

COLLEGE OF NATURAL RESOURCES AND ENVIRONMENT
Department of Forest Resources and Environmental Conservation
B.S. Degree in Water: Resources, Policy, and Management
Major: Water: Resources, Policy, and Management
For Students Graduating in Calendar Year 2020

Minimum credits required for graduation is 120.

Degree Core Requirements (21 credits)

- ___ * ALS/NR 4614 Watershed Assessment, Management, and Policy (2) Pre: Two 4000 level courses in environmental/natural resource science, management, engineering, and/or policy in BSE, CEE, FREC, GEOL, LAR, CSES, ENT, BIOL, GEOG, AAEC, UAP or equivalent.
- ___ * ENSC 3604 Fundamentals of Environmental Science (3) Pre: BIOL 1105 or CHEM 1035.
- ___ * ENSC/CSES 4314 Water Quality (3) OR FREC 3754 Watersheds and Water Quality Monitoring (3) Pre: BIOL 1106, CHEM 1035, (FREC 2004 or FREC 2114 or FREC 3314 or BIOL 2804 or ENSC 3604).
- ___ * FREC 3104 Principles of Watershed Hydrology (3) Pre: Junior Standing Pre: MATH 1206 or MATH 1226 or MATH 2015 or MATH 1026.
- ___ * FREC/AAEC 4464 Water Resources Policy & Economics (3) Pre: AAEC 1005.
- ___ * GEOG/NR 2004 Water, Environment, and Society (3)
- ___ PHYS 2205 General Physics (3) Pre: MATH 1016 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
- ___ PHYS 2215 General Physics Lab (1) Co: PHYS 2205.

In accordance with university guidelines, courses satisfying degree core requirements may not be double counted to satisfy other areas of a degree (e.g., CLE).

Major Requirements (36 hours)

Writing (3 credits – choose one course)

- ___ ENGL 3764 Technical Writing (3) Junior standing required.
- ___ ENGL 3534 Literature and Ecology (3) Pre: ENGL 1106 or ENGL 1204H or COMM 1016.

Water Law, Planning, and Economics (6 credits – choose one course from each area below)

- ___ * AAEC 3314 Environmental Law (3), OR UAP 4344 Law of Critical Environmental Areas (3) Pre: AAEC 4754, AAEC 3314.
- ___ * UAP 3354 Introduction to Environmental Policy and Planning (3), OR UAP 4374 Land Use and Environment: Planning and Policy (3) Junior standing required.

Geospatial Technology (3 credits – choose one course)

- ___ * BSE 4344 GIS for Engineers (3) Laboratory work and senior standing required.
- ___ * FREC 4114 Information Technologies for Natural Resource Management (3) Pre: FREC 2214 or GEOG 2314
- ___ * FREC 4214 Forest Photogrammetry and Spatial Data Processing (3) Senior standing required.
- ___ * GEOG 2084 Principles of Geographic Information Systems (3)
- ___ * GEOG/GEOS 4354 Introduction to Remote Sensing (3)

Water Science Specialization (12 credits – choose 9 credits in one of the three specializations listed below and the remaining 3 credits in any of the four specializations listed below)

(see *Water Science Specialization course list*)

___ I. <i>Aquatic Ecosystems</i>	___	___	___	___	___
___ II. <i>Hydrology</i>	___	___	___	___	___
___ III. <i>Water Quality</i>	___	___	___	___	___

Water Policy Specialization (12 credits – choose 9 credits in one of the three specializations listed below and the remaining 3 credits in any of the three specializations listed below)
(see *Water Policy Specialization course list*)

<input type="checkbox"/> I. <i>Watershed Management</i>	_____*	_____*	_____*	_____*
<input type="checkbox"/> II. <i>Water Planning, Policy, and Economics</i>	_____*	_____*	_____*	_____*
<input type="checkbox"/> III. <i>Water, Climate, Energy, and Global Issues</i>	_____*	_____*	_____*	_____*

Restricted Electives (Minimum 18 credits – see course lists: choose from courses listed under the Water Science or Water Policy Specializations or from those listed as Restricted Electives)

Free Electives (9 credits)

CLE Requirements (36 credits)

Area 1: Writing and Discourse (6 credits)

- CLE Area 1 course: _____ (3)
 CLE Area 1 course: _____ (3)

Area 2: Ideas, Cultural Traditions, and Values (6 credits)

- CLE Area 2 course: _____ (3)
 CLE Area 2 course: _____ (3)

Area 3: Society and Human Behavior (6 credits)

- ECON 2005 Principles of Economics (3), ECON 2006 Principles of Economics (3)
OR
 AAEC 1005 Economics of Food and Fiber (3), AAEC 1006 Economics of Food and Fiber (3)

Area 4: Scientific Reasoning and Discovery (8 credits, including 2 labs)

- BIOL 1106 Principles of Biology (3)
 BIOL 1116 Principles of Biology Lab (1) Co: BIOL 1106
 CHEM 1035 General Chemistry (3) Co: MATH 1025 or MATH 1225.
 CHEM 1045 General Chemistry Lab (1) Co: CHEM 1035 or 1035H

Area 5: Quantitative and Symbolic Reasoning (6 credits)

- MATH 1025 Elementary Calculus (3), MATH 1026 Elementary Calculus (3)
OR
 MATH 1225 Calculus of a Single Variable (4), MATH 1226 Calculus of a Single Variable (4)

Area 6: Creativity and Aesthetic Experience (1 credit)

- CLE Area 6 course: _____ (1)

Area 7: Critical Issues in a Global Context (3 credits)

- CLE Area 7 course: _____ (3)

WATER: RESOURCES, POLICY, AND MANAGEMENT NOTES

1. **Prerequisites:** Prerequisites for all courses on this checksheet are indicated. Please refer to the Undergraduate Course Catalog or consult your advisor for information about prerequisites.
2. **In-Major GPA Computation:** *Indicates courses counted toward in-major GPA. For restricted electives and free electives, any course taken from either a water science specialization or a water policy specialization counts toward the in-major GPA.
3. **Satisfactory Progress:** By the end of the semester in which the student has attempted 60 credits (including transfer, advanced placement, advanced standing, and credit by examination), "satisfactory progress" towards a B.S. degree in Water: Resources, Policy, and Management will include the following minimum criteria:
 - Having an in-major and overall grade point average of at least 2.0
 - Passing at least 24 semester credits that apply to the Curriculum for Liberal Education (CLE)
 - Passing the following courses, or their equivalents: BIOL 1106, 1116; CHEM 1035, 1045; and MATH 1026
4. **Foreign Language Requirement:** Students who did not successfully complete at least two years of a single foreign, classical, or sign language during high school must successfully complete six semester hours of a single foreign, classical, or sign language at the college level. Course taken to meet this requirement do not count toward the hours required for graduation. Please consult the Undergraduate Catalog for details.
5. **Policy on Student Exchanges:** Studying overseas or at another U.S. university is a wonderful opportunity to enhance your education. However, planning for an exchange should begin at least nine months prior to leaving for the exchange. This will allow time to determine what substitutions, if any, will be allowed and time to arrange your schedule at Virginia Tech to ensure that all requirements for graduation are met.
6. **GPA for Graduation:** An in-major and overall GPA of 2.0 is required for graduation.
7. **American Institute of Hydrology - Educational Criteria:** This is an option for students interested in pursuing a Professional Hydrology certification with the American Institute of Hydrology after completing their B.S. and five years of experience.

Basic Requirements:
Completion of a full course of study leading to a bachelor's or higher degree at an accredited college or university with a major in hydrology, physical or natural science or engineering.

The study must have included a minimum of:

 - 4-5 semester hours in Chemistry (e.g., CHEM 1035 and 1036) AND
 - 4-5 semester hours in Physics (e.g., PHYS 2205 and 2206) AND
 - 4-5 semester hours in Differential and Integral Calculus (MATH 1025 and 1026) AND
 - 25 semester hours in the specialty areas (Students likely meet this requirement if they select the Hydrology or Water Quality specialization).

Specialty Requirements:

Completion of 25 semester hours of which at least 10 semester hours must come from Category I listing of courses and the rest from a combination of Category II and Category III listing of courses. Twenty semester hours must be in the third or fourth year or graduate course studies.

- Category I. Courses in hydrology, hydrogeology, or water quality - minimum of 6 semester hours.
- Category II. Courses in allied subjects in which hydrology, hydrogeology or water quality constitutes more than 10 percent of the course work - minimum of 9 semester hours.
- Category III. Supplemental courses - minimum of 6 semester hours. These courses would include subjects such as economics, geology, geophysics, law, planning, remote sensing, statistics, land and water policy, resource management, water administration, and so forth.

8. US Office of Personnel Management: Hydrology Qualification Standards:

Basic Requirements:

Degree: physical or natural science, or engineering that included at least 30 semester hours in any combination of courses in hydrology, the physical sciences, geophysics, chemistry, engineering science, soils, mathematics, aquatic biology, atmospheric science, meteorology, geology, oceanography, or the management or conservation of water resources. The course work must have included at least 6 semester hours in calculus (including both differential and integral calculus, e.g., MATH 1025 and 1026), and at least 6 semester hours in physics (e.g., PHYS 2205 and 2206).

Water Science Specialization Courses

All water science specialization courses count toward in-major GPA.

I. Aquatic Ecosystems

BIOL	4004	Freshwater Ecology (4) Pre: BIOL 2804
BIOL/CSSES/ENSC	4164	Environmental Microbiology (3) Pre: BIOL 2604.
BIOL/ENT	4354	Aquatic Entomology (4) Pre: (BIOL 1005, 1006), (BIOL 1015, 1016) or (BIOL 1105, 1106, 1115, 1116).
BIOL	4454	Invertebrate Zoology (4) Pre: BIOL 2504
ENT/BIOL/FIW	4484	Freshwater Biomonitoring (4) Pre: (BIOL 2804), (BIOL 4604 or BIOL 4354 or ENT 4354 or FIW 4424 or FIW 4614).
FIW	4534	Ecology & Management of Wetland Systems (3) Enrollment restricted to junior, seniors and graduate students. Pre: BIOL 3204.
FIW	4614	Fish Ecology (3) Pre: BIOL 1006.
FIW	4624	Marine Ecology (3) Pre: BIOL 2804 or GEOS 3034.
FIW	4714	Fisheries Management (4) Pre: FIW 3514.
FREC	4374	Forested Wetlands (3) Pre: CSES 3114 or CSES 3134.

II. Hydrology

BSE	3324	Small Watershed Hydrology (3) Course requirements may be satisfied by taking CEE 3304 or CHE 3114 or ESM 3234 or ESM 3024 or ME 3404 prior to or concurrent with course.
BSE	4224	Field Methods in Hydrology (3) Co: BSE 3324 or CEE 3314 or FREC 4354.
CEE	3304	Fluid Mechanics for Civil and Environmental Engineering (3) A grade of C- or better in pre-requisite ESM 2104. Pre: ESM 2104.
CEE	3314	Water Resources Engineering (3) A grade of C- or better required in pre-requisite CEE 3304. Pre: CEE 3304.
CEE	4304	Hydrology (3) A grade of C- or better required in pre-requisite CEE 3304. Pre: CEE 3304.
CEE	4314	Groundwater Resources (3) A grade of C- or better required in pre-requisite CEE 3304. Pre: CEE 3304.
CEE	4324	Open Channel Flow (3) Pre: CEE 3314.
CSSES/GEOG/GEOS	3304	Geomorphology (3) Pre: GEOG 1104 or GEOS 1004 or GEOS 2104.
CSSES/ENSC	3614	Soil Physical & Hydrological Properties (3) Pre: (CSES 3114, 3124) or (GEOS 3614, GEOS 3624)
FREC	4354	Forest Soil and Watershed Management (3) Pre: CSES 3114 or ENSC 3114 or GEOS 3614 or CSES 3134 or ENSC 3134.
GEOS	3014	Environmental Geosciences (3) Pre: GEOS 1004 or 1024 or 2104 or 2024.
GEOS	4804	Groundwater Hydrology (3) Pre: (PHYS 2205 or PHYS 2305), (MATH 1206 or MATH 1226 or MATH 2016 or MATH 2024).

III. Water Quality

BSE	3334	Nonpoint Source Assessment & Control (3) Pre: BSE 3324.
BSE	4304	Nonpoint Source Pollution Modeling & Management (3) Pre: BSE 3334.
BSE	4394	Water Supply & Sanitation in Developing Countries (3) Pre: CEE 3104.
CEE	3104	Introduction to Environmental Engineering (3) Pre: (CHEM 1035 or CHEM 1074), (CHEM 1045 or CHEM 1084), (MATH 1206 or MATH 1206H or MATH 1226 or MATH 2016 or MATH 2024), (PHYS 2305 or PHYS 2205).
CEE	4104	Water & Wastewater Treatment Design (3) Pre: CEE 3104, CEE 3304.
CEE	4114	Fundamentals of Public Health Engineering (3) A grade of C- or better required in pre-requisite. Pre: CEE 3104.
CEE	4174	Solid & Hazardous Waste Management (3) A grade of C- or better required in pre-requisite CEE 3104. Pre: CEE 3104.
CSES	4644	Land Based Systems for Waste Treatment (3) Taught odd years.
CSSES/ENSC	3634	Physics of Pollution (3) Pre: CSES 3114, PHYS 2206, (MATH 2016 or MATH 2024).
CSSES/BIOL/ENSC	4164	Environmental Microbiology (3) Pre: BIOL 2604.
CSSES/ENSC/CHEM	4734	Environmental Soil Chemistry (3) Pre: CSES 3114, CSES 3124, CHEM 2514 or CHEM 2535, CHEM 3114, (MATH 2015 or MATH 1026).
FREC	4354	Forest Soil and Watershed Management (3) Pre: CSES 3114 or ENSC 3114 or GEOS 3614 or CSES 3134 or ENSC 3134.

FREC	4374	Forested Wetlands (3) Pre: CSES 3114 or CSES 3134.
FREC	4784	Wetland Hydrology and Biogeochemistry (3) Co: FREC 4374 or FIW 4534 or CSES 4854 or ENSC 4854.
GEOS	4634	Environmental Geochemistry (3) Pre: (MATH 1205 or MATH 1225), CHEM 1036.

Water Policy Specialization Courses

All water policy specialization courses count toward in-major GPA.

I. Watershed Management

ALS	3404	Ecological Agriculture Theory & Practice (3) Pre: ALS 2204.
BSE	3324	Small Watershed Hydrology (3) Course requirements may be satisfied by taking CEE 3304 or CHE 3114 or ESM 3234 or ESM 3024 or ME 3404 prior to or concurrent with course.
BSE	3334	Nonpoint Source Assessment & Control (3) Pre: BSE 3324.
BSE	4304	Nonpoint Source Pollution Modeling & Management (3) Pre: BSE 3334.
CEE	3274	Introduction to Land Development Design (3) A grade of C- or better in prerequisite. Pre: CEE 2814.
CEE	4264	Sustainable Land Development (3) Pre-requisite: Senior Standing required.
FREC	4374	Forested Wetlands (3) Pre: CSES 3114 or CSES 3134.
LAR	3154	Watershed Sensitive Design & Construction (4) Pre-requisite: LAR 2164 or consent of instructor.
UAP	3354	Introduction to Environmental Policy & Planning (3)
UAP	4374	Land Use & Environment: Planning & Policy (3) Pre: Junior standing.

II. Water Planning, Policy, & Economics

AAEC	3004	Agricultural Production & Consumption Economics (3) Pre: AAEC 1005.
AAEC	3014	Analytical Methods in Applied Economics (3) Pre: STAT 3005 or BIT 2405 or STAT 3615.
AAEC	3314	Environmental Law (3)
AAEC	3324	Environment and Sustainable Development Economics (3) Pre: AAEC 1005 or ECON 2005.
AAEC	3604	Agricultural Law (3)
AAEC	4314	Environmental Economic Analysis & Management (3) Pre: AAEC 3324 or ECON 4014 or FREC 3424.
AAEC	4344	Sustainable Development Economics (3) Pre: AAEC 3324 or AAEC 3004 or ECON 4014.
CEE	4134	Environmental Sustainability – A Systems Approach (3) Senior Standing. Pre: MATH 2214.
CEE	4344	Water Resources Planning (3) Senior standing required.
FREC/NR	4014	Natural Resources Economics (3) Pre: ECON 2005 or AAEC 1005.
FREC	4434	Natural Resource Policy (3) Pre: NR 4014 or FREC 4424 or FOR 4424 or ECON 4014 or FREC 4014 or FOR 4014.
GEOG	4204	Geography of Resources (3) Pre: Junior Standing.
LAR	3154	Watershed Sensitive Site Design & Construction (4) Pre-requisite: LAR 2164 or consent of instructor.
SPIA	2554	Collaborative Policy-Making and Planning (3)
UAP	3224	Policy Implementation (3) Must complete prerequisites UAP 3014 (B- or higher) or UAP 3354, and UAP 3024 (B- or higher). Pre: UAP 3024, (UAP 3014 or UAP 3354).
UAP	4344	Law of Critical Environmental Areas (3) Pre: UAP 4754, AAEC 3314.
UAP	4374	Land Use & Environment: Planning & Policy (3) Pre: Junior standing.

III. Water, Climate, Energy, & Global Issues

ALS/HORT	4714	Global Seminar (1) Pre: Junior or Senior Standing required.
BIOL	4114	Global Change Ecology (3) (Pre: BIOL 2704, 2804.)
BSE	4394	Water Supply & Sanitation in Developing Countries (3) Pre: CEE 3104.
CEE	4134	Environmental Sustainability – A Systems Approach (3) Senior Standing. Pre: MATH 2214.
CEE	4264	Sustainable Land Development (3) Pre-requisite: Senior Standing required.
FREC	2124	Forests, Society & Climate (3)
FREC/SBIO	2784	Global Forest Sustainability (3)
FREC	3604	Climate Science (3) Pre: Junior Standing. MATH 1026 or MATH 1206 or MATH 1226 or MATH 2015.
GEOG	1514	Introduction to Meteorology (3)
GEOG	3104	Environmental Problems, Population, & Development (3)
GEOG	4134	Water, Hazards, & Development (3)

IS	4014	International Development (3)
ME/ESM	4194	Sustainable Energy Solutions for a Global Society (3) Senior Standing in major may be substituted for pre-requisite ENGL 3764. Pre: (CHEM 1035 or CHEM 1055), PHYS 2306, ENGL 3764.
NR	4444	Practicing Sustainability (3) Pre-requisite: Senior Standing required.
PSCI/UAP	3344	Global Environmental Issues: Interdisciplinary Perspectives (3) Completion of Area 4 of University Core required.
UAP/GEOG/WGS	4214	Gender, Environment, and International Development (3) Pre: Junior standing required.
UAP/GEOG/SOC	4764	International Development Policy & Planning (3) Junior standing required.

Restricted Electives

ALS	2204	Introduction to Civic Agriculture (3)
BIOL	1105	Principles of Biology (3) Co: BIOL1115.
BIOL	1115	Principles of Biology Lab (1) Co: BIOL 1105.
BIOL	2504	General Zoology (3) Pre: (BIOL 1005 or 1105 or 1205H), (BIOL 1006 or 1106 or 1206H).
BIOL	2604	General Microbiology (3) Pre: (BIOL 1005 or BIOL 1105 or BIOL 1205H), (BIOL 1006 or BIOL 1106 or BIOL 1206H), (CHEM 1036 or CHEM 1056 or CHEM 1036H or CHEM 1056H or CHEM 1016).
BIOL	2704	Evolutionary Biology (3) Pre: (BIOL 1005 or 1105 or 1205H), (BIOL 1006 or 1106 or 1206H).
BIOL	2804	Ecology (3) Pre: (BIOL 1005 or 1105 or 1205H), (BIOL 1006 or 1106 or 1206H).
BIOL	3204	Plant Taxonomy (3) Pre: (BIOL 1005 or BIOL 1105 or BIOL 1205H), (BIOL 1006 or BIOL 1106 or BIOL 1206H).
BSE	2304	Landscape Measurements and Modeling (3) Pre: (MATH 1206 or MATH 1226).
CEE	2814	Civil and Environmental Engineering Measurement (4) Pre: (ENGE 1114 or ENGE 1216 or ENGE 1434 or BC 1224), (MATH 1206 or MATH 1206H or MATH 1226). Co: CEE 2824.
CEE	3514	Introduction to Geotechnical Engineering (3) A grade of C- or better required in pre-requisites GEOS 2104 and ESM 2204. Pre: ESM 2204, (GEOS 1004 or GEOS 2104 or GEOL 1004 or GEOL 2104).
CHE	3114	Fluid Transport (3) Pre: CHE 2114, PHYS 2305, (MATH 2204 or MATH 2224). Co: MATH 4564.
CHE	3144	Mass Transfer (3) Pre: CHE 3114, CHE 2164, (MATH 4544 or MATH 4564).
CHEM	1036	General Chemistry (3) Pre: CHEM 1035 or CHEM 1055 or CHEM 1055H. Co: MATH 1025 or MATH 1225.
CHEM	1046	General Chemistry Lab (1) Co: CHEM 1036.
CHEM	2114	Analytical Chemistry (3) Pre: CHEM 1036 or CHEM 1056 or CHEM 1056H. Co: CHEM 2124.
CHEM	2514	Survey of Organic Chemistry (3) Pre: (CHEM 1035 or CHEM 1055 or CHEM 1055H), (CHEM 1036 or CHEM 1056 or CHEM 1056H), (CHEM 1045 or CHEM 1065), (CHEM 1046 or CHEM 1066).
CHEM	2535	Organic Chemistry (3) Pre: CHEM 1036 or CHEM 1056 or CHEM 1056H or CHEM 1036H
CSES/ENSC/GEOS	3114	Soils (3) Junior standing. Pre: CHEM 1036. Co: CSES/ENSC/GEOS 3124.
CSES/ENSC/GEOS	3124	Soils Lab (1) Co: CSES 3114.
CSES/ENSC	3134	Soils in the Landscape (3) Pre: one year of introductory CHEM or BIOL or GEOS.
CSES/ENSC	4774	Reclamation of Drastically Disturbed Lands (3) Pre: CSES 3114 or ENSC 3114 or GEOS 3614 or CSES 3134 or ENSC 3134 or CSES 3304 or GEOG 3304 or GEOS 3304.
ECON	4014	Environmental Economics (3) Pre: ECON 2005 or 2116 or 2126 or 2025H.
ENGL	3534	Literature and Ecology (3) Pre: ENGL 1106 or ENGL 1204H or COMM 1016.
ENSC/CSES	4324	Water Quality Lab (1) Pre: CHEM 1046. Co: CSES 4314, 4314.
ENSC	4414	Monitoring and Analysis of the Environment (2) Senior standing required. Pre: (ENSC 3604 or ENSC 4314 or CSES 4314 or BIOL 4004), (MATH 1026 or MATH 2015, CHEM 1036, BIOL 1105).
ENSC/CSES	4854	Wetland Soils and Mitigation (3) Odd years. Pre: (CSES 3114, CSES 3124) or (ENSC 3114, ENSC 3124) or (GEOS 3614, GEOS 3624) or CSES 3134 or ENSC 3134.
ESM	3024	Introduction to Fluid Mechanics (3) Pre: ESM 2304, (MATH 2224 or MATH 2204 or MATH 2204H).
FIW	2114	Principles of Fisheries and Wildlife Management (3) Pre: BIOL 1006 or BIOL 1106.
FIW	3514	Fisheries Techniques (3) Pre: FIW 2114.
FIW	4424	Ichthyology (4)
FREC	2004	Forest Ecosystems (3)
FREC	2214	Introduction to Land and Field Measurements (3) Pre: (MATH 1016 or MATH 1025). Co: FREC 2324.
FREC	2314	Forest Biology and Dendrology (2) Pre: BIOL 1006 or BIOL 1106. Co: FREC 2324.
FREC	2324	Dendrology Lab (1)
FREC	2414	Field Experience in Forest Resources and Environmental Conservation (2)
FREC/LAR	2554	Leadership for Global Sustainability (3)
FREC	3314	Forest Ecology and Silvics (3) Pre: (2314 or FOR 2314), (FREC 2214 or FOR 2214).
FREC	3324	Silviculture Principles and Applications (4) Pre: FREC 3314.
FREC/HORT	3354	Trees in the Built Environment (3) Pre: (FREC 2314 or BIOL 2304 or HORT 2304), (FREC 2324 or HORT 3325 or HORT 3326).
FREC	3724	Forest Boundaries and Roads (3) Pre: FREC 2214
FREC/CSES	4334	Principles and Practice of Agroforestry (3)
FREC	4424	Forest Resources Economics and Management (3) Pre: FREC 3324 or FREC 3364
GEOG	1104	Introduction to Physical Geography (3)

GEOG	2505	Weather Analysis I (3)
GEOG	2506	Weather Analysis II (3) Pre: GEOG 2505
GEOG	3504	Severe Weather (3) Pre: GEOG 2505.
GEOG	3515	Dynamic Meteorology I (3) Pre: GEOG 2506, MATH 2214, (PHYS 2206, PHYS 2216 or PHYS 2306)
GEOG	3516	Dynamic Meteorology II (3) Pre: GEOG 3515
GEOG	4084	Modeling with Geographic Information Systems (3) Senior Standing. Pre: GEOG 2084.
GEOG	4524	Physical Meteorology (3) Pre: GEOG 3515.
GEOG	4554	Remote Sensing of the Atmosphere (1) Pre: GEOG 4354.
GEOS	1004	Earth Science: Our Past, Present, and Future (3)
GEOS	1014	Evolution of the Earth-Life System (4)
GEOS	2104	Elements of Geology (3) Geology 2104 duplicates material in Geology 1004 and both may not be taken for credit.
GEOS	3034	Oceanography (3) Pre: (MATH 1206 or MATH 1226) or (MATH 2015 or MATH 1026).
HIST	3144	American Environmental History (3)
LAR	2164	Landform Function and Aesthetics (4) Pre: LAR 1264 or consent of instructor
MATH	2114	Introduction to Linear Algebra (3) Pre: MATH 1225 or MATH 1226.
MATH	2214	Introduction to Differential Equations (3) Pre: (MATH 1114 or MATH 1114H or MATH 2114 or MATH 2114H), (MATH 1206 or MATH 1226).
PHYS	2206	General Physics (3) Pre: PHYS 2305 or 2205
PHYS	2216	General Physics Lab (1) Co: PHYS 2206
PHYS	2305	Foundations of Physics (4) Co: PHYS 2325 or (MATH 1206 or MATH 1206H or MATH 1226). Pre: (MATH 1205 or MATH 1205H or MATH 1225) or (MATH 1206 or MATH 1206H or MATH 1226).
PSCI/UAP	3444	Administrative Law and Policy (3) Pre: PSCI 1014.
PSCI/UAP	3714	The US Policy Process (3) Pre: PSCI 1014.
PSCI/UAP	3744	Public Policy Analysis (3) Pre: PSCI 1014 or PSCI 1014H.
STAT	3005	Statistical Methods (3) STAT 3005 duplicates STAT 3615 and STAT 4604, only one may be taken for credit. Pre: MATH 1206 or MATH 1226
STAT	3006	Statistical Methods (3) Pre: STAT 3005
STAT	3615	Biological Statistics (3) STAT 3615 partially duplicates STAT 3005 and STAT 4604, only one may be taken for credit.
STAT	3616	Biological Statistics (3) STAT 3616 partially duplicate STAT 3006, 4604 and 4706, only one may be taken for credit. Pre: STAT 3615
UAP	3014	Urban Policy and Planning (3) Grade of B- or better required in prerequisites. Pre: UAP 1024.
UAP	3024	Urban and Regional Analysis (3) Restricted to UAP majors and minors only.
UAP	4754	Legal Foundations of Planning (3) Pre: Junior Standing required