

COLLEGE OF SCIENCE (COS)

100 Level Courses

COS 100: *Introduction to Science as a Profession*. 1-2 credits.

COS 100 introduces students to contemporary fields in science, computation, mathematics, and technology, while building essential interdisciplinary skills applicable to these academic and career pathways. Through interactive learning, students gain insights into diverse scientific disciplines and explore associated academic and professional expectations. Key topics include an overview of 21st-century career skills and professional development opportunities (such as internships and undergraduate research), creative problem-solving approaches, project design fundamentals, and introductory ethics. Students are introduced to principles of collegiate-level scholarly research, data visualization, systems and stakeholder mapping, and science communication, while engaging with academic unit representatives to explore relevant academic programs and professions. The course culminates in a capstone project, which involved addressing a global challenge. Offered by College of Science (<https://catalog.gmu.edu/colleges-schools/science/>). Limited to three attempts.

Schedule Type: Lecture

Grading:

This course is graded on the Undergraduate Regular scale. (<https://catalog.gmu.edu/policies/academic/grading/>)

COS 108: *College of Science Transitions*. 1 credit.

This first-year seminar for College of Science majors provides guidance and support for students transitioning from high school to college and connects students to supportive Mason resources. The class will make connections between academic, personal, and career interests, empower students, and reveal the hidden curriculum essential for success in science, technology, engineering, and math (STEM). Through a variety of activities and assignments, students will develop peer and faculty relationships and extend the learning begun during STEM Bridge Camp. Offered by College of Science (<https://catalog.gmu.edu/colleges-schools/science/>). Limited to three attempts.

Schedule Type: Lecture

Grading:

This course is graded on the Undergraduate Regular scale. (<https://catalog.gmu.edu/policies/academic/grading/>)

COS 120: *Introduction to Research*. 1-3 credits.

Introduction to research, involving work on a research project. May involve lab study, computer modeling and analysis, mathematics, or other original research as appropriate. Research formulated and completed under instructor's guidance. Culminates in a written or oral final report. Offered by College of Science (<https://catalog.gmu.edu/colleges-schools/science/>). May be repeated within the degree for a maximum 6 credits.

Schedule Type: Independent Study

Grading:

This course is graded on the Undergraduate Regular scale. (<https://catalog.gmu.edu/policies/academic/grading/>)

COS 150: *Women Leaders in STEM*. 1 credit.

This is a discussion-oriented course to develop leadership skills for students pursuing a careers in science, technology, engineering, and math (STEM). The course will also emphasize cohort building, networking, and mentorship. Current issues surrounding the treatment

of women leaders in STEM disciplines will also be discussed. Classes will be either seminar-style or workshops and will focus on case studies, relevant scholarship, and skill practice. This course is open to science, technology, engineering, or mathematics majors of all gender identities. Offered by College of Science (<https://catalog.gmu.edu/colleges-schools/science/>). Limited to three attempts.

Recommended Prerequisite: Science, technology, engineering, or mathematics (STEM) majors.

Schedule Type: Seminar

Grading:

This course is graded on the Undergraduate Regular scale. (<https://catalog.gmu.edu/policies/academic/grading/>)

300 Level Courses

COS 300: *Professional Preparation for STEM Disciplines*. 3 credits.

Prepares any undergraduate major that is interested in enhancing their competences in science writing, technical communication and social media skills. Students will be prepared to become more competitive in the next generation workforce. Covers these topics: drafting and revising papers, dissecting scientific journal articles, communicating science to non-scientists, creating a podcast, writing grant proposals, and preparing CVs, resume and "elevator pitches." By the end of the course, the student will not only be familiar but more confident in effectively disseminating information in their own field of interest. Offered by College of Science (<https://catalog.gmu.edu/colleges-schools/science/>). Limited to three attempts.

Specialized Designation: Green Leaf Focused Course, Mason Impact.

Recommended Prerequisite: ENGH 302 or its equivalent and COMM 100 or COMM 101 or their equivalents. (Concurrent enrollment permitted.)

Schedule Type: Lecture

Grading:

This course is graded on the Undergraduate Regular scale. (<https://catalog.gmu.edu/policies/academic/grading/>)

COS 301: *Great Ideas in Science*. 3 credits.

Nontechnical introduction to ideas that have shaped the growth of science, from the building of Stonehenge to modern theories of the Big Bang. The idea behind each major advance is treated in its historical context, with special attention to its importance in mankind's understanding of the nature of the universe. Intended for nonscience majors; uses little mathematics. COS 301 is the new course number for PROV 301: Great Ideas in Science. Offered by College of Science (<https://catalog.gmu.edu/colleges-schools/science/>). Limited to three attempts.

Mason Core: Mason Core, Natural Science Overview (<https://catalog.gmu.edu/mason-core/>)

Schedule Type: Lecture

Grading:

This course is graded on the Undergraduate Regular scale. (<https://catalog.gmu.edu/policies/academic/grading/>)

COS 302: *College of Science Transfer Transition*. 1 credit.

This seminar provides guidance and support for College of Science students who transferred from other post-secondary institutions, connecting students to supportive Mason resources. COS 302 explores

the implicit, essential interdisciplinary professional skills for success in STEM while orienting students to essential resources and experiences to support success in today's STEM disciplines and tomorrow's career pathways. Students will gain understanding of STEM curricular and student engagement opportunities, explore hands-on learning opportunities (including undergraduate research, internships, and microcredentials), and more. COS 302 provides a transfer student-focused introduction to 21st century STEM skills and occupations, including global problem-solving, project management, and the fundamental principles of research, writing and communication across scientific research and practice. Offered by College of Science (<https://catalog.gmu.edu/colleges-schools/science/>). Limited to three attempts.

Schedule Type: Seminar

Grading:

This course is graded on the Undergraduate Regular scale. (<https://catalog.gmu.edu/policies/academic/grading/>)

COS 310: *Introduction to Science Policy*. 3 credits.

This course is an introduction to how science is used to inform governmental policy decisions and how policy impacts U.S. science. The course is intended for any STEM student with an interest in understanding or contributing to decision making at the federal and state level or joining the government to draft policies and legislation directly. Government policies affect all parts of society, including the scientific research enterprise. Reciprocally, science can be used to inform policy in myriad ways at different levels of government. Scientists' lack of familiarity with policy, and policymakers' lack of familiarity with science contributes to the longstanding gap between the production of scientific research and its perceived utility by decision-makers. This course will bridge this gap and provide new skills for scientists to contribute to this new field. Offered by College of Science (<https://catalog.gmu.edu/colleges-schools/science/>). Limited to three attempts.

Mason Core: Mason Core, Mason Apex (<https://catalog.gmu.edu/mason-core/>)

Schedule Type: Lecture

Grading:

This course is graded on the Undergraduate Regular scale. (<https://catalog.gmu.edu/policies/academic/grading/>)

COS 315: *Science Policy Internship Preparation*. 1 credit.

Science policy internships along with their application and interview processes are likely to be quite different from most of the experiences that students have had in their core science classes. This course is designed to help students identify internship experiences that are of interest, prepare the materials that they will need to apply, and practice the skills that they will need to interview effectively for these positions. Offered by College of Science (<https://catalog.gmu.edu/colleges-schools/science/>). Limited to three attempts.

Registration Restrictions:

Required Prerequisites: (COS 310^C or 310^{XS}).

^C Requires minimum grade of C.

^{XS} Requires minimum grade of XS.

Schedule Type: Seminar

Grading:

This course is graded on the Undergraduate Regular scale. (<https://catalog.gmu.edu/policies/academic/grading/>)

COS 320: *Science Policy in Practice*. 1 credit.

Science policy internships are central to developing an understanding of how science policy operates. This course is a project-based follow-up to a science policy internship in which students will have the opportunity to synthesize what they have learned. During the course students will develop a policy memo analyzing relevant topics from their internship that will be submitted to their internship office and presented to members of the science policy community. Offered by College of Science (<https://catalog.gmu.edu/colleges-schools/science/>). Limited to three attempts.

Recommended Prerequisite: GOVT 480

Registration Restrictions:

Required Prerequisites: (COS 310^C or 310^{XS}).

^C Requires minimum grade of C.

^{XS} Requires minimum grade of XS.

Schedule Type: Seminar

Grading:

This course is graded on the Undergraduate Regular scale. (<https://catalog.gmu.edu/policies/academic/grading/>)

COS 390: *Learning Assistant Seminar*. 0-1 credits.

This course is designed to prepare newly appointed STEM Accelerator Learning Assistants (LAs) to conduct tutoring/learning sessions for students enrolled in the course for which the LAs are assigned. Offered by College of Science (<https://catalog.gmu.edu/colleges-schools/science/>). Limited to three attempts.

Recommended Prerequisite: Must be a Learning Assistant in the STEM Accelerator

Schedule Type: Seminar

Grading:

This course is graded on the Undergraduate Regular scale. (<https://catalog.gmu.edu/policies/academic/grading/>)

COS 391: *Continuing Learning Assistant Seminar*. 0-1 credits.

Continues the content taught previously in COS 390 and assists students to better grasp the leadership and teaching skills required to be a Learning Assistant within the STEM Accelerator. Offered by College of Science (<https://catalog.gmu.edu/colleges-schools/science/>). May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Must be a Learning Assistant in the STEM Accelerator

Schedule Type: Seminar

Grading:

This course is graded on the Undergraduate Regular scale. (<https://catalog.gmu.edu/policies/academic/grading/>)

400 Level Courses

COS 400: *Problem Solving and Leadership in STEAM*. 3 credits.

In this course, participants will experience a hands-on approach to incorporating problem solving principles into the STEAM (Science, Technology, Engineering, Arts and Mathematics) disciplines and consider implications for innovations in research, development, and entrepreneurship. This course consists of face to face meetings, follow up webinars, a collaborative project, and the opportunity for internship. Notes: This course may culminate with international travel; locations will vary by semester. Offered by College of Science (<https://catalog.gmu.edu/colleges-schools/science/>). Limited to three attempts.

Specialized Designation: Entrepreneurship

Schedule Type: Lecture

Grading:

This course is graded on the Undergraduate Regular scale. (<https://catalog.gmu.edu/policies/academic/grading/>)

COS 401: *RS: Discipline-Based Research in STEM*. 1-9 credits.

Students will conduct an original Discipline-Based STEM Research project with their faculty mentor. Project proposals are developed jointly by the student and faculty mentor and approved by the course instructor. COS 401 research projects may include lab-based and field-based studies, discipline-based educational research (DBER), computational and simulation studies, quantitative or qualitative data analyses, or systematic reviews and meta-analyses. Concurrent instruction will supplement research activities to guide students through the research process, the development of summative scholarly research products, and the effective dissemination of results. Each student will develop a scholarly research product that represents their time and effort, and will present their research at a poster session at the conclusion of the course. Offered by College of Science (<https://catalog.gmu.edu/colleges-schools/science/>). Limited to three attempts.

Specialized Designation: Research/Scholarship Intensive

Schedule Type: Research

Grading:

This course is graded on the Undergraduate Regular scale. (<https://catalog.gmu.edu/policies/academic/grading/>)

COS 402: *Special Topics in Science*. 1-4 credits.

Explore an array of exciting topics in science; the course's topic will vary by section offered. Offered by College of Science (<https://catalog.gmu.edu/colleges-schools/science/>). May be repeated within the term for a maximum 8 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:

This course is graded on the Undergraduate Regular scale. (<https://catalog.gmu.edu/policies/academic/grading/>)

500 Level Courses

COS 500: *Professional Preparation for STEM Disciplines*. 3 credits.

Prepares graduate students that are interested in enhancing their competences in science writing, technical communication and social media skills. Students will be prepared to become more competitive in the next generation workforce. Covers these topics: drafting and revising papers, dissecting scientific journal articles, communicating science to non-scientists, creating a podcast, writing grant proposals, and preparing CVs, resume and "elevator pitches." By the end of the course, the student will not only be familiar but more confident in effectively disseminating information in their own field of interest. Offered by College of Science (<https://catalog.gmu.edu/colleges-schools/science/>). May not be repeated for credit.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale. (<https://catalog.gmu.edu/policies/academic/grading/>)

COS 510: *Introduction to Science Policy*. 3 credits.

This course is an introduction to how science is used to inform governmental policy decisions and how policy impacts U.S. science. The course is intended for any STEM student with an interest in understanding or contributing to decision making at the federal and state level or joining the government to draft policies and legislation directly. Government policies affect all parts of society, including the scientific research enterprise. Reciprocally, science can be used to inform policy in myriad ways at different levels of government. Scientists' lack of familiarity with policy, and policymakers' lack of familiarity with science contributes to the longstanding gap between the production of scientific research and its perceived utility by decision-makers. This course will bridge this gap and provide new skills for scientists to contribute to this new field. Offered by College of Science (<https://catalog.gmu.edu/colleges-schools/science/>). Limited to three attempts.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Junior Plus, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale. (<https://catalog.gmu.edu/policies/academic/grading/>)

COS 515: *Science Policy Internship Preparation*. 1 credit.

Science policy internships along with their application and interview processes are likely to be quite different from most of the experiences that students have had in their core science classes. This course is designed to help students identify internship experiences that are of interest, prepare the materials that they will need to apply, and practice the skills that they will need to interview effectively for these positions. Offered by College of Science (<https://catalog.gmu.edu/colleges-schools/science/>). May not be repeated for credit.

Registration Restrictions:

Required Prerequisite: COS 510^{B-}.

^{B-} Requires minimum grade of B-.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Junior Plus, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:

This course is graded on the Graduate Regular scale. (<https://catalog.gmu.edu/policies/academic/grading/>)

COS 520: *Science Policy in Practice*. 1 credit.

Science policy internships are central to developing an understanding of how science policy operates. This course is a project-based follow-up to a science policy internship in which students will have the opportunity to synthesize what they have learned in the internship and in their scientific research. During the course students will develop a policy paper analyzing relevant topics from their internship and prepared in a format that will be submitted to their internship office and can be submitted to a science policy journal. In addition, students will present their work orally to members of the science policy community. Offered by College of Science (<https://catalog.gmu.edu/colleges-schools/science/>). May not be repeated for credit.

Recommended Prerequisite: POGO 794

Registration Restrictions:

Required Prerequisite: COS 510^{B-}.

^{B-} Requires minimum grade of B-.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Junior Plus, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:

This course is graded on the Graduate Regular scale. (<https://catalog.gmu.edu/policies/academic/grading/>)

600 Level Courses

COS 600: *Multidisciplinary Problem Solving and Leadership*. 3 credits.

In this course, participants will experience a hands-on approach to incorporating problem solving principles into the STEAM (Science, Technology, Engineering, Arts and Mathematics) disciplines and consider implications for innovations in research, development, and entrepreneurship. This course consists of face to face meetings, follow up webinars, a collaborative project, and the opportunity for internship. Notes: This course may culminate with international travel; locations will vary by semester. Offered by College of Science (<https://catalog.gmu.edu/colleges-schools/science/>). May not be repeated for credit.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Junior Plus, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale. (<https://catalog.gmu.edu/policies/academic/grading/>)

COS 602: *Special Topics in Science*. 1-4 credits.

Explore an array of exciting topics in science; the course's topic will vary by section offered. Offered by College of Science (<https://catalog.gmu.edu/colleges-schools/science/>). May be repeated within the term for a maximum 8 credits.

Specialized Designation: Topic Varies

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Junior Plus, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale. (<https://catalog.gmu.edu/policies/academic/grading/>)