I. Basic Course Information

A. Course Number and Title: ENVI 201 – Environmental Science Applications

B. New or Modified Course: Modified

C. Date of Proposal: Semester: Fall Year: 2018

D. Effective Term: Fall 2019

E. Sponsoring Department: Science & Engineering

F. Semester Credit Hours: 2

G. Weekly Contact Hours: 2
   Lecture: 2
   Laboratory: 0
   Out of class student work per week: 4

H. Prerequisites/Corequisites: ENVI-102 or BIOL-231

I. Laboratory Fees: No

J. Name and Telephone Number or E-Mail Address of Department Chair and Divisional Dean at time of approval: Marianne Baricevic Marianne.Baricevic@raritanval.edu ; Sarah Imbriglio simbrigl@raritanval.edu

II. Catalog Description

Prerequisites: ENVI-102 or BIOL-231. Offered in Spring Semester Only.
A capstone class where students will apply what they have learned in ecology and environmental science to develop solutions to real-world environmental problems in areas such as ecosystem management and restoration, pollution control, and species conservation. Case studies will be used to explore various dimensions of these issues and help reinforce skills in data analysis, interpretation, and presentation, and their integration in environmental planning and problem-solving. Students will also be introduced to basic skills in remote sensing and GIS, environmental communication and outreach, and areas of environmental specialization. Two weekend field trips required.
III. Statement of Course Need

A. This course is the capstone course required for students in their fourth semester of study in the Environmental Science A.S. and Environmental Studies A.A. degree programs. This course challenges students to integrate the concepts and skills learned in ecology, environmental science, and other coursework and apply them to develop scientifically informed, evidence-based solutions to real-world environmental problems. Doing so provides them with opportunity to reinforce what they have learned in quantitative and field studies and apply them to these higher level applications.

B. There is no laboratory component.

C. This course generally transfers as a Free Elective or a program requirement in Ecology, Environmental Science, or related fields.

IV. Place of Course in College Curriculum

A. This course is a Free Elective

B. This course does not serve as a General Education Science course.

C. This course meets a program requirement for Environmental Science A.S. and Environmental Studies A.A. degrees.

D. To see course transferability: a) for New Jersey schools, go to the NJ Transfer website, www.njtransfer.org; b) for all other colleges and universities, go to the individual websites.

V. Outline of Course Content

A. Applied Environmental Science - General Framework
   1. Literature research and resources
      a. Library databases – JSTOR, ScienceDirect
      b. Literature review
      c. Citation styles for environmental sciences
   2. Environmental data management
      a. MS Excel
      b. Online databases
   3. Data analysis and interpretation
      a. Summarizing and representing data – MS Excel
      b. Statistical testing and interpretation – SAS-JMP 10.0
   4. Integration with environmental planning
      a. Remote sensing and GIS
         i. Satellite and aerial imagery
         ii. Topographic profiles and spatial analysis
         iii. Map construction and presentation
         iv. ArcMAP 10.0, Conservation Blueprint, NJ GeoWEB
      b. Adaptive management
   5. Environmental communication and outreach
      a. Report preparation and poster presentations
      b. Oral presentations and civic engagement
c. Peer and stakeholder review processes

B. Applications – Case Studies
   1. Approach
      a. Investigation of environmental problem to be addressed
      b. Identifying causes of environmental degradation
      c. Developing solutions to improve ecosystem and/or public health
      c. Public communication and outreach
   2. Case Studies
      a. Balancing recreational beach use with endangered species habitat and
don development in New Jersey
      b. Watershed management and restoration in Jamaica Bay
      c. Other examples

C. Areas of Specialization
   a. Guest lectures
   b. Sector analysis and trade-offs
   c. Degree Programs at Transfer institutions and career pathways

VI. General Education and Course Learning Outcomes

A. General Education Learning Outcomes:

   At the completion of the course, students will be able to:
   1. communicate and collaborate with others in a clear, logical manner about
      environmental issues (GE-NJ1)
   2. use technological tools to acquire, analyze and integrate environmental data into
      planning and management solutions (GE-NJ4, IL)
   3. apply the scientific method to collect, analyze and interpret data (GE-NJ3 *)

B. Course Learning Outcomes:

   At the completion of the course, students will be able to:
   1. recognize and discuss local environmental problems and the scientific methods
      used to study and address them
   2. compare and contrast scientific results in a critical manner;
   3. develop evidence-based solutions to environmental problems;

C. Assessment Instruments

   A. research papers
   B. computer assignments
   C. oral presentations
   D. poster presentations

VII. Grade Determinants

   A. research project
   B. oral and poster presentations
C. service learning
D. computer assignments
E. homework assignments
F. research paper

Given the goals and outcomes described above, the primary formats, modes, and methods for teaching and learning that may be used in the course are:
   A. lecture/discussion
   B. small-group work
   C. computer-assisted instruction (Excel, GIS, remote sensing, statistical software)
   D. guest speakers
   E. field work
   F. student oral and poster presentations
   G. student collaboration
   H. independent study

VIII. Texts and Materials
   A. Articles from scientific journals and periodicals
   B. Books and Book Reviews
   C. Films and Documentaries
   D. Internet Databases and Information Sources
   E. Library Article Databases
   F. Laboratory Equipment

(Please Note: The course outline is intended only as a guide to course content and resources. Do not purchase textbooks based on this outline. The RVCC Bookstore is the sole resource for the most up-to-date information about textbooks.)

IX. Resources
   A. RVCC passenger van
   B. Library databases and other library resources;
   C. Natural areas on campus and elsewhere;
   D. RVCC greenhouse and related supplies;
   E. Environmental monitoring, GPS, and forest ecology field equipment;
   F. Computers with Excel, ArcMAP (GIS), and SAS-JMP statistical software;
   G. Field guides, literature, films and documentaries from RVCC Science Library;

X. Honors Options [if relevant]
   Not Applicable