The ENST concentration in Ecosystem Health gives students the concepts and skills to work in this broad and increasingly important field with wide ranging applications in the environmental science and public health fields. The field encompasses environmental factors and ecosystem functions that affect human health and the effects of human activities on the ecosystem products and services we depend on. Example topics within the field include ecological risk analysis, environmental toxicology, environmental impact assessment, chemical fate and transport, human health risk assessment, industrial hygiene, air quality, environmental microbiology, food safety and security, biodiversity and human health, and children’s environmental health.

Science and Math Fundamentals Required (56-57 credits):

- ENST 200 Fundamentals of Soil Science (F; Sp, 4)
- ENST 233 Introduction to Environmental Health (F; Sp, 3)
- ENST 360 Ecosystem Ecology (F, 4)
- ENST 389 Internship (F; S, 3)
- ENST 471 Capstone I (F, 2)
- ENST 472 Capstone II (Sp, 3)
- BSCI 170/171 Principles of Biology I (F; Sp; Su, 4)
- BSCI 160/161 Principles of Biology II (F; Sp; Su, 4)
- BSCI 207 Principles of Biology III (F; Sp, 3)
- BSCI 223 General Microbiology (F; Sp; Su, 4)
- CHEM 131&132 Fundamentals of General Chemistry & Lab (F; Sp; Su, 4)
- CHEM 231&232 Organic Chemistry I & Lab (F; Sp; Su, 4)
- CHEM 241/242 Organic Chemistry II & Lab (F; Sp; Su, 4)
- MATH 140 Calculus I (4) - or - MATH 120 Elementary Calculus I (F; Sp; Su, 3)
- PHYS 121 Fundamentals of Physics (F; Sp; Su, 4)
- BIOM 301 Introduction to Biometrics (F; W; Sp; Su, 3)

Concentration Depth (12 credits):

- ENST 333 Ecosystem Health and Protection (F, 3)
- ENST 334 Environmental Toxicology (S, 3)
- ENST 434 Toxic Contaminants: Sources, Fate, and Effects (F, 3) -or-
- ENST 436 Emerging Environmental Threats (S, 3)
- ENST 445 Ecological Risk Assessment (S, 3)

Ecosystem Health and Human Health Electives (12 credits)
Example courses listed on reverse side. Courses applied to elective requirements may not be applied to other curriculum requirements.

Benchmark to be completed by 30 credits
Benchmark to be completed by 60 credits
Benchmark to be completed by 90 credits
Requires prior approval

Highlighted Courses are ENST CORE
Students must maintain a 2.0 grade point average in major required courses

last updated on 10/2017
Ecosystem Health Electives (at least 6 credits):
- **ANSC 252**  Introduction to the Diseases of Wildlife (3)
- **AOSC 200/201**  Weather and Climate & Lab (4)
- **AOSC 434**  Air Pollution (3)
- **BSCI 222**  Principles of Genetics (4)
- **BSCI 330**  Cell Biology and Physiology (4)
- **BSCI 447**  General Endocrinology (3)
- **BSCI 467**  Freshwater Biology (4)
- **BSCI 473**  Marine Ecology (3)
- **CHEM 271/272**  General Chemistry and Energetics & Bioanalytical Lab (4)
- **ENST 314**  Fisheries Sustainability and Management (3)
- **ENST 405**  Energy and Environment (3)
- **ENST 415**  Renewable Energy (3)
- **ENST 421**  Soil Chemistry (4)
- **ENST 422**  Soil Microbial Ecology (3)
- **ENST 423**  Soil-Water Pollution (3)
- **ENST 430**  Wetland Soils (3)
- **ENST 434**  Toxic Contaminants: Sources, Fate, and Effects (3)
- **ENST 436**  Emerging Environmental Threats (3)
- **ENST 440**  Sustainable Agriculture (3)
- **ENST 441**  Industrial Ecology (3)
- **ENST 450**  Wetland Ecology (3)
- **ENST 460**  Principles of Wildlife Management (3)
- **ENST 461**  Urban Wildlife Management (3)
- **ENST 462**  Field Techniques in Wildlife Management (3)
- **ENST 463**  Wildlife Habitat and Population Modeling (3)
- **ENST 479**  Tropical Ecology and Resource Management (3)
- **ENST 499**  Special Topics in Environmental Science and Technology (1-4)
- **GEOG 415**  Land Use, Climate Change, and Sustainability (3)
- **GEOG 418**  Field and Laboratory Techniques in Environmental Science (1-3)
- **GEOG 372**  Remote Sensing (3)
- **GEOG 373**  Geographic Information Systems (3)
- **GEOG 452**  Watershed and Wetland Hydrology (3)
- **LARC 450**  Environmental Resources (3)
- **PLSC 400**  Environmental Plant Physiology (3)

Students will take approximately 6 credits each of Ecosystem Health and Human Health electives to tailor their program to their specific interests (total = 12 credits). Ecosystem Health electives cannot be double-counted as Human Health Electives, and vice-versa. This is not an exhaustive list of electives; other ecosystem and human health courses can be substituted with advisor approval. Required electives may not be applied in more than one category, e.g. Elective selections will not also satisfy Concentration Depth requirements.

### Human Health Electives (at least 3 credits must come from the Human Dimensions area):
- **BSCI 201**  Human Anatomy and Physiology I (4)
- **BSCI 202**  Human Anatomy and Physiology II (4)
- **BSCI 330**  Cell Biology and Physiology (4)
- **BSCI 417**  Microbial Pathogenesis (3)
- **BSCI 422**  Principles of Immunology (3)
- **BSCI 424**  Pathogenic Microbiology (4)
- **BSCI 425**  Epidemiology and Public Health (3)
- **BSCI 437**  General Virology (3)
- **BSCI 440**  Mammalian Physiology (4)
- **ENST 499**  Special Topics in Environmental Science and Technology (1-4)
- **ENST 432**  Environmental Microbiology (3)
- **ENST 436**  Emerging Environmental Threats (3)
- **GEOG 331**  Introduction to Human Dimensions of Global Change (3)
- **GEOG 431**  Culture and Natural Resource Management (3)
- **HLTH 140**  Personal and Community Health (3)
- **NFSC 430/434**  Food Microbiology & NFSC 434 Food Microbiology Lab (5)

### Human Dimensions Area (subset of Human Health Electives):

- **ANTH 410**  Theory and Practice of Health and Community development -or-
- **ANTH 450**  Theory and Practice of Environmental Anthropology (3)
- **AREC 240**  Introduction to Economics and the Environment -or-
- **ENST 410**  Ecosystem Services: an Integrated Analysis (3-4)
- **AREC 332**  Introduction to Natural Resource Policy (3)
- **AREC 365**  World Hunger, Population, and Food Supplies (3)
- **ENSP 102**  Introduction to Environmental Policy -or-
- **ENSP 330**  Introduction to Environmental Law -or-
- **ENSP 340**  Water: Science, Ethics, and Law (3)
- **GEOG 331**  Introduction to Human Dimensions of Global Change -or-
- **GEOG 341**  Culture and Natural Resource Management (3)
- **LARC 450**  Environmental Resources (3)
- **PHIL 261**  Philosophy of the Environment (3)
- **PUAF 300**  Introduction to Sustainability (3)
- **SOCY 305**  Scarcity and Modern Society -or-
- **SOCY 406**  Globalization (3)
- **SPHL 400**  Introduction to Global Health -or-
- **SPHL 401**  History of Public Health (3)
- **URSP 250**  The Sustainable City: Exploring Opportunities & Challenges (3)

**Restricted. Permission required. Meets at Shady Grove Campus.**