Environmental and Industrial Chemistry.

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Once again the Committee on Computers in Chemical Education is planning an undergraduate on-line chemistry course for the Spring semester of 1998. This course will once again focus on "Environmental and Industrial Chemistry." The committee felt that there was sufficient interest to repeat this course. However, courses on other subjects are being planned as well. The on-line activities will be scheduled for February 2nd to April 24th, 1998.

In this course as before, the Internet will be used for discussions among students (student Listserv), faculty (faculty Listserv), and experts: on campus, across the nation, and around the world. However, this course will make much more extensive use of the World Wide Web than the last offering.

Process Related Goals of the Environmental and Industrial Chemistry Course.

1. to provide an electronic forum which permits students easy, significant interaction with professionals (scientists, governmental officials, and potential employers),

2. to provide a context in which students will interact locally and at a distance to do brain-storming, data-gathering and problem-solving in order to deal with the modern use of chemical materials.

3. to provide an opportunity for students to research, develop, and synthesize complex ideas, and to build interrelationships between concepts and issues though intelligent technical discourse.

4. to provide the incentive for investigation of the physical and chemical properties of a specific commercial chemical product.

5. to provide guidance for students in accessing and interpreting electronic and printed documents describing chemistry of industry and the environment written by corporate, governmental, and/or academic authors.

Responsibilities of Participants

Students will participate in collaborative learning assignments where they can practice division of labor, teamwork, and individual responsibility. The electronic medium will be used by the students to seek insight into concepts they have difficulty with as well as to respond to difficult concepts posed by colleagues (their peers).

The instructors will interact with the students at their own sites, guiding library work, prompting questions, etc., while the students will write to each other as colleagues. Students will be encouraged to interact with each other and perform library investigation before they question the authors of the works. Student collaborative groups will be facilitated to pose higher order questions to the experts.

While some schools may wish to have their own independent assignment schedule, faculty participants will be encouraged to collaborate. We anticipate that an essential core of faculty will respond to the documents and each other in order to formulate critical thinking questions, classroom activities, and writing assignments to be made available for adoption by any or all of the other participants. Faculty/expert facilitators will select and review Industry Sectors, and nominate them for study, from the USEPA Industry Sector Notebook Reports (described below).

It is the responsibility of each participating institution to register students and to provide college credit for the course. The role of the OLCC organizing committee and the CCCE is limited to assistance in organizing and administering electronic aspects of the course. No credit will be given and no fees will be assessed by the American Chemical Society. It is suggested that 3 semester hours of student credit would be appropriate in most cases for full participation in this project.

It will be the responsibility of each local faculty member to assign grades to the individual, local students. In addition to the student Listserv there will be a faculty Listserv to allow free communication among the various faculty members involved, as well as between faculty and authors of papers. It is intended that web conferencing software will also be used to supplement the Listserves.

Content specific Goals of the Environmental and Industrial Chemistry Course.

1. to develop greater insight into the application of chemical science to environmental concerns.

2. to explore a subset of 50 industrial chemicals in production in 18 industrial sectors and perform life cycle analysis of their benefits to society and their impact on the environment.

For example, How is the chemical obtained? What is it used for? How much energy is used to make it? Is it easily disposed of? Why do we need so much of it? How do we get more of it? And, what opportunities for pollution and pollution prevention exist in the production, use, and disposal of these chemicals?

A theme of "chemistry behind pollution prevention" has been selected. The core documents have been compiled by the United States Environmental Protection Agency, Research and Development Headquarters, for the Office of Enforcement and Compliance.

A separate notebook has been developed by the EPA Office of Compliance covering 18 selected major industrial groups focusing on key indicators that holistically present air, water, and land pollutant release data. These notebooks have been thoroughly reviewed by experts both inside and outside the EPA. The notebooks range from 84 to 164 pages and include bibliographic references and a description of research methodology.

Each sector-specific notebook brings you comprehensive, well-researched details gathered for the first time in a single source and includes:

- A comprehensive environmental profile
- Industrial process information
- Pollution prevention techniques
- Pollutant release data
- Regulatory requirements
- Compliance/enforcement history
- Innovative programs
- Contact names

Industrial sector notebooks are available for the following sectors:

- Dry Cleaning Industry
- Electronics and Computer Industry
- Wood Furniture and Fixtures Industry
- Inorganic Chemical Industry
- Iron and Steel Industry
- Lumber and Wood Products Industry
- Fabricated Metal Products Industry
- Federal Facilities (PDF)
- Metal Mining Industry
- Motor Vehicle Assembly Industry
- Nonferrous Metals Industry
- Non-Fuel, Non-Metal Mining Industry
- Organic Chemical Industry
- Petroleum Refining Industry
- Printing Industry
- Pulp and Paper Industry
- Rubber and Plastic Industry
- Stone, Clay, Glass and Concrete Industry
- Transportation Equipment Cleaning Industry

For further information about an on-line course like this, see the WebPages for OLCC-I at:

http://www.py.iup.edu/college/chemistry/chem-course/webpage.html

and additional information and evaluations of OLCC-I at:

http://www.clarkson.edu/~rosen2/olcc.html

For more information contact one of the organizing committee members.

The Organizing Committee for OLCC-II

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Those interested in participating during the spring '98 semester should complete and submit the pre-registration/interest form at:
http://www.py.iup.edu/college/chemistry/chem-course/olcc2.htm

by December 5, 1997. All registered schools will be contacted and asked to reconfirm their participation between December 5, 1997 and January 16, 1998. Late registrations will be accepted, but registration by December 5, 1997 is preferred. A list of participating students will be due by January 31, 1998.

EVALUATION OF CHEMCONF '97 BY CONFERENCE PARTICIPANTS

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An Information and Evaluation Form was distributed to all registrants of the 1997 summer on-line Conference entitled "General Papers in Chemistry and Chemical Education". (The papers and discussion are available on the Conference Web Site (http://www.wam.umd.edu/~toh/ChemConf97.html)). 63 forms were filled out and returned. This represents eight to nine percent of the 700 to 800 registrants. This article contains a summary of the responses.

STATISTICS

To obtain a better understanding of the degree of participation a number of questions were asked.

Question 6: How many of the 11 papers did you read?
Average = 7.5 SD Average = 0.42
SD Average is the standard deviation of the mean
31 % of respondents read all eleven papers
1.6 % (one person) read none of the papers!
3.1 % read one paper

Question 7A: How many papers did you look at?
Average = 9.2 SD Average = 0.33
57 % looked at all eleven papers
1.6 % (one person) looked at one paper

Question 7B: What percentage of the papers you looked at did you read?
Average = 79 SD Average = 3.2
45 % read 100 %

Question 8: Total Time Spent Reading Papers (in hours)
Average = 5.6 SD Average = 0.53
3.4 % spent 20 hours (the maximum time spent)
5.1 % spent 1 hour (the minimum time spent)

Question 9: Average number of times participant accessed the discussion each day
Average = 2.3 SD Average = 0.24
1.7 % accessed the discussion 10 times/day
16.9 % accessed the discussion 2 times/day
3.4 % accessed the discussion 0.5 times/day

Question 10A: Total amount of time devoted to the discussion (in hours)
Average = 13 SD Average = 1.3
1.9 % devoted 50 hours (the maximum time)
3.7 % devoted 0.5 hours (the minimum time)

Question 10B: What percentage of the discussion did you read for the papers which you looked at?
Average = 80 SD Average = 2.9
30.5 % read 100 %
3.4 % read 20 % (the minimum)