	Special Topics in Plant Science (PLSC4890 Plant Taxonomy) <sup>4</sup>	
	or PLSC254 Woody Plants for Mid-Atlantic Landscape II	
Forestry:		
PLSC253	Woody Plants for Mid-Atlantic Landscapes I	
PLSC254	Woody Plants for Mid-Atlantic Landscape II	
PLSC400	Plant Physiology	
PLSC471	Forest Ecology	
<b>Total Credits</b>		<b>33</b>

## Soil and Watershed Science

Course	Title	Credits
<b>Concentration Core</b>		
GEOL100 & GEOL110	Physical Geology and Physical Geology Laboratory	4
ENST456	Spatial Analysis and Ecological Sampling	3
	or GEOG272 Introduction to Earth Observation Science	
	or GEOG373 Geographic Information Systems	
	or INAG237 GPS & Drone Applications in Surveying	
<b>Concentration Depth - Soil Sciences</b> 7		
ENST411	Principles of Soil Fertility	
ENST414	Soil Morphology, Genesis and Classification <sup>5</sup>	
ENST417	Soil Hydrology and Physics <sup>5</sup>	
ENST421	Soil Chemistry <sup>5</sup>	
ENST422	Soil Microbial Ecology <sup>5</sup>	
<b>Concentration Depth - Field Experiences</b> 3		
ENST301	Field Soil Morphology I	
ENST302	Field Soil Morphology II	
ENST303	Field Soil Morphology III	
ENST309	Advanced Field Soil Morphology	
ENST424		
ENST430	Wetland Soils	
ENST441	Sustainable Agriculture	
ENST450	Wetland Ecology	
<b>Concentration Depth - Systems</b> 6		
AREC365	World Hunger, Population, and Food Supplies	
ENST410	Ecosystem Services: An Integrated Analysis	
ENST432	Environmental Microbiology	
PLSC400	Plant Physiology	
<b>Soil and Watershed Science Technical Electives</b> <sup>1</sup> 12		
Agriculture and Sustainable Land Use:		
AREC365	World Hunger, Population, and Food Supplies	
PLSC303	Global Food Systems	
PLSC405	Agroecology	
Social Ecology:		
BSCI223	General Microbiology	
BSCI337	Biology of Insects	
BSCI467	Freshwater Biology	
ENST410	Ecosystem Services: An Integrated Analysis	
Geosciences:		
GEOL322	Mineralogy	

GEOL340	Geomorphology	
GEOL341	Structural Geology	
GEOL342	Sedimentation and Stratigraphy	
GEOL444	Low Temperature Geochemistry	
Watersheds:		
ENST334	Environmental Toxicology	
ENST423	Soil-Water Pollution	
ENST453	Watershed Science: Water Balance, Open Channel Flow, and Near Surface Hydrology	
GEOL451	Groundwater	
GEOL452	Watershed and Wetland Hydrology	
GEOL453	Ecosystem Restoration	
<b>Total Credits</b>		<b>35</b>

- <sup>1</sup> Any combination of electives can be taken. Courses appear in blocks of related topics to assist students in tailoring their program to particular interests within the concentration. Under some circumstances, other 300 or 400 level electives can be substituted with advisor's approval.
- <sup>2</sup> Required for Professional Certification as an Associate Wildlife Biologist by The Wildlife Society.
- <sup>3</sup> Required for Professional Certification as an Associate Fisheries Professional by American Fisheries Society.
- <sup>4</sup> Required for Professional Certification as a Wetland Professional in Training (WPIT) by The Society of Wetland Scientists Professional Certification Program (SWSPCP).
- <sup>5</sup> Required for Soil Certification Exam.

## Fire Protection Engineering Major

**Under** Fire Protection Engineering Major (<https://academiccatalog.umd.edu/undergraduate/colleges-schools/engineering/fire-protection-engineering/fire-protection-engineering-major/>)

1. The senior design project statement in the the program description changed (*published August 11, 2023*).
2. The accreditation statement in the program description changed (*published September 7, 2023*).

### Original

- (1) A senior design or research project is required which gives the student an opportunity to explore issues beyond the normal classroom environment.
- (2) The Bachelor of Science degree in Fire Protection Engineering degree program at the University of Maryland is accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>, under the General Criteria and the Fire Protection Engineering Program Criteria.

### Change

- (1) A senior capstone design project is included in a course that allows students who are nearing graduation to integrate the knowledge and skills they have acquired in their program and apply them to develop fire protection solutions to complex, yet practical, challenges.
- (2) The Bachelor of Science degree in Fire Protection Engineering degree program at the University of Maryland is accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>, under the

General Criteria and Program Criteria for Fire Protection and Similarly Named Engineering Programs.

## French Language and Literature Major

**Under** French Language and Literature Major (<https://academiccatalog.umd.edu/undergraduate/colleges-schools/arts-humanities/languages-literatures-cultures/french-language-literature/french-major/>)

- Effective Spring 2024, the program description, learning outcomes, and course requirements changed (*published December 19, 2023*).

### Original

See French Language and Literature Major (<https://academiccatalog.umd.edu/undergraduate/colleges-schools/arts-humanities/languages-literatures-cultures/french-language-literature/french-major/>).

### Change

The undergraduate major in French (FREN) is centered on the study of the French language and the literatures and cultures of the French and Francophone people. Our faculty members teach a wide variety of courses in culture, literature, linguistics, stylistics, cinema, civilization, the contemporary French and Francophone world, and women's studies.

Students who complete the requirements for the major can expect to be able to speak, read, write, and understand French at a level that would allow them to communicate with native speakers, to recognize and interpret the diverse cultural perspectives and products of the French-speaking world, and to be culturally sensitive members of society.

Students of French have the option of living in the Language House. University faculty-led programs in Nice (semester or year-long) and Montpellier (summer) are offered by the Department, and all students majoring in French are encouraged to participate in either, or both, of these programs as an integral part of their curriculum. Students may also consider a double major in French and another discipline, such as College of Arts and Humanities majors, Business, International relations, Economics, or Journalism.

Students can satisfy the ARHU Global Engagement Requirement by taking the appropriate French language course sequence (103>203), or by taking a higher level French course.

Students must take language acquisition courses sequentially, i.e., 103, 203, 204, 250, etc. Once credit has been received in a higher-level language acquisition or grammar course, a lower-level course may not be taken for credit. FREN387 must be taken before any 400 level course taught in French.

Advanced students of French may substitute 3xx or 4xx level electives for FREN204, FREN250, or FREN301, in consultation with the Advisor.

## Program Learning Outcomes

1. Demonstrate knowledge of the institutions, values, and cultural products of France and/or the francophone countries
2. Demonstrate proficiency in oral expression in French
3. Demonstrate proficiency in written expression in French
4. Demonstrate reading literacy in French

## Requirements

Course	Title	Credits
College Requirements ( <a href="https://academiccatalog.umd.edu/undergraduate/colleges-schools/arts-humanities/#collegerequirementstext">https://academiccatalog.umd.edu/undergraduate/colleges-schools/arts-humanities/#collegerequirementstext</a> )		
FREN204	French Grammar and Composition	3
FREN250	Introduction to Cultural and Textual Analysis	3
FREN301	Composition and Style	3
FREN387	Critical Writing on France and the French-Speaking World	3
Select two of the following:		6
FREN302	Introduction to Translation	
FREN306	Commercial French I	
FREN312	France Today	
FREN313	(Current Issues in the French-Speaking World)	
FREN399	Directed Study in French	
FREN351	From Romanticism to the Age of Modernism and Beyond	3
FREN352	From the Age of Epic and Romance to the Enlightenment	3
Select four additional FREN4xx level courses in literature, linguistics, film, and culture, of which only one may be in English. FREN387 must be completed before any FREN4xx level course offered in French.		12
<b>Total Credits</b>		<b>36</b>

Students must earn a grade of "C-" or higher in each course applied toward a major or minor in the School of Languages, Literatures, and Cultures. Additionally, an overall GPA of 2.0 in a major or minor is required for graduation.

## Global Terrorism Studies Minor

**Under** Global Terrorism Studies Minor (<https://academiccatalog.umd.edu/undergraduate/colleges-schools/behavioral-social-sciences/global-terrorism-studies-minor/#requirementstext>)

- Effective Spring 2024, course requirements changed (*published December 19, 2023*).

### Original

See Global Terrorism Studies Minor (<https://academiccatalog.umd.edu/undergraduate/colleges-schools/behavioral-social-sciences/global-terrorism-studies-minor/#requirementstext>).

### Change

Course	Title	Credits
<b>Minor Requirements</b>		
BSST377	Applying Theory to the Practice of Countering Terrorism	1
BSST330	Terrorism Studies	3
BSST386	Experiential Learning in Terrorism Studies (Not repeatable)	1
Innovative Ideas Requirement (choose one of the following)		3
BSST331	Innovations in Counterterrorism	
BSST335	Innovations in Countering Violent Extremism	

ELECTIVES	Six additional elective credits from within Terrorism Studies (BSST) <sup>1</sup>	6
Select one of the following Global Perspective courses:		3
ANTH265	Anthropology of Global Health	
AREC345	Global Poverty and Economic Development	
AREC365	World Hunger, Population, and Food Supplies	
ENES269	Topics in Grand Challenges for Engineering in a Global Context	
ENES316	Global Leadership in Engineering, Business, & Technology	
ENES464	International Entrepreneurship and Innovation	
ENES472	Leading Global Teams and Engaging Across Cultures in Business, Engineering, and Technology	
ENES474	Global Perspectives of Engineering	
GEOG330	As the World Turns: Society and Sustainability in a Time of Great Change	
GVPT200	International Political Relations	
GVPT204	Uncertain Partners: US and China in a Changing World	
GVPT206	Appetite for Change: Politics and the Globalization of Food	
GVPT210	Religions, Beliefs, and World Affairs	
GVPT280	The Study of Comparative Politics	
GVPT282	The Politics of Global Development	
GVPT306	Global Environmental Politics	
GVPT309	Topics in International Relations	
GVPT354	International Development and Conflict Management	
GVPT359	Topics in Comparative Politics	
GVPT409	Seminar in International Relations and World Politics (GVPT409J: Multi-Track Diplomacy & Conflict Transformation)	
GVPT409	Seminar in International Relations and World Politics (GVPT409K: Workshop in Multi-Track Diplomacy)	
<b>Total Credits</b>		<b>17</b>

<sup>1</sup> Upon approval from the Director, students may substitute a relevant course outside BSST. If BSST331 is taken to fulfill the Innovative Ideas requirement, BSST335 can be taken to fulfill 3 BSST elective credits; if BSST335 is taken to fulfill the Innovative Ideas requirement, BSST331 can be taken to fulfill 3 BSST elective credits.

All courses used to satisfy the requirements of the minor must be completed with a grade of "C-" or better. Students must have a minimum 2.0 cumulative grade point average across all courses used to satisfy the minor requirements.

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## Kinesiology: Biomechanics and Motor Control Minor

- Effective Spring 2024, the Kinesiology: Biomechanics and Motor Control Minor was established (*published December 19, 2023*).

**Program Director:** Polly Sebastian-Schurer

The Kinesiology minor in Biomechanics and Motor Control provides a depth of knowledge to enhance students' chosen major, so they excel in their careers after graduation. This minor focuses on the study of human movement and the physical and physiological principles upon which it depends and the influence of growth and development upon human and motor performance. Note: The Biomechanics and Motor Control minor is not open to declared Kinesiology majors. Minor courses are offered over summer/winter and students may need to utilize these offerings to complete the minor.

### Program Learning Outcomes

1. Students will interpret, synthesize, and critically analyze research underlying the kinesiological dimensions of physical activity and health that are specific to biomechanics and motor control.
2. Students will develop principled reasoning skills necessary to apply and extend kinesiology knowledge to address problems that are relevant to physical activity and the health of diverse populations in relation to biomechanics and motor control.
3. Students will integrate, interrogate, and communicate the connection between the scholarship of kinesiology and the goals of public health in relation to biomechanics and motor control.
4. Students will engage in physical activities both within their formal curriculum with the goal of asserting the importance of lifelong physical activity.
5. Students will integrate their physical activity experiences with kinesiology sub-disciplinary knowledge of biomechanics and motor control.

### Requirements

Students are required to have BSCI170 and BSCI201 or PHYS121 (or equivalents) completed.

Course	Title	Credits
KNES1XX	(Physical Activity Course)	1-2
Choose five of the following:		15
KNES226	The Cybernetic Human	
KNES265	Mathematical, Physical, & Statistical Basis of Kinesiology	
KNES300	Biomechanics of Human Motion	
KNES306	Prosthetics for Limb Amputations	
KNES350	The Psychology of Sports & Exercise	
KNES370	Motor Development	
KNES385	Motor Control and Learning	
KNES402	Biomechanics of Sport	
KNES462	Neural Basis of Human Movement	
KNES474	Quantitative Methods in Cognitive Motor Behavior - MATLAB	
KNES498	Special Topics in Kinesiology (KNES498V Clinical Biomechanics: Musculoskeletal Injury)	
<b>Total Credits</b>		<b>16-17</b>

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## Kinesiology: Exercise Physiology Minor

- Effective Spring 2024, the Kinesiology: Exercise Physiology Minor was established (*published December 19, 2023*).

**Program Director:** Polly Sebastian-Schurer

The Kinesiology minor in Exercise Physiology provides a depth of knowledge to enhance students' chosen major, so they excel in their careers after graduation. The minor offers access to knowledge in a broad range of areas, including whole-body and molecular aspects of cardiovascular physiology, metabolism, aging, health, and disease.

Note: The Exercise Physiology minor is not open to declared Kinesiology majors. Minor courses are offered over summer/winter and students may need to utilize these offerings to complete the minor.

### Program Learning Outcomes

- Students will interpret, synthesize, and critically analyze research underlying the kinesiological dimensions of physical activity and health that are specific to exercise physiology.
- Students will develop principled reasoning skills necessary to apply and extend kinesiology knowledge to address problems that are relevant to physical activity and the health of diverse populations in relation to exercise physiology.
- Students will integrate, interrogate, and communicate the connection between the scholarship of kinesiology and the goals of public health in relation to exercise physiology.
- Students will engage in physical activities both within their formal curriculum with the goal of asserting the importance of lifelong physical activity.
- Students will integrate their physical activity experiences with kinesiology sub-disciplinary knowledge of exercise physiology.

### Requirements

At least nine credits must be at the 300 or 400 level. Please note that many of the upper-level courses have prerequisites. Students should have completed MATH113 or higher, or have a minimum eligibility for MATH120, in order to take any necessary prerequisite courses for this minor.

Course	Title	Credits
KNES1XX	(Physical Activity Course)	1-2
Choose five of the following:		15
KNES260	Science of Physical Activity and Cardiovascular Health	
KNES282	Basic Care and Prevention of Athletic Injuries	
KNES289	Topical Investigations (KNES289F Foundations of Food, Physical Activity, & Health)	
KNES320	Physiological Basis of Physical Activity and Human Health	
KNES332	Exercise Testing & Prescription for Fitness Professionals	
KNES350	The Psychology of Sports & Exercise	
KNES360	Physiology of Exercise	
KNES445	Exercise and Brain Health	
KNES460	Physiology of Aging and the Impact of Physical Activity	
KNES464	Exercise Metabolism: Role in Health and Disease	

KNES465 Physical Activity and Disease Prevention and Treatment

**Total Credits**

**16-17**

## Kinesiology: Sport, Commerce, & Culture Minor

- Effective Spring 2024, the Kinesiology: Sport, Commerce, & Culture Minor was established (*published December 19, 2023*).

**Program Director:** Polly Sebastian-Schurer

The Kinesiology minor in Sport, Commerce, & Culture provides a depth of knowledge to enhance students' chosen major, so they excel in their careers after graduation. The minor provides students with an opportunity to study the structure and experience of contemporary sport culture from an interdisciplinary perspective, informed by research, theories, and methods drawn largely—but not exclusively—from anthropology, cultural studies, economics, gender studies, history, race and ethnic studies, urban studies, and sociology. Note: The Sport, Commerce, & Culture minor is not open to declared Kinesiology majors. Minor courses are offered over summer/winter and students may need to utilize these offerings to complete the minor.

### Program Learning Outcomes

- Students will interpret, synthesize, and critically analyze research underlying the kinesiological dimensions of physical activity and health that are specific to Sport, Commerce, Culture.
- Students will develop principled reasoning skills necessary to apply and extend kinesiology knowledge to address problems that are relevant to physical activity and the health of diverse populations in relation to Sport, Commerce, Culture.
- Students will integrate, interrogate, and communicate the connection between the scholarship of kinesiology and the goals of public health in relation to Sport, Commerce, Culture.
- Students will engage in physical activities both within their formal curriculum with the goal of asserting the importance of lifelong physical activity.
- Students will integrate their physical activity experiences with kinesiology sub-disciplinary knowledge of Sport, Commerce, Culture.

### Requirements

At least nine credits must be at the 300 or 400 level.

Course	Title	Credits
KNES1XX	(Physical Activity Course)	1-2
KNES287	Sport and American Society	3
Choose four of the following:		12
KNES225	Hoop Dreams: Black Masculinity and Sport	
KNES285	History of Physical Culture, Sport, & Science in America	
KNES289	Topical Investigations (KNES289B Baseball: The National Pastime(?))	
KNES342	Sport, Commerce, and Culture in the Global Marketplace	
KNES346	Sport for Development	
KNES347	Sport Economics	

KNES484	Sporting Hollywood
KNES485	Sport and Globalization
<b>Total Credits</b>	<b>16-17</b>

## Information Science Major

**Under** Information Science Major (<https://academiccatalog.umd.edu/undergraduate/colleges-schools/information-studies/information-science-major/>)

- Effective Spring 2024, the program description and course requirements changed (*published December 19, 2023*).

### Original

See Information Science Major (<https://academiccatalog.umd.edu/undergraduate/colleges-schools/information-studies/information-science-major/>).

### Change

The field of information science, particularly in the iSchool, is a field concerned with the intersections of information, people, and technology. Information science is an interdisciplinary field, drawing from other areas of study such as computer science, management, social science, education, and the humanities, but with a focus on individual and institutional users of information and their information needs. In our program students gain the knowledge and the skills for creating information systems, resources, and services that help address society's pressing needs in a variety of contexts and in a variety of private and public sector positions, ranging from financial services to healthcare; from information technology to consulting; and from education to cultural institutions.

Restriction: Students are not permitted to double-major or double-degree with the Bachelor of Arts in Technology and Information Design.

### Requirements

Students must earn a "C-" or better in all major requirements and an overall average of 2.0.

Course	Title	Credits
<b>Benchmark Courses</b>		
MATH115	Precalculus	3
PSYC100	Introduction to Psychology	3
STAT100	Elementary Statistics and Probability	3
INST126	Introduction to Programming for Information Science <sup>1</sup>	3
<b>Major Core Requirements</b>		
INST201	Introduction to Information Science	3
INST311	Information Organization	3
INST314	Statistics for Information Science	3
INST326	Object-Oriented Programming for Information Science	3
INST327	Database Design and Modeling	3
INST335	Organizations, Management and Teamwork	3
INST346	Technologies, Infrastructure and Architecture	3
INST352	Information User Needs and Assessment	3
INST362	User-Centered Design	3
INST490	Integrated Capstone for Information Science	3

### Major Elective Requirements

Select ONE of the following options: 15

1. Complete at least 15 credits of INST-coded major electives <sup>2</sup>
2. InfoSci Cognate Area: Data Science, Cybersecurity and Privacy, Digital Curation, and Health Information (See below for more information)

**Total Credits** **57**

<sup>1</sup> Other courses exist which fulfill this requirement. Please check with your advisor to make sure that a particular course fulfills this requirement before registering.

<sup>2</sup> Check Testudo for currently available INST elective courses.

## Data Science Cognate Area

The original cognate area in the InfoSci program allows students develop understanding and skills for managing, manipulating, and mobilizing data to develop insight, create value, and achieve organizational goals in a wide range of sectors. The two career streams students aim for after completing this cognate area are data analysts - focusing on analyzing and reporting data - and data stewards - focusing on extracting, manipulating, and preparing data for quicker and more efficient analysis.

## Cybersecurity and Privacy Cognate Area

This cognate area is based on the perspective that a comprehensive and effective understanding of issues surrounding cybersecurity should encompass both technological and human aspects. This cognate area helps students equip themselves with human-centered cybersecurity skills and perspectives, and prepare to launch careers in the cybersecurity field with particular emphasis on management, policy, and governance-related functions.

## Digital Curation Cognate Area

This cognate area prepares students for jobs where they collect, digitize, appraise, curate, and disseminate information assets effectively and efficiently. Information is at the heart of our society's ability to learn, conduct business, recreate, and manage complex scientific, technological, industrial, and information infrastructures. Students focusing in this cognate area will play critical roles in preserving a vast and varied body of information for posterity.

## Health Information Cognate Area

This cognate area teaches students about the ways data informs the decisions made by health professionals, patients, and policy makers. Students focusing in this cognate area will learn about designing patient-centered technologies, health informatics for patients and consumers, and health data analytics.

## Information Science Major at Shady Grove

**Under** Information Science Major at Shady Grove (<https://academiccatalog.umd.edu/undergraduate/colleges-schools/universities-shady-grove/information-studies/information-science/#text>)

- Effective Spring 2024, the program description changed (*published December 19, 2023*).

**Original**

See Information Science Major at Shady Grove (<https://academiccatalog.umd.edu/undergraduate/colleges-schools/universities-shady-grove/information-studies/information-science/#text>).

**Change**

The field of information science, particularly in an iSchool, is a field concerned with the intersections of information, people and technology. It is an interdisciplinary field, drawing from other areas of study such as computer science, management, social science, education, and the humanities, but with a focus on individual and institutional users of information and their information needs. Information Science students gain the knowledge and the skills for creating information systems, resources, and services that help address society's pressing needs in a variety of contexts and in a variety of private and public sector positions, ranging from financial services to healthcare; from information technology to consulting; and from education to cultural institutions. Undergraduate courses offered by this college may be found under the acronym: INST.

Starting in Fall 2018, UMD iSchool offers the Bachelor of Science in Information Science (BSIS) program at the Universities at Shady Grove (USG) (<https://www.shadygrove.umd.edu/>) campus, as well as the College Park campus.

Qualified transfer students are admitted to the BSIS at Shady Grove program as a cohort group. Students complete their degree over four consecutive semesters as full-time students, taking five 3-credit courses per semester, and graduate with a Bachelor of Science in Information Science degree. The BSIS program at Shady Grove is a cohort program with a pre-set class schedule to ensure admitted students are able to complete their degree in four consecutive semesters.

The BSIS at Shady Grove program offers outstanding nationally recognized faculty, uniquely qualified for excellent learning classrooms, academic support, valuable financial resources, career advising, and various student engagement and leadership opportunities.

Restriction: Students are not permitted to double-major or double-degree with the Bachelor of Arts in Technology and Information Design.

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**Materials Science and Engineering Major**

**Under** Materials Science and Engineering Major (<https://academiccatalog.umd.edu/undergraduate/colleges-schools/engineering/materials-science-engineering/materials-science-engineering-major/>)

- The accreditation statement in the program description changed (*published September 7, 2023*).

**Original**

The Bachelor of Science in Materials Science and Engineering degree program at the University of Maryland is accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>, under the General Criteria and the Materials Engineering Program Criteria.

**Change**

The Bachelor of Science in Materials Science and Engineering degree program at the University of Maryland is accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>, under the

General Criteria and Program Criteria for Materials, Metallurgical, Ceramics and Similarly Named Engineering Programs.

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**Mechanical Engineering Major**

**Under** Mechanical Engineering Major (<https://academiccatalog.umd.edu/undergraduate/colleges-schools/engineering/mechanical-engineering/mechanical-engineering-major/>)

- The accreditation statement in the program description changed (*published September 7, 2023*).

**Original**

The Bachelor of Science in Mechanical Engineering degree program at the University of Maryland is accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>, under the General Criteria and the Mechanical Engineering Program Criteria.

**Change**

The Bachelor of Science in Mechanical Engineering degree program at the University of Maryland is accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>, under the General Criteria and Program Criteria for Mechanical and Similarly Named Engineering Programs.

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**The Robert H. Smith School of Business**

**Under** The Robert H. Smith School of Business - Transfer Admission for Students from on or off Campus (<https://academiccatalog.umd.edu/undergraduate/colleges-schools/business/#transfer-admission>)

- The cumulative grade point average requirement for competitive review for admission changed (*published October 10, 2023*).
- The cumulative grade point average requirement for direct admission changed (*published October 10, 2023*).
- The listing of gateway courses changed (*published October 10, 2023*).

**Original**

- A minimum grade point average of 3.0 in all college coursework is required for consideration for all internal and external transfer applicants. As of Fall 2019, admitted University of Maryland students applying to Business, who have completed all of the LEP gateway requirements, and have a 3.0 - 3.799 cumulative grade point average across all attempted college coursework will undergo a competitive review for admission to the Business major. Admitted University of Maryland students applying to Business, who have completed all of the LEP gateway requirements, and have a 3.8 or higher cumulative grade point average across all attempted college coursework will be admitted into the Business major.
- Completion of the following gateway courses, all with "C-" or better:

Course	Title	Credits
<b>Accounting</b>		
BMGT220	Principles of Accounting I	3
<b>Calculus</b>		
MATH120	Elementary Calculus I	3
MATH130	Calculus I for the Life Sciences	4
MATH136	Calculus for Life Sciences	4

MATH140	Calculus I	4
<b>Business Statistics</b>		
BMGT230	Business Statistics <sup>1</sup>	3
BMGT231	<sup>2</sup>	

<sup>1</sup> The following courses are approved substitutes for BMGT230: BIOM301, CCJS200, ECON230, ECON321, EDMS451, GEOG305, INST314, PSYC200, and SOCY201.

<sup>2</sup> The following courses are approved substitutes for BMGT231: BIOE372, ENCE302, ENEE324, ENME392, or STAT400

### Change

- A minimum grade point average of 3.0 in all college coursework is required for consideration for all internal and external transfer applicants. As of Fall 2023, admitted University of Maryland students applying to Business, who have completed all of the LEP gateway requirements, and have a 3.0 - 3.599 cumulative grade point average across all attempted college coursework will undergo a competitive review for admission to the Business major. Admitted University of Maryland students applying to Business, who have completed all of the LEP gateway requirements, and have a 3.6 or higher cumulative grade point average across all attempted college coursework will be directly admitted into the Business major.
- Completion of the following gateway courses, all with "C-" or better:

Course	Title	Credits
<b>Accounting</b>		
BMGT220	Principles of Accounting I	3
<b>Calculus</b>		
Select one of the following:		3-4
MATH120	Elementary Calculus I	
MATH136	Calculus for Life Sciences	
MATH140	Calculus I	
<b>Business Statistics</b>		
BMGT230	Business Statistics <sup>1</sup>	3
	or BMGT231	

<sup>1</sup> The following courses are approved substitutes for BMGT230: BIOM301, CCJS200, ECON230, ECON321, EDMS451, EPIB300, EPIB315, GEOG306, HLTH300, INST314, PSYC200, and SOCY201. The following courses are approved substitutes for BMGT231: BIOE372, ENCE302, ENEE324, ENME392, STAT400, or STAT420.

## Robotics and Autonomous Systems Minor

**Under** Robotics and Autonomous Systems Minor (CMSC) (<https://academiccatalog.umd.edu/undergraduate/colleges-schools/computer-mathematical-natural-sciences/computer-science/robotics-autonomous-systems-minor/>) **and** Robotics and Autonomous Systems Minor (ENGR) (<https://academiccatalog.umd.edu/undergraduate/colleges-schools/engineering/robotics-autonomous-systems-minor/>)

- Effective Spring 2024, course requirements changed (*published December 19, 2023*).

### Original

See Robotics and Autonomous Systems Minor (CMSC) (<https://academiccatalog.umd.edu/undergraduate/colleges-schools/computer-mathematical-natural-sciences/computer-science/robotics-autonomous-systems-minor/>) and Robotics and Autonomous Systems Minor (ENGR) (<https://academiccatalog.umd.edu/undergraduate/colleges-schools/engineering/robotics-autonomous-systems-minor/>).

### Change Prerequisites

Course	Title	Credits
<b>Robotics and Autonomous Systems (RAS) Minor Prerequisites</b>		
MATH246	Differential Equations for Scientists and Engineers	
	or ENES221 Dynamics	
One of the following:		
CMSC131	Object-Oriented Programming I	
ENME202	Computing Fundamentals for Engineers	
ENAE202	Computing Fundamentals for Engineers	
ENEE150	Intermediate Programming Concepts for Engineers	

### Requirements

A minimum grade of C- or better is required for all minor and all prerequisite courses. A maximum of 2 courses may be used to satisfy the requirements of both a major and a minor.

Course	Title	Credits
<b>Required Courses</b>		<b>12</b>
ENME480	Introduction to Robotics	
ENAE450	Robotics Programming	
ENEE467	Robotics Project Laboratory	
CMSC477	Robotics Perception and Planning	
<b>Supporting Math Course (Required. Select one course. Must be completed prior to enrollment in CMSC477) <sup>1</sup></b>		<b>3-4</b>
MATH240	Introduction to Linear Algebra	
MATH340	Multivariable Calculus, Linear Algebra and Differential Equations I (Honors)	
MATH341	Multivariable Calculus, Linear Algebra, Differential Equations II (Honors)	
MATH461	Linear Algebra for Scientists and Engineers	
ENEE290	Introduction to Differential Equations and Linear Algebra for Engineers	

### Electives (select two courses): **6**

Course options will depend on the student's academic major and being able to meet course requirements/restrictions set by each Department. Other electives may be available. Contact minor advisor for assistance.

ENME400	Machine Design
ENME410	Design Optimization
ENME413	Bio-Inspired Robotics
ENME435	Remote Sensing Instrumentation
ENME441	Mechatronics and the Internet of Things
ENME461	Control Systems Laboratory
ENME467	Engineering for Social Change
	or ENES467 Engineering for Social Change
ENME444	Assistive Robotics

ENME476	Mircoelectromechanical Systems (MEMS) I
ENEE440	Microprocessors
ENEE460	Control Systems
ENEE461	Control Systems Laboratory
ENEE425	Digital Signal Processing
ENEE426	Communication Networks
ENEE408	Capstone Design Project (ENEE408I Capstone Autonomous Robotics)
ENAE380	Flight Software Systems
ENAE403	Aircraft Flight Dynamics
ENAE432	Control of Aerospace Systems
ENAE441	Space Navigation and Guidance
ENAE488	Topics in Aerospace Engineering (ENAE488O Introduction to Autonomous Multi-Robot Swarms)
CMSC421	Introduction to Artificial Intelligence
CMSC422	Introduction to Machine Learning
CMSC426	Computer Vision
CMSC427	Computer Graphics
CMSC451	Design and Analysis of Computer Algorithms
CMSC498	Selected Topics in Computer Science (CMSC498E Robotics)

**Total Credits** **21-22**

<sup>1</sup> Students may waive this requirement if they complete the course for another minor or major.

## Technology and Information Design Major

**Under** Technology and Information Design Major (<https://academiccatalog.umd.edu/undergraduate/colleges-schools/information-studies/technology-info-design-major/>)

- Effective Spring 2024, the program description and course requirements changed (*published December 19, 2023*).

### Original

See Technology and Information Design Major (<https://academiccatalog.umd.edu/undergraduate/colleges-schools/information-studies/technology-info-design-major/>)

### Change

The B.A. in Technology and Information Design (InfoDesign) teaches students to frame important problems at the intersection of people and information; to design solutions for those problems; and to realize, deploy and iterate on those solutions. InfoDesign supports students in their efforts to use technology in the service of the greater good; to apply and expand their creativity; to develop a start-up mentality (in which they must try solutions and fail first in order to succeed); and to engage in rapid development and prototyping grounded by rapid evaluation and assessment. Students participate in hands-on studio and laboratory classes in user-centered design, technology development, problem-solving and cross-disciplinary communication. Graduates may become designers, planners, technology consultants, project managers, and entrepreneurs, in such wide-ranging fields as user experience, mobile development, healthcare, law, entertainment, policy, smart-city development, libraries and archives.

Restriction: Students are not permitted to double-major or double-degree with the Bachelor of Science in Information Science.

## Requirements

Course	Title	Credits
<b>Core Courses</b>		
INST104	Design Across Campus	3
INST126	Introduction to Programming for Information Science	3
IDEA258	Special Topics in Innovation (IDEA258A Becoming a Design Thinker: Tools and Mindsets for Innovation)	1
INST201	Introduction to Information Science	3
SOCY105	Introduction to Contemporary Social Problems	3
STAT100	Elementary Statistics and Probability	3
INST204	Designing Fair Systems	3
INST380	Technology and Information Design: Do Good Now	3
or PLCY380	Innovation and Social Change: Do Good Now	
INST367	Prototyping and Development Studio	3
INST406	Cross Disciplinary Communication Lab	3
INST454	(Modeling and Simulating Systemic Problems)	3
INST466	Technology, Culture, and Society	3
INST491	(Integrated Capstone for Technology and Information Design)	3

**Major Electives** **18**

INST311	Information Organization
INST352	Information User Needs and Assessment
INST366	Privacy, Security and Ethics for Big Data
INST401	Design and Human Disability and Aging
INST402	Designing Patient-Centered Technologies
INST404	(Youth Experience Design Studio)
INST405	Game Design
INST441	Information Ethics and Policy
INST460	(Video Games as Emergent Experiences)
INST463	Technology Socialpreneur (AI and Society)

Additional elective courses may be added to this list upon approval by the Technology and Information Design program committee.

**Total Credits** **55**

### Benchmark courses (16 credits)

Failure to complete both sets of benchmark courses within the timeline indicated below may result in dismissal from the program.

Course	Title	Credits
<b>Benchmark I</b>		
The below courses must be completed with a C- of higher within the first two semesters of the program:		
INST104	Design Across Campus	3
INST126	Introduction to Programming for Information Science	3
IDEA258	Special Topics in Innovation (IDEA258A Becoming a Design Thinker: Tools and Mindsets for Innovation)	1
<b>Benchmark II</b>		

The below courses must be completed with a C- or higher within the first three semesters of the program:

INST201	Introduction to Information Science	3
SOCY105	Introduction to Contemporary Social Problems	3
STAT100	Elementary Statistics and Probability	3