Trove of Chemistry, General Chemistry Glossary, Analytical Chemistry Basics, Chemistry Tutor Page, Chem101, Hyperchemistry on the Web, General Organic and Biochemistry, BioChemNet, Organic Chemistry and CHEMystery
Some specific links to chemistry:
Frank Potter's Science Gems- Physical Science I - link to Physical Science Part III
Eric's Treasure Trove of Chemistry
General Chemistry Glossary
Analytical Chemistry Basics
Chemistry Tutor Page
Chem101
Hyperchemistry on the Web
General Organic and Biochemistry
BioChemNet
Organic Chemistry
CHEMystery

SOCIAL STUDIES (16 sites)
Maps, travel and information about countries and regions of the U. S.

ENGLISH (47 sites)
Grammar, punctuation, style, vocabulary and literature

HISTORY (44 sites)
U.S. and World History

FOREIGN LANGUAGES (15 sites)
Dictionaries, travel and language learning sites

MUSIC AND ART (14 sites)
Music education and sound - art history and pictures

PLAYTIME (9 sites)
The Looney Bin shows you how to take good notes in class and study for exams.

Many of the over 380 links provide additional links to other sites. By using this site you can eliminate the need to establish bookmarks or easily build a personal library of bookmarks.

ON-LINE CONFERENCE
January 16 to May 1, 1998

Donald Rosenthal
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The Division of Chemical Education is sponsoring this Conference. The abstracts and papers will be available on the World Wide Web (http://www.wam.umd.edu/~toh/ChemConf98.html).

Discussion will occur on the CHEMCONF Listserv. To register send the message:
SUBSCRIBE CHEMCONF JANE DOE
(where JANE DOE is your name)
To: LISTSERV@UMDD.UMD.EDU

One week will be devoted to the discussion of each paper. Short questions will be sent on Friday and discussion will occur from Monday through Thursday. The discussion schedule, titles and authors of the twelve papers are listed below.

The Conference is being organized by the Division's Committee on Computers in Chemical Education. Thomas O'Haver (University of Maryland, College Park MD - to2@umail.umd.edu) and Donald Rosenthal (Clarkson University, Potsdam NY 13699, rosen1@clvm.clarkson.edu) are co-chairs.

1. January 16 to 22, 1998
FROM PRE-SCHOOL TO DEATH:
Life-Long Learning and the ACS Education Division
Sylvia Ware, Education Division, American Chemical Society, Washington DC 20036
saw97@wash24.acs.org

The ACS Education Division programs, which address all levels of education from the youngest to the oldest of learners, cover four types of activities: materials development; professional development; student groups; and science education policy. The Division attempts to provide services and products which are not otherwise readily available; and is also involved in the dissemination of information about other innovations in chemical education. Our curriculum projects all emphasize the importance of context to facilitate student learning. We use the students' "need-to-know" the science as the framework for the instructional design. Our professional development programs recognize the importance of life-long learning for all involved in chemistry, whether as teachers or researchers. Our student programs are targeted to gifted high school students, economically disadvantaged high school students, and college

students majoring in the chemical sciences.

2. January 23 to 29, 1998
DO I REALLY NEED TO KNOW THIS STUFF:
A Dialogue Between Student and Teacher
Julie A. Grundman and Paul B. Kelter, Department of Chemistry, University of Nebraska, Lincoln NE 68588-0304
pkelter@unlinfo.unl.edu

How much math is really necessary in a freshman general chemistry class? In this paper, we explore the extent to which math should be included in general chemistry, with the student (Julie) supporting a math-rich chemistry class while her teacher (Paul) argues against it. The effects of including more rigorous mathematical topics in the curriculum are examined by looking at their impact on the students' understanding of chemical concepts and their preparedness for future college courses.

3. January 30 to February 5, 1998
SILICON COGNITION AND TEACHING
David W. Brooks, University of Nebraska, Lincoln NE 68588-0355
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Two different major changes affect teaching at the outset of the 21st century. Students work less and less efficiently as we approach 2100 AD. Why? What can we do about it? This problem seems best approached through the area currently called self-regulation.

This author is concerned with those students who are good self-regulators and who work hard and efficiently. What should they be learning? The end of the 20th century has seen the emergence of numerous tools that perform skills previously in the purview of experts. The hand-held calculator heralded the emergence of silicon technology as a main factor for humankind — especially for those of us who were too slow to see the potential of computers even as we used them in the late fifties and sixties.

This paper will deal with two issues. First, it will focus on the apparent impact of silicon technology on student performance. Do kids brought up on hand-held calculators really know arithmetic today? Next, it will offer both instructional and curricular strategies for teaching which anticipate increasing dependence of carbonoid humans upon silicon cognition.

4. February 6 to 12, 1998
COLLABORATION: WHY PARTICIPATE IN AN UNNATURAL ACT?
John Clevenger, Truckee Meadows Community College, Reno NV 89512
clevenge@scs.unr.edu

Collaborative activities between faculty at two- and four-year institutions have been found to be an excellent method to facilitate articulation and transfer. However, collaboration has been defined as "An unnatural act, performed by non-consenting adults". Although this may be true, the potential rewards for our students and ourselves are great. Consideration of why we should participate in these "unnatural acts" and how to encourage them must address questions such as: "What if they don't want to?" and "What's in it for me?" Positive responses to the needs and reward structure for faculty in each institution is necessary. Mechanisms which establish collaborative research and scholarly activities between faculty primarily involved in research and those primarily involved in teaching are often missing in these discussions. This presentation will provide suggestions and examples for this type of collaboration. One of these is the Nevada Teaching Research - Enhancement Collaboration (TREC) Program.

5. February 13 to 19, 1998
FIRST, DO NO HARM . . .
The (Moral) Obligation of the Faculty
Brian P. Coppola, The University of Michigan, Ann Arbor MI 48109-1055
bcoppola@umich.edu

Higher education continues to evolve. Introductory courses enroll literally thousands of students, yet few of those students are thinking about taking on the subject professionally. Faculty have assumed greater roles as administrators and fund-raisers for themselves and the institution. Administrators shepherd multi-million (and billion) dollar organizations. This is a far cry from past centuries, where colleges were generally controlled by churches and primarily concerned with the development of moral character and citizenship. Intellectual communities have grown, and this growth has resulted in separation, isolation, and the inevitable

competition over resources. What about the state of education in all of this?

Like most large research universities, the undergraduate teaching program at Michigan has been neglected, undermined, exploited, or suffering, depending on the critic's perspective. Over the last decade, a number of significant undergraduate initiatives have improved the quality of the educational experience for Michigan's students. Many of the innovations have been drawn from the foundations of traditional liberal arts values and adapted to the strengths of the large University setting. In this article, I will outline some of the broadest philosophical underpinnings that have both emerged from and impacted the way in which we might think about the privilege that accompanies our Doctorates in the context of our positions in the professoriate.

6. February 20 to 26, 1998
STUDENTS' RESPONSE TO THE USE OF COMPUTER-MEDIATED COMMUNICA TION (CMC) FOR TEACHING CHEMISTRY
Rosamaria Fong, British Columbia Institute of Technology, Burnaby, British Columbia, CANADA
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This paper describes a Web-based study guide for teaching a post-secondary pre-entry Chemistry course. The purpose of the Web-based study guide is:
(1) to provide students 24-hour access to the course,
(2) to improve students' problem-solving skills in chemistry,
(3) to give students instant self-evaluation with interactive problem assignments, and
(4) to identify specific problem areas of chemistry that the students face.

The use of Web-based technology in teaching improves students' self-learning initiatives. Architectural framework of the Web-based study guide consists of using HTML frames to provide ease of navigation. Java-scripting is used to enhance interactivity during the students' studying process. Students' evaluation and response to using the Web-based study guide will also be presented.

7. February 27 to March 5, 1998
TEACHING FORENSIC ANALYTICAL CHEMIS TRY
Scott R. Goode (1), Stephen L. Morgan (1), William E. Brewer (2), and Stephen J. Lambert (3)
(1) University of South Carolina, Columbia SC 29208, Goode@sc.edu
(2) South Carolina Law Enforcement Division, Toxicology Department, Columbia SC 29210
(3) South Carolina Law Enforcement Division, Seroology Department, Columbia SC 29210

During the last school year, we taught Forensic Analytical Chemistry as an elective for juniors and seniors who successfully completed two semesters of General Chemistry, two semesters of Organic Chemistry, and one semester of Quantitative Analysis. Approximately 40 students enrolled for this course, taught by two scientists from the South Carolina Law Enforcement Division labs and two faculty at the University of South Carolina.

We will present the details of the course and the results of student evaluations and interviews. The syllabus follows:

I. Introduction to Forensic Science
II. Evidence Control
  A. Evidence Processing
  B. Chain-of-Custody
III. Drug Identification
  A. Spot Tests
  B. Confirmatory Methods
    1. Gas chromatography/mass spectrometry (GC/MS)
    2. Fourier transform infrared spectroscopy (FT-IR)
    3. High performance liquid chromatography (HPLC)
IV. Toxicology - DUI Issues
  A. Breath Testing
    1. UV-Visible Spectrophotometry
    2. Infrared Spectroscopy (IR)
    3. Electrochemical (screening)
  B. Blood Alcohol Analysis
    1. Headspace GC (HSGC)
    2. QA/QC
  C. Urine/Blood Drug Testing
    1. Immunoassays
    2. GC-MS
    3. HPLC
V. Toxicology-Death Investigation
  A. Cause and Manner (Forensic Pathology-Autopsy)
    1. Suicides
    2. Accidental
    3. Homicides
    4. Natural
  B. Volatile Analysis

1. Blood Alcohol Analysis (.1 ISGC)
2. Inhalant Abuse

C. Drug Screening
1. Fluorescence Polarization Immunoassays
2. Radioimmunoassays
3. EMIT
4. Toxilab (TLC)

D. Drug extraction methods
1. Acid/neutral drugs
2. Basic drugs
3. Solid phase vs. liquid

E. Drug confirmation/quantitation
1. GC-MS
2. HPLC
3. HPLC-MS

F. Interpretation of Results-Courtroom Testimony

VI. Trace Evidence

A. Hair Analysis
1. Microscopy

B. Fiber Analysis
1. Microscopy
2. Polarized Light Microscopy
3. Tensile Strength Analysis
4. FT-IR

C. Paint Analysis
1. Microscopy
2. FT-IR
3. Scanning Electron Microscopy (SEM)

D. Gunshot Residue
1. SEM
2. Atomic Absorption Spectrometry (AA)
3. ICP-MS
4. Chemical Tests (Distance Evaluation)

VII. Arson

A. Sample Handling

B. Analysis
1. GC
2. GC-MS

VIII. DNA/Serology

A. Crime Scene Processing
1. Types of Biological Evidence
2. Techniques of Evidence Collection/ Interpretation of Crime Scene
3. Potential Problems
a) Environmental Contamination
b) Mixed Samples

B. Forensic Serology - Theory and Technique
1. Species/Tissue Identification
2. Blood Grouping
3. Polymorphic Protein Markers
4. Semen Identification and Characterization

C. Forensic DNA Analysis-Theory and Technique
1. DNA Polymorphisms
2. Restriction Fragment Length Polymorphism Analysis of VNTR Loci
a) Multi-locus Analysis
b) Single-locus Analysis
c) Methods of Detection
3. Polymerase Chain Reaction Techniques
a) DQ-alpha and Polymarker
b) Amplified Fragment Length Polymorphisms (AMPFlps) and Short Tandem Repeats (STRS)
c) Mitochondrial DNA D-loop Sequencing
d) Mini-variable Repeat Sequencing Analysis
e) Future techniques: Mass Spectrometry, Mitochondrial Reverse Dot-blot Analysis, Digital Array

IX. Other Forensic Disciplines

A.Latent Fingerprints

B. Firearms

C. Polygraph

D. Forensic Art

E. Questioned Documents

8. March 6 to 12, 1998

I.O.N.S.- INNOVATIVE OPTIONS AND NEW SOLUTIONS: A CD-Rom Based Chemical Technology Curriculum Supplement

Paul B. Kelter (1), John Kenkel (2), Julie A. Grundman (1), Darren Jack (1) and Bradette Hammerling (1)
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Innovative Options and New Solutions is a student- based consulting company created for two-year chemical technology students. This hypothetical company is the basis of an NSF-supported curriculum development project that has Problem-based Learning as its centerpiece. This paper describes a CD-ROM that requires chemical technology students to solve concerns related to industry in the context of the general chemistry curriculum and the Voluntary Industry Standards.

9. March 13 to 19, 1998

PULLING OUT ALL THE STOPS: Applying Technology to Every Facet of Chemical Education

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A curriculum reform effort known as the 'MPC Project' has been underway at UNCW for five

years. The chemistry component of the project began with the development of hypermedia enhanced lectures and laboratories featuring on-line data acquisition and computer assisted data anlysis and reporting. More recently, efforts to incorporate the WWW and interactive software into the curriculum have also been undertaken. Research findings both here at UNCW and from other campuses have guided tour efforts, and have compelled us to conclude that a different model for chemical instruction should be implemented and tested. This paper will detail our work to date, and provide an overview of the new model for instruction in introductory chemistry that we hope to implement at UNCW in Fall, 1998.

10. March 20 to 26, 1998
ON-LINE EXERCISES AND PUBLIC DOMAIN DATABASES IN CHEMISTRY
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1. A wide variety of WWW-based materials have been developed and installed on our site. These range from lab data analysis through problem sets. The applications are all interactive and have enabled us to assign students individualized problem sets and to track their performance in some detail. These materials have been in use at our site during the past academic year in the courses "Introduction to College Chemistry" and "Quantitative Analysis". The approach appears to be practical and inexpensive in our investment of time. There is promise that this approach will lead to a genuinely practical method for tracking our students' progress in a mode of independent study. It further permits us to have an ongoing program of review and reinforcement not tied to a particular course.

2. Many databases contain chemical information which is in the public domain. Although there is growing media coverage of the confusion over the fair use doctrine and copyright as it will be applied to information on the Internet, little treatment is given to the distribution of information which is not copyrighted. This section of our presentation will discuss the breadth of this public domain information and methods of making it available to our students and to all Internet users.

11. April 10 to 16, 1998
HIGH SCHOOL STUDENT USE OF WORLD-WIDE-WEB-BASED HYPERMEDIA
M. Gwen Sibert, Roanoke Valley Governor's School for Science and Technology, Roanoke VA 24015.
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The course material (syllabus, competencies, class notes, laboratory experiments, etc.) for the Governor's School Chemistry have been formatted for use with web browsers, such as Netscape, and placed on the Virginia Tech chemistry web server as part of the Chemistry Hypermedia Project. Students in two RVGS Chemistry classes routinely accessed these materials during the 1995-96 and 1996-97 school years for pre-lab information and class notes, both of which have links to other material on the Tech web server. Specific examples of these applications, how they were part of the lesson plans, and a survey of student responses to use of the WWW for part of their instruction are covered in the paper. Samples of tutorials which have interactive practice sessions written in Javascript and were developed during the second year of the project are also included. This paper addresses the issue of the time involved in formatting the material for the web versus the effectiveness of using this medium as a way of presenting chemistry to high school students. The RVGS chemistry course material may be viewed on-line at http://www.chem.vt.edu/RVGS/RVGS-home.html.

12. April 17 to 23, 1998
USING THE WORLD WIDE WEB TO PROVIDE TEACHING ON DEMAND IN THE PHYSICAL CHEMISTRY LABORATORY
Gabriela C. Weaver, University of Colorado, Denver CO 80217-3364
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A WWW site has been developed which provides students with prelab information such as an overview of the theory of the experiment, the procedures, and prelab questions. The site makes use of MPEG movies to show the proce dures the students will use in the lab and also makes use of JAVA script for the problems gien to students. The site is used in the recitation section of the Physical Chemistry laboratory in order to allow students carrying out different experiments to have concurrent access to the information they need for that week's lab.