

**College of Natural Resources and Environment**  
**Department of Geography**  
**Bachelor of Science (B.S.) in Meteorology (MTRG)**  
**Major: Meteorology**  
**Includes Curriculum for Liberal Education (CLE)**  
**(For students graduating in calendar year 2021)**

**APPROVED**  
**COMMISSION ON UNDERGRADUATE**  
**STUDIES AND POLICIES**

Student \_\_\_\_\_

Student ID Number (last 4 digits) \_\_\_\_\_

**MTRG Degree Core Requirements: 22 credit hours required**

GEOG 1104: Introduction to Physical Geography (3) \_\_\_\_\_  
 GEOG 1084 (FREC 1004): Digital Planet (3) \_\_\_\_\_  
 GEOG 1504: Survey of Meteorology (1) \_\_\_\_\_  
 GEOG 1514: Introduction to Meteorology (3) \_\_\_\_\_  
 GEOG 2314: Maps and Mapping (3) \_\_\_\_\_  
 GEOG 2505: Weather Analysis I (3) \_\_\_\_\_  
 GEOG 2506: Weather Analysis II (3) (Pre: 2505) \_\_\_\_\_  
 GEOG 3504: Severe Weather (3) (Pre: 2505) \_\_\_\_\_

**Mapping and GIS: 13 credit hours required**

GEOG 2084: Principles of GIS (3) \_\_\_\_\_  
 GEOG 3314: Cartography (3) \_\_\_\_\_  
 GEOG 4084 (GEOS 4084): Modeling with GIS (3) (Pre: 2084) \_\_\_\_\_  
 GEOG 4354 (GEOS 4354): Introduction to Remote Sensing (3) \_\_\_\_\_  
 GEOG 4554: Remote Sensing of the Atmosphere (1) (Pre: 4354) \_\_\_\_\_

**Human Systems: 9 credit hours required**

GEOG 1004: Intro Human Geography (3) \_\_\_\_\_  
 GEOG 1014: World Regions (3) \_\_\_\_\_

**AND**

**Select 3 credits from:**

GEOG 1115 (GEOS 1115): Seeking Sustainability I (3) \_\_\_\_\_  
 GEOG 2004 (WATER 2004): Water, Environment, and Society (3) \_\_\_\_\_  
 GEOG 2134 (IS 2134) (PSCI 2134): Geography of the Global Economy (3) \_\_\_\_\_  
 GEOG 2214: Geography of North America (3) \_\_\_\_\_  
 GEOG 3104: Environmental Problems, Population, and Development (3) \_\_\_\_\_  
 GEOG 3224: Geography of Appalachia (3) (Pre: 1004 or 1104 or 1014 or APS 1704 or HUM 1704) \_\_\_\_\_  
 GEOG 3244: The U.S. City (3) (Pre: Junior Standing) \_\_\_\_\_  
 GEOG 3464 (AHRM 3463) (APS 3464) (HD 3464) (HUM 3464) (SOC 3464) (UAP 3464): Appalachian Communities (3) (Pre: Junior Standing) \_\_\_\_\_  
 GEOG 4054: Geography of Wine (3) \_\_\_\_\_  
 GEOG 4074: Medical Geography (3) (Pre: Junior Standing) \_\_\_\_\_  
 GEOG 4134 (GEOS 4134): Interdisciplinary Issues & Ethics in Water Resources (3) \_\_\_\_\_  
 GEOG 4204: Geography of Resources (3) (Pre: Junior Standing) \_\_\_\_\_

**Meteorology: 12 upper level credits required**

GEOG 3515: Dynamic Meteorology (3), (Pre: 2506, MATH 2214, (PHYS 2206/2216 OR PHYS 2306) \_\_\_\_\_  
 GEOG 3516: Dynamic Meteorology (3) (Pre: 3515) \_\_\_\_\_  
 GEOG 4504: Synoptic Meteorology (3) (Pre: 3504, (MATH 1226)) \_\_\_\_\_  
 GEOG 4524: Physical Meteorology (3) (Pre: 3515) \_\_\_\_\_

**Field Experience: 3 credit hours required**

MTRG 2964 or 4964: Field Study (3) \_\_\_\_\_  
 MTRG 3524: Meteorology Field Methods\* (3) (Pre: GEOG 2506, GEOG 3504) \_\_\_\_\_  
 MTRG 3954: Study Abroad (3) \_\_\_\_\_

MTRG 4584: Topics in Applied Meteorology (3) (Pre: GEOG 1514) \_\_\_\_\_

MTRG 4994: Undergraduate Research (3) \_\_\_\_\_

\*Field Methods Course topics may vary: e.g. Great Plains Storm Chase, Mountain Weather, Coastal Weather, Instrumentation, etc.

**Math/Stat major requirements: minimum of 8 credit hours required**

MATH 1114: Elementary Linear Algebra (2) \_\_\_\_\_  
 OR MATH 2114: Introduction to Linear Algebra (3) (Pre: 1225 or 1226) \_\_\_\_\_  
 MATH 2214: Introduction to Differential Equations (Pre: 1114 or 1114H or 2114 or 2114H), (1206 or 1226) \_\_\_\_\_  
 STAT 3604: Statistics for Social Sciences (Pre: MATH 1014 or MATH 1025 or MATH 1525 or MATH 1225) \_\_\_\_\_  
 OR STAT 3615: Biological Statistics (Pre: MATH 1205 or MATH 1225 or MATH 1025 or MATH 1525) \_\_\_\_\_

**MTRG Restricted Electives: 9 credit hours required\***

Note: This physical sciences area requirement can also be met by completion of a second major or minor in: Astronomy, Chemistry, Computer Science, Geosciences, Geographic Information Science, Math, or Physics.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

\*Recommended for graduate school preparation

CHEM 1015: Chemistry in Context (3) \_\_\_\_\_  
 CHEM 1016: Chemistry in Context (3) \_\_\_\_\_  
 CHEM 1035: General Chemistry (3) \_\_\_\_\_  
 CHEM 1036: General Chemistry (3) \_\_\_\_\_  
 CS 1014: Intro Computational Thinking (3) \_\_\_\_\_  
 CS 1044: Introduction to Programming in C (3) \_\_\_\_\_  
 CS 1064: Intro to Programming in Python (3) \_\_\_\_\_  
 CS 1114: Introduction to Software Design (3) \_\_\_\_\_  
 CS 1124: Introduction to Media Computation (3) \_\_\_\_\_  
 CS 2114: Software Design and Data Structures (3) (Pre: CS 1114 or 1124, Math 1225) (Pre: 1114 (C) or 1124 (C)) \_\_\_\_\_  
 MATH 2204: Intro Multivariable Calculus (3) (Pre: MATH 1226) \_\_\_\_\_

\*Recommended for all other students

CSES 3114 (ENSC 3114) (GEOS 3114): Soils (3) (Pre: CHEM 1036 – Co-req 3124) \_\_\_\_\_  
 CSES 3124 (ENSC 3124) (GEOS 3624): Soils Laboratory (1) (CO: 3114) \_\_\_\_\_  
 CSES 3134 (ENSC 3134): Soils in the Landscape (3) (Pre: one year of Intro CHEM, BIOL, or GEOS) \_\_\_\_\_  
 CSES 3634 (ENSC 3634): Physics of Pollution (3) (Pre: 3114, PHYS MATH 2024)) \_\_\_\_\_  
 FREC 3104: Prin of Watershed Hydrology (3) (Pre: MATH 1206 or MATH 1226 or MATH 2015 or MATH 1026) \_\_\_\_\_  
 FREC 3604: Climate Science (3) (Pre: MATH 1026 or MATH 1206 or MATH 1226 or MATH 2015) \_\_\_\_\_  
 FREC 4374: Forested Wetlands (3) (Pre: CSES 3114 or 3134) \_\_\_\_\_  
 GEOG 1524: Intro Earth's Climate (3) \_\_\_\_\_  
 GEOG 3274: Geography of Subarctic and Arctic Environments (3) \_\_\_\_\_



GEOG 3304 (CSES 3304) (GEOS 3304): Geomorphology (3) (Pre: or  
GEOS 1004 or GEOS 2104)  
GEOG 3404: Mountain Geography (3) (Pre: GEOG 1104)  
GEOG 4044 (BIOL 4044): Biogeography (3) (Pre: 1104 or BIOL 2804)  
GEOG 4224: Tracking Environmental Change (3)  
GEOG 4514: Tropical Meteorology (3) (Pre: 2506, 3504)

GEOS 3014: Environmental Geosciences (3) (Pre: 1004  
or 1024 or 2024 or 2104)  
GEOS 3034: Oceanography (3)  
GEOS 4804: Groundwater Hydrology (3)  
STAT 3616: Biological Statistics (3) (Pre: STAT 3615)

Courses for in-major GPA computation include all GEOG/MTRG courses, and approved physical sciences.

### **Curriculum for Liberal Education (CLE) Requirements (38 hours)**

For approved Curriculum for Liberal Education course listings see:

<http://www.cle.prov.vt.edu/guides/>

#### **Minimum Degree Requirements**

##### **Area 1: Writing and Discourse (6 credit hours)**

ENGL 1105 (3) _____	OR	COMM 1015 (3) _____
ENGL 1106 (3) _____		COMM 1016 (3) _____
or ENGL 1204H(3) _____		

##### **Area 2: Ideas, Cultural Traditions, and Values (6 credit hours)**

Approved CLE courses \_\_\_\_\_

##### **Area 3: Society and Human Behavior (6 credit hours)**

The meteorology major covers this area with completion of GEOG 1004 and 1014

##### **Area 4: Scientific Reasoning and Discovery (8 credit hours in Physics)**

PHYS 2205/2215: General Physics (4) (Pre: MATH 1016 or \_\_\_\_\_ OR  
MATH 1016H or MATH 1025 or MATH 2015 or MATH 1026 or  
MATH 1205 or MATH 1205H or MATH 1525 or MATH 1535 or  
MATH 1225 or MATH 1225H for 2205; 2305 or 2205 for 2206) \_\_\_\_\_

PHYS 2305: Foundations of Physics (4) (Pre: (MATH 1205 or MATH  
1205H) or MATH 1225 or (MATH 1206 or MATH 1206H) or MATH  
1226 for 2305; (MATH 1206 or MATH 1206H or MATH 1226), PHYS  
2305 for 2306) \_\_\_\_\_

PHYS 2206/2216: General Physics (4) (Pre: MATH 1016 or \_\_\_\_\_ OR  
MATH 1016H or MATH 1025 or MATH 2015 or MATH 1026  
or MATH 1205 or MATH 1205H or MATH 1525 or MATH 1535  
or MATH 1225 or MATH 1225H for 2205; 2305 or 2205 for 2206) \_\_\_\_\_

PHYS 2306: Foundations of Physics (4) (Pre: (MATH 1205 or MATH  
1205H) or MATH 1225 or (MATH 1206 or MATH 1206H) or MATH  
1226 for 2305; (MATH 1206 or MATH 1206H or MATH 1226), PHYS  
2305 for 2306) \_\_\_\_\_

##### **Area 5: Quantitative and Symbolic Reasoning (8 credit hours)**

MATH 1225: Calculus of a single variable (4) \_\_\_\_\_ MATH 1226: Calculus of a single variable (4) (Pre: MATH 1225) \_\_\_\_\_

##### **Area 6: Creativity and Aesthetic Experience (1 credit hour)**

Approved CLE course \_\_\_\_\_

##### **Area 7: Critical Issues in a Global Context (3 credit hours)**

Meteorology major covers this area with completion of GEOG 1014

Some courses required for this major have prerequisites. Please refer to the Undergraduate Course Catalog or consult your advisor for information about prerequisites.

Required minimum hours in the major is 73. Minimum number of hours for the degree is 120. Satisfactory Progress: The overall and in-major GPA required for graduation is 2.0. To make satisfactory progress towards the Meteorology degree, upon completion of 60 hours, students must have completed 15 hours in Geography/Meteorology.

**Foreign Language:** A sequence of two (2) foreign language courses is required for graduation unless two (2) high school credits of the same foreign language or six (6) transfer credit hours of foreign language have been earned. These credits do not count toward graduation. See catalog section on "Graduation Requirements."

**Free Elective List:** \_\_\_\_\_

**NOTE:** MTRG students planning to double major in Geography, must complete at least 12 hours of GEOG coursework that is not being used to complete either major. In addition, students must complete two distinct 3 credit field experiences that apply to each major for a total of 15 additional credits.