I. **Outline of the proposed major**

Proposed Catalog Copy:

INTEGRATED ENVIRONMENTAL SCIENCES PROGRAM

The integrated environmental sciences major at Longwood University provides an interdisciplinary perspective to develop citizen leaders who are equipped to understand complex environmental issues. The major provides strong foundational knowledge in natural and social sciences and heavily emphasizes practical skills and integrated critical thinking throughout the curriculum. Students will receive training that is appropriate preparation for graduate studies or careers in research, teaching, industry, government, or nonprofit organizations.

The major requires core competency courses in life sciences, physical sciences, earth sciences, and social sciences. Additional coursework emphasizes the development of quantitative and communication skills. The hallmark of the curriculum is the integrative courses that are required throughout each year of coursework, bringing together the core competency knowledge and skills to engage in critical thinking about environmental issues from an interdisciplinary perspective. In addition, students must choose a specialization in one of the core competency areas to complete advanced elective courses. Alternatively, a student may design an individualized concentration to best meet the student's objectives for professional preparation.

Students may take a maximum of 4 credits total in internship (ENSC 492) and research (ENSC 496) courses for quality points (A, B, and C grades). Beyond 4 credits, such courses must be taken on a pass/fail basis. A minimum grade of C- must be earned in every prerequisite to ENSC courses and all courses listed under the integrated environmental sciences major requirements.

INTEGRATED ENVIRONMENTAL SCIENCES MAJOR, BS DEGREE

A. General Education Core Requirement/38 credits
MATH 171 is recommended for General Education Goal 5.
PHYS 103 is recommended for General Education Goal 6.
PHIL 316 is required for General Education Goal 12.
ENSC 492 or 496 is required for General Education Goal 14.

B. Additional Degree Requirements/7 credits
MATH 301/3 credits (MATH 171 prerequisite)
CHEM 111/4 credits

C. Major Requirements/61-69 credits

1. CORE COMPETENCIES/26 credits
   - Life Sciences
     - BIOL 122 Diversity of Life/4 credits
     - BIOL 341 General Ecology/4 credits
   - Physical Sciences
     - CHEM 111 Fundamentals of Chemistry I/4 credits (satisfied by Additional Degree Requirements)
     - CHEM 112 Fundamentals of Chemistry II/4 credits
     - PHYS 103 Conceptual Physics/4 credits (satisfied if taken as General Education Goal 6)
   - Earth Sciences
     - EASC 211 Environmental Geology/4 credits
     - EASC 212 Atmospheric Science/4 credits
   - Social Sciences
     - *Choose two courses from the following:*
     - ECON 314 Environmental and Resource Economics/3 credits
     - SOCL 260 Environment and Society/3credits
     - ENSC 380 Introduction to Environmental Law and Policy/3credits
     - GEOG 241 Cultural Geography/3 credits

2. SKILLS/7 credits
   - GEOG 275 Introduction to GIS/4 credits
   - COMM 101 Public Speaking/3credits
   - MATH 171 Statistical Decision Making/3 credits (satisfied if taken as General Education Goal 5)
   - MATH 301 Applied Statistics/3 credits (satisfied by Additional Degree Requirements)

3. INTEGRATIVE COURSES/16 credits
   - ENSC 101 Introduction to Integrated Environmental Sciences/2 credits
   - ENSC 201 Integrated Environmental Investigations/4 credits
   - ENSC/GEOG 340 Global Environmental Issues/3 credits
   - ENSC 401 Environmental Planning and Management/4 credits
   - ENSC 402 Environmental Decision Making/3 credits
   - ENSC 492 Internship in Environmental Science/1 credit (satisfied by General Education Goal 14)
   - *OR* ENSC 496 Research in Environmental Science/1 credit (satisfied by General Education Goal 14)

4. ENVIRONMENTAL SCIENCE ELECTIVES/12-20 credits

Choose four elective courses in one of the approved concentrations listed below (Life Sciences, Physical Sciences, Earth Sciences, or Social Sciences). Alternatively, a student may design an individualized concentration to best meet the student's objectives for professional preparation. An individualized concentration must be developed in consultation with the student's advisor and approved by the Department of Biological and Environmental Sciences' Curriculum Committee.

Life Sciences Concentration

Choose four of the following courses:

BIOL 304	Microbiology/5 credits
BIOL 342	Terrestrial Biogeography/4 credits
BIOL 361	Aquatic Ecology/5 credits
BIOL 430	Conservation Biology/4 credits
BIOL 435	Advanced Ecology/4 credits
BIOL 443	Field Botany/6 credits
BIOL 445	Tropical Ecology/4 credits
BIOL 471	Ornithology/4 credits
BIOL 474	Entomology/4 credits

Physical Sciences Concentration

Choose four of the following courses (lecture and lab combination counts as one course):

CHEM 305 and 307	Organic Chemistry I (lecture + lab) /4 credits
CHEM 306 and 308	Organic Chemistry II (lecture + lab) /4 credits
CHEM 350	Quantitative Analysis/4 credits
CHEM 351	Instrumental Analysis/3 credits
CHEM 372	Environmental Chemistry/3 credits

Earth Sciences Concentration

Choose four of the following courses:

EASC 261	Meteorology/4 credits
EASC 354	Hydrology/3 credits
EASC 355	Climatology/3 credits
EASC 363	Physical Oceanography/4 credits
EASC 410	Geomorphology/3 credits
EASC 342	Terrestrial Biogeography/4 credits

Social Sciences Concentration

Choose four of the following courses:

ECON 314	Environmental and Resource Economics/3 credits*
SOCL 260	Environment and Society /3 credits*
ENSC 380	Environmental Law and Policy/3 credits*
GEOG 241	Cultural Geography/3 credits*
ANTH/SOCL 322	Sustainability/3 credits
GEOG 342	Terrestrial Biogeography/4 credits
GEOG 358	Map Design and Analysis/4 credits
GEOG 353	Geography of Virginia/3 credits
HIST 427	Latin American Environmental History/3 credits
HLTH 210	World Health Issues/3 credits
HLTH 400	Environmental Health/3 credits
RECR 420	Environmental Education Resources/3 credits

*ECON 314, SOCL 260, ENSC 380, and GEOG 241 may only be used to fulfill requirements in the Social Science Concentration if they were not taken to fulfill core competencies

D. General Electives/6-14 credits

E. Total Credits Required for BS in Integrated Environmental Sciences/120 credits