CLIMATE SCIENCE MINOR

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Climate Science Minor Website (https://www.jmu.edu/academics/undergraduate/minors/climate-science.shtml)

Program Description

The Climate Science Minor introduces students to the domain knowledge and analytical skills necessary for understanding and investigating Earth's climate system. The program serves as an organizing framework for students interested in climate science and will broaden disciplinary expertise for advanced study, graduate programs and/or employment. The minor is structured in three tiers:

1. Introductory lecture and lab courses serve as an entry point to the program (4 credits total);
2. Content-specific courses build domain knowledge in climate science (minimum of 3 courses);
3. A minimum of one course focused on mathematical and/or data analytical skills provides tools necessary for working with scientific data; and
4. The remaining credit hours to fulfill the 18 credit-hour minimum requirement may consist of additional courses closely aligned with climate science, such as undergraduate research, internships and honors theses, upon approval by the program director(s).

Students are encouraged to discuss with their advisors or the program director(s) how climate science may interface with their primary degree program(s).

Minor Requirements

The Climate Science Minor requires a minimum of 18 credit hours, and no more than six credits from the minor may be used to double-count with a major or another minor.

Code	Title	Credits
Introductory Lecture and Lab		
GEOG 210	Physical Geography (2, 2)	4
or GEOL 115 & 115L	Earth Systems and Climate Change [C3NS] and Earth Systems and Climate Change Lab [C3L]	
Subtotal		4
Content-Specific Courses		
Choose a minimum of three courses from the following:		9-10
GEOG 301	Introduction to Natural Disasters Response	
GEOG 327	Climatology [1]	
GEOG 329	Global Climate Change [1]	
GEOG 330	Weather, Climate and Society	
GEOG 430	Dynamics of the Atmosphere [1]	
GEOL 211	Introduction to Oceanography [C3NS]	
GEOL 320	Meteorology	
GEOL 355	Geochemistry of Natural Waters [1]	
GEOL 406	Paleoclimatology and Paleoceanography [1]	
CHEM 353	Environmental Chemistry [1]	
BIO 354	Global Climate Change and Life: Ecological and Biological Impacts of Climate Variability [1]	
Subtotal		9-10
Analytical Skills		
At least one course focused on analytical skills must be taken. Choose at least one course from the follow lists, and note that only one programming course or one geospatial course may be counted toward the 18 credit hour total for the minor.		3-4
Programming Courses:		
CS 149	Introduction to Programming [1]	
MATH 229	Introduction to Applied Statistics Using R [C3QR] [1]	
Geospatial Courses:		
GEOG 215	Introduction to Geographic Information Science and Cartography	
GEOG 216	Earth Observation and Satellite Navigation Systems	
GEOL 360	GIS for the Geoscientist [1]	
Other Analytical Skills Courses:		
GEOL 440	Geophysics (3, 2) [1]	
GEOL 489	Quantitative Methods in Geology	
GEOG 447	Climates Through Time [1]	
ISAT 420	Environmental Analysis and Modeling	
MATH 268	Data Analysis and Visualization [1]	
Subtotal		3-4
Other Course Options		
Students who have not fulfilled the 18 credit hours with the above courses may fill the remaining credit hours with a course or research experience approved by the program director(s). Course content must include a focus on Earth's climate system at any scale, and may include intersections with society, individuals and/or natural systems. Examples of course options include, but are not limited to, the following. [1]		
Choose 0-2 credit hours of the following:		0-2
GEOG 308	Environment, Nature and Society [2]	
GEOG 415	Environment, Landscape and Culture [2]	
GEOG 490	Senior Research or Field Practicum [2,3]	
GEOG 495	Internship in Geography [3]	
GEOG 497	Independent Study [3]	
GEOG 499A	Honors in Geography [3]	
GEOG 499B	Honors in Geography [3]	
GEOG 499C	Honors in Geography [3]	
ENVT 200	Environmental Systems Theory	
ENVT 225	Environmental Advocacy and the Psychology of Change	
GEOL 398	Topics in Geology [3]	
GEOL 491	Geological Literature and Research [2,3]	
GEOL 497	Work-Based Learning Experiences in Geology and Environmental Science [2,3]	
GEOL 499A	Honors in Geology [2]	
GEOL 499B	Honors in Geology [3]	
GEOL 499C	Honors in Geology [3]	
ISAT 490	Capstone Experience I [3]	
ISAT 491	Senior Capstone Project I [3]	
ISAT 499A	Senior Honors Thesis I [3]	
ISAT 499B	Senior Honors Thesis II [3]	
ISAT 499C	Senior Honors Thesis III [3]	

ISAT 499D	Honors Thesis [3]	
Subtotal		0-2
Total Credits		**18**

1. Students who have met the 18 credit hour requirement for the minor should speak to their advisor about the possibility of having the "Other Course Option" waived.
2. These courses have prerequisites listed.
3. These courses require director approval.