Environmental Science Education - Course outline

Environmental Science is a loose subject defined by problems of environment, which often are the problems for which no individual claims ownership/responsibility. Most books and materials on the subject deal with the types of pollution, a list of cause of pollution and some prescription for environmentally favourable human practices. The texts often lack rigour and cohesive structure of concepts that can empower students/readers to analyze and respond to their own environmental problems. A rigourous understanding of topics in environmental science requires concepts from physics, chemistry, geology, as well as biology. In addition, social dynamics of systems also needs to be understood.

In last 15 years in India, chapters on environmental science have become part of every school science textbook, and a one-semester course on ES has become mandatory for every science as well as non-science undergraduate program. Therefore, this curricular requirement has made a holistic and rigourous approach towards environmental science a crucial need as well as an opportunity.

In this course, we shall try to
(i) understand the conceptual domain of environmental science, by touching upon topics from various disciplines(physics, chemistry, biology, geology, economics, engineering)
(ii) look at the environmental science chapters in the science textbooks of NCERT and a few state boards, and a few text books that have been prescribed for undergraduate curricula.
(iii) analyze the content from utility perspective, i.e., does the content empowers a student to understand or analyze their own environmental problems?
(iv) take two topics such as composting and water quality, which are one of the ubiquitous topic in environmental science. We shall try to understand how these topic are approached even in advanced programs in environmental engineering, microbiology, chemistry. We shall also do some experiments to understand some of the practical problems faced by students of environmental science.

The course would include 3 major assignments:
a) A short essay on scope of environmental science and a model curriculum for environmental science.
b) Development of a textbook chapter on one topic in environment science at middle, secondary or undergraduate level based on criteria discussed in classes.
c) A small experimental project on environmental analysis (can be conducted on campus or in nearby school/areas)