What Makes an Online Course Effective?

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Mt. San Antonio College

September 1, 1999

Sabbatical Leave Report
Sabbatical Leave – Fall 1998

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Sabbatical Leave Proposal:

What Makes an On-line Course Effective?

Purpose for the Project

Increased college enrollments and student demand for more classes have called for increasingly innovative ways to reach out to students needing coursework. Long work schedules and travel times to school have made on-campus class attendance more difficult. In addition, classroom usage on weekdays (Monday-Thursday) is currently at or near maximum levels, leaving little opportunity to increase weekday on-campus offerings. Faculty and students are looking to on-line solutions to address these needs. The number of on-line courses offered through the distance learning program at Mt. San Antonio College continues to increase to address these needs. On-line courses feature flexible scheduling (Friday and/or weekends), remote learning activities, and an increased emphasis on self-motivated independent study. A systematic strategy is needed for developing new on-line courses in order to safeguard our commitment to quality learning. Currently, there are few guidelines available to faculty to help with effective on-line course design. There is a growing body of knowledge at Mt. SAC regarding on-line issues, as more instructors experiment with Internet-related activities. However, we have no one compiling this knowledge into a common resource for all of us to share. My goal is to develop a comprehensive resource guide that will provide a methodology for developing on-line courses, and help to define and clarify the effectiveness of the on-line components. I wish to apply that knowledge in

the initial development of an on-line CHEM 2A (Introductory Chemistry) course.

Background

On-line courses, or courses with an on-line component, are being developed every day. *On-line* is generally defined as an electronic communication via the Internet. On-line courses can be when all of the information interaction between teacher and students is transmitted electronically from a distance, to when only one class assignment requires on-line discussion(s) or research. On-line courses take advantage of Internet capabilities and innovative scheduling options in offering either an entire course or a portion of a course from a remote location. On-line learning uniquely utilizes both technological and classroom facilities/resources while allowing faculty and students to continue to expand learning opportunities. On-line learning varies tremendously from course to course, teacher to teacher, and discipline to discipline. On-line courses take many forms, as is evident by searching the Web for current course offerings (for example, Mt. SAC's on-line "Virtual Classroom": http://vclass.mtsac.edu/vc/). Traditional on-campus course components generally include lectures, discussions, handouts, homework, reports, quizzes, and exams. Many of the components of an on-line class can fall short of accomplishing the same level of interaction and learning as an on-campus class. For example, in order to "give a quiz" in an on-line mode, many issues must be considered and resolved. Issues such as time limits,

cheating, using other resources, creating original work need to be addressed. In a normal classroom situation, with a watchful teacher present, cheating is difficult for a student to do. But, in an on-line quiz situation, who will monitor the resources of each student as the quiz is being completed? The on-line quiz could be conducted as a "take-home" quiz, where it is expected that the student will use course resources to complete the quiz. What is to prevent one student from e-mailing his/her completed quiz to another student, so that the second student can turn it in as "original work", or students working in groups on the answers and then turning the completed quizzes in? Another example, which could occur in a science or math course, involves problem solving in homework problems. Can a student in an on-line course receive appropriate instruction in working out numerical story problems? The detailed explanations of problem-solving, which occur in traditional lectures, may be completely omitted in on-line courses. Appropriate remote instruction of difficult lecture topics may require sophisticated audio and/or video components that simulate on-campus learning. Proper course design, with appropriate visual and/or audio aids, as well as security and assignment deadlines, can resolve many issues dealing with the various components of an on-line course, making it just as effective as the on-campus equivalent. Careful study of existing on-line components will lead us to the proper design of future on-line courses.

Science courses (chemistry included), in general, have the added traditional component of laboratory sessions, where specialized instruction in using labware, developing skills and techniques, and performing procedures is conducted. These lab sessions are difficult to provide in an on-line course situation. It is entirely possible to keep the laboratory portion of the course as an on-campus requirement, and offer the other components of the course in an on-line manner. There is very little that can substitute the hands-on, one-on-one faculty-student interaction which occurs in traditional on-campus lab situations. If a portion of the lab component is to be offered on-line in science courses, it may largely be preparatory in nature, and may not replace the actual experiment itself. An on-line component regarding lab information may also require video and/or audio on-line components, as well as text and graphics components, to be effective for student learning.

Research is needed to see what types of on-line components are currently being used and to evaluate the effectiveness of these on-line components. Careful study of existing on-line components in chemistry courses, as well as other courses, will give Mt. SAC faculty better ideas of how to develop and implement our on-line courses of the future. On-line courses *can* be made to be personal, effective, and responsive to the needs of our students. This one-semester sabbatical proposal requests support of my project, "What Makes an On-line Course Effective?", to study current on-line course offerings throughout the nation, evaluate the on-line components of these courses with

the help of Mt. SAC faculty across the curriculum, develop effective on-line parameters for use by all Mt. SAC faculty and staff in implementing future on-line courses, explore the usage of on-line video and audio components, and initiate the development of an on-line CHEM 2A course (Introductory Chemistry) to be offered through Mt. SAC's Virtual Classroom.

Personal Goals

It has long been a goal of mine to combine my two teaching interests, chemistry and technology, in a more integrated and satisfying way. Over my years at Mt. SAC, I have participated in many Staff Development Technology Workshops and Courses (WordPerfect, Windows, Toolbook, PowerPoint, Multimedia Presentations, Multimedia Projects, and now Virtual Classroom) and Mt. SAC courses COMP 14 (Introduction to the Internet) and Comp 16 (Microsoft Office - Word, Excel, and Access). I have incorporated the knowledge that I have learned from *every one of these classes* into my teaching and professional activities. I have used PowerPoint for class lectures and professional presentations. I have used Toolbook to author three different learning programs for use in Introductory and General Chemistry - visual animations of covalent bonding and three- dimensional molecular geometry, and a periodic table tool for accessing physical properties of the elements as well as laserdisc images of the elements in their natural states, and in reaction with air, water, acid and base. I have designed the Chemistry Department web page, my own web page, and have helped to design the Mt. SAC

Chemistry Club web page. These new technologies have profoundly changed the way I teach, and have given me much confidence to introduce new technologies in our chemistry curricula. Ever since the Internet has gained so much popularity, the possibility of offering an on-line chemistry course has grown. I have recently set up a Mt. SAC On-line Learning Discussion Group to encourage Mt. SAC faculty and staff to exchange ideas and philosophies about on-line courses and components.

In the past, I was skeptical of on-line courses, primarily because I have not been impressed with the "Distance Education" courses I have seen. "Distance Education" has been given a bad rap because the courses developed some years ago did not have all of the technology that is available today. They were, and still are, largely video-taped segments of classroom situations offered through a television network, not allowing for much interaction between teachers and remote students. Any learning that is done from a remote location can be rightly called distance learning, and now the opportunities and technologies are expanding to include on-line courses. The Internet and sophisticated software that utilizes multimedia (audio and video, as well as text and graphics) now offer exciting possibilities for those individuals willing to put forth the effort to use these tools to design effective on-line courses.

This year I have indicated my interests in developing an on-line chemistry course to the Mt. SAC Distance Learning Committee (I am a non-attending member of that committee this semester, attending next semester), and have received enthusiastic endorsement from the Chair, Kerry Stern. The Chemistry Department is also supportive of this research, and is anxiously looking forward to the results of this project. The Dean of Natural Sciences, Larry Redinger, is also aware of my goal, and has indicated his support for research in this area, as the results would assist all faculty in the Division to develop and implement on-line science courses in the future. This project is also in alignment with the 1997-1998 College Goals and Objectives - Breakthrough GOAL B1: Objective #3 - "Increase student access through establishment of a weekend college, on-line, and alternate learning opportunities" and Objective #5 - "Provide faculty and staff with the training and support necessary to enable full usage of the planned connectivity to the mainframe and Internet in enriching and enhancing the curricula and thus the student's learning experiences."

On-line courses are the wave of the future, and our opportunities are now. On-line courses may serve only a minority of Mt. SAC students, but these courses will offer opportunities not currently available for certain capable and motivated students. Mt. SAC has recently implemented a courseware server (Mt. SAC Virtual Classroom - http://www.mtsac.edu/vclass) that has the capability of managing most of the components of many on-line courses at

one time. Two on-line courses are currently being offered to Mt. SAC students: Physical Anthropology (Ken Irvine) and Creative Writing-Poetry (Bruce Williams). These courses are very different in design and have incorporated many on-line components, though each course is not entirely an on-line course (some traditional on-campus components, such as exams, still exist in these courses). Mt. SAC is also a member of a community college consortium which will collaboratively develop and implement on-line Business courses (Margie Chitwood) in the near future. More and more on-line courses will be developed and offered in the future, and I want Mt. SAC's courses to be of the highest quality possible. We immediately need to begin evaluating and designing the best on-line courses and components. This project will initiate the formal process of identifying quality components for on-line courses and making this information available for all Mt.SAC faculty to use.

Project Activities and Timeline (One semester sabbatical leave, Fall 1998)

Activity #1: Create a database of current on-line courses and components by contacting faculty, colleges, universities, organizations across the nation, and searching appropriate web sites. This information can be stored in a database program which can be cataloged and sorted by component or discipline.

Activity #2: Enlist 5-15 Mt. SAC faculty and staff across the curriculum to assist me in evaluating on-line courses and components in the database.

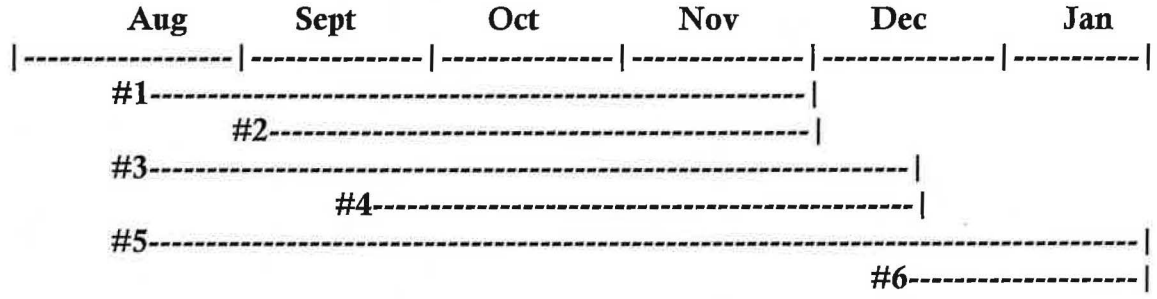
Activity #3: Record evaluations by Mt. SAC faculty and staff in an On-line Resource Guide and/or in the database.

Activity #4: Explore the possibilities of including audio and video components in an on-line chemistry course.

Activity #5: Begin development of an on-line CHEM 2A course using effective on-line components.

Activity #6: Write and submit a comprehensive sabbatical report, detailing the progress and results of the project. Two complete copies will be submitted to the Salary and Leaves Committee by the first working day of February 1999.

Project Timeline, Academic Year 1998-1999



Anticipated Outcomes and Benefits

Measurable Outcomes:

- A database of current on-line courses and components, in various disciplines
- A resource guide of effective on-line course components, in various disciplines
- Development of video and audio on-line components
- Initial development of an on-line CHEM 2A course
- Complete, detailed sabbatical report.

Merit and Value to the College:

This project is in alignment with the 1997-1998 Breakthrough Goals of the College. It will enable Mt. SAC faculty to enhance their reputation of providing quality course offerings while utilizing the best of their technological capabilities. A variety of effective on-line course components will have been explored and evaluated by qualified Mt. SAC faculty and staff, then disseminated across the curriculum. Faculty will have more ideas how to improve the effectiveness of on-line learning, which in turn, will create many more opportunities to offer on-line courses as suitable alternatives to impacted scheduling and high demand for courses. Exploring and reporting the capabilities of audio and video components for use as alternatives for intricate on-line lecture or laboratory components will benefit the entire Division of Natural Sciences, since nearly all of its courses include a laboratory component. The possibilities for on-line course development across the curriculum will expand with increased faculty knowledge of effective on-line course components.

Merit and Value to the Chemistry Department:

The Chemistry Department's courses have been impacted for years, especially the CHEM 2A courses. Enrollments have remained steady over the years. Lately, more sections of CHEM 2A have been added, and the class sizes have returned to more manageable levels, benefiting the students. But we are rapidly approaching the point where we can no longer increase the number of sections (including CHEM 1A, CHEM 1B, CHEM 2B, CHEM 12A, and CHEM 12B in addition to CHEM 2A) because we have simply exhausted our rooms and/or facilities. The CHEM 2A

sections comprise more than half of our total student enrollment each semester and all of our enrollment in summer sessions. Many of these students could enroll in on-line courses to alleviate their travel between work/home and campus during weekdays. This would relieve some of the scheduling constraints that currently exist in the Chemistry Department, and could use the possible option of Friday or weekend laboratory sessions and/or exams. On-line courses would allow the Chemistry Department to continue to expand their offerings, with a minimum demand during the prime weekday usage.

Merit and Value to Terri Beam:

I will continue to grow in my technological as well as teaching skills. I will become a campus resource for all Mt. SAC faculty and staff for future on-line course development. I would be happy to share my gained knowledge with anyone who is interested in developing quality on-line courses. I would truly enjoy helping others to develop effective on-line courses in their own disciplines, because I can learn and grow from those situations also. Information learned from the exploration of using video and/or audio on-line components could easily be presented at an educational conference, as it is relatively innovative. When the development of an on-line CHEM 2A is completed, I would be happy to teach it, and I would more than willing to show my colleagues in Chemistry how to facilitate the course or adapt any of the Department's other chemistry courses to that format.

Sabbatical Proposal Revisions, 1/12/98

Committee Recommendations (taken from Prelim. Eval., numbered here):

1) Explore putting laboratory courses online.

2) Investigate what other schools are doing online.

3) The committee questions the relevancy of creating a database because it would be out-of date by the time it was completed.

4) The committee suggests you explore ways to offer the lab component for this course as well.

5) Interview schools throughout the U. S. or Western United States that offer effective online chemistry/science courses.

6) Give more specifics on who you will contact and when.

7) Month by month timeline needs to be more specific.

8) The committee considers a developed online Chemistry 2A course a reasonable result.

Revisions/Additions to Original Proposal

Recommendations #1, 2, 4, and 5 are a part of **Activity #1** as originally proposed. In order to create a wealth of information on online courses and components, (to put into an electronic database), extensive searching (both online and telephone) of the schools, institutions, and organizations which offer these courses will need to be done. On campus, there currently exists a limited amount of information on online components. Mt. SAC faculty and staff who have been interested or involved in learning processes and/or information technology in most recent years already have been exposed to

various educators or administrators around the country who are planning to or have implemented online courses at their respective institutions. They, as well as I, have attended conferences and have spoken with knowledgeable persons about the issues surrounding online courses/components. These contacts that I and other Mt. SAC faculty/staff have made, will be the first contacts that I will make in developing the database of information. These contacts are people who have already demonstrated their knowledge, commitment, and dedication to using technology in education over the years.

The following list will give an idea of who I plan to contact first: Florida Community College at Jacksonville (annually hosts the International Conference on College Teaching and Learning and is the Center for the Advancement of Teaching and Learning), University of South Carolina (location of 1998 Teaching and Learning through the Internet Conference), Technology in Education of the California Community College Foundation (Sacramento), Center for Instructional & Research Computing at the University of Florida (Mark Hale, Director), Institute for Academic Technology at the University of North Carolina - Chapel Hill (Kathryn Conway), Instructional Technology Department at the University of Georgia (Thomas Reeves), Regis University (Tom Kennedy), The College Board, Spring Arbor College (Michigan), CSU - Bakersfield, Learning Solutions Research Lab at Arizona State University (Paul Privateer), League for Innovation in the Community College, the Society for College and University

Planning (authors of Transforming Higher Education: A Vision for Learning in the 21st Century, Ann Arbor, Michigan), Penn State University (Eleanor Bicanich - author of "Internet-Based Testing: A Vision or a Reality?", the Chemical Education Committee of the American Chemical Society, the National Science Foundation (Susan Hixson), the Committee on Chemistry in the Two Year College (2YC3, Richard Jones at Sinclair Community College), and Mt. SAC faculty and staff. This research will be conducted throughout the entire sabbatical leave (Fall 1998) with the majority of it done in August, September, and October.

Questions to be asked of these contacts will be similar to the following: *Do you have any information on any current online courses at your institution? How were these courses developed? What stumbling blocks did you encounter during the development or implementation of these courses? How did you overcome these obstacles? Will you continue to place more courses online? What has been the response to these courses from your students/professors/administrators? Do you plan to make changes? ? Do your offer weekend college, or other alternatives to traditional learning with your online courses? Do you currently have audio or video segments in your online courses? Do any of your online courses include online laboratory components? How do you manage the lab component? Do you know of other institutions offering online courses? Is there someone else you are acquainted with that I could talk to who could give me more information on developing and implementing online courses, especially in Chemistry and/or the sciences?*

The database will compiled at the same time as the search for information. The database will contain 2 types of information: 1)current online courses (URLs), and 2) online course components (syllabi, course outlines, quizzes, exams, discussion groups, reference materials, homework or other assignments, and labs). The first type of information may be out-of-date as soon as the school term is over, as certain courses are not always offered each term. But the second type of information will not be out-of-date until all of the courses at Mt. SAC (!) have been converted to online courses, or the 2nd generation Internet takes over with even more and exciting ways to communicate. In other words, putting together in an electronic database the information on the online components alone will be very valuable as we set out to convert some of our traditional courses to online courses. Let me explain this a little more. If an instructor, in any discipline, wishes to convert a traditional course to an online course, and also wishes to keep intact as many of the same course components which have worked well in the classroom, there should be a process by which the instructor may preview a selection of electronically-stored course components. (Web pages and/or HTML source codes are easily downloaded, stored, and displayed). Components may vary significantly in design, security, and ease of use. The instructor could then choose which components will work the best in order to achieve effective online learning in his/her discipline. Right now, there is very little information available for an instructor to use in developing an

online course. The limited information that we do have on online courses is not available in one convenient and accessible location for anyone to view or use. Primarily a trained Web consultant, who works for the Distance Education contingent on campus, in coordination with the faculty member involved in the process, has designed the two current online courses at Mt. SAC. As more and more courses are being placed online, this time-intensive process of developing and implementing online courses will not be very productive. The electronic database of online course components (which can be modified per the instructor's desires), will work in a majority of Mt. SAC's courses and will make the design of new online courses much easier and simpler.

Recommendation #8 reflects on Activities #4 and #5 of the original proposal. The completion of the development of an online Chemistry 2A course would depend on some of the information gathered in Activity #1. If I find a number of schools that are currently offering Chemistry courses online, with an online lab component, it may not be too difficult to adapt their methodology for Mt. SAC. We are limited in some ways, by our campus infrastructure, from having all technological options open to us for online classes. During the implementation of one of our current online courses, we encountered difficulties in managing the discussion group component of the course. This course component will need to be managed in a different fashion, with less faculty control than was expected. Those types of issues

should be ironed out before a course goes online, or it will not be very effective. I could reasonably expect to have the non-laboratory portion of an online Chem 2A course completed at the end of the sabbatical leave, but the laboratory portion could turn out to be non-effective as an online component. I would not like to lower the standards that we have set in the Chemistry Department with our current Program by offering a substandard online laboratory component. The online lab component may just take additional development time in order to meet our current departmental standards.

Recommendation #8 also depends on the results of Activity #4. I have already proposed to begin exploration into incorporating audio and video segments into an online Chem 2A course in order for it to be effective and to continue to meet our existing departmental standards. Including significant audio/video segments into Web pages has not met with much enthusiasm from Web developers, because of the great amount of time spent in development, and the large file sizes to be transmitted over the Internet. Instructional Technology Center staff member Dwight Ayle has optimism about this aspect of this project, and I am thankful that he has encouraged me to seek this route. I teach Chemistry now with many visuals, and I would really like to see an online course contain many of the already successful components of the traditional course. This is relatively new work for Mt.SAC, and I am not sure what we will encounter. Given his trusted optimism, I am confident of at least partial success in this area.

"Completion" of an online Chemistry 2A course is dependent on several factors (beyond my control), so I am hesitant to include the "completion" in this proposal. Development of this new online course would also depend on the type of support I would receive from the Instructional Technology Center and Distance Education staff here at Mt. SAC. In the past, certain ITC and Distance Education staff members have spent significant time assisting faculty to develop online courses. If I knew that this type of support were to continue, I would feel more confident in including the "completion" of an online course in this proposal. But I do not determine their involvement in this project and their staff assignments. Given the time, I could develop much of this course on my own, because of my recent education in technology. But when difficulties arise, my limited knowledge may not be able to overcome them. Trained expertise will be needed.

More specifics for the timeline:

Activity #1 will continue throughout the entire semester, with the majority of the work being performed in August, September, and October. I will keep a log of all contacts, and all information gathered.

Activity #2 and **Activity #3** will coincide with Activity #1 results. The implementation of the Online Learning Discussion group here at Mt. SAC

will provide an excellent opportunity to share my new information, and collect input from other Mt. SAC faculty and staff.

Activity #4 will begin as soon I have completed the development of the textual portion of the online course. The textual portion will be the easiest for me to complete, as I have experience in this area. When the textual development is done, it will be more recognizable where the audio and video components should be included in the course. The audio and video components will be designed to augment the corresponding textual portion, in order to bring more clarity and understanding of certain concepts, procedures, or visual processes to the students.

Activity #5 is the development and implementation of the textual as well as audio/video components of the online course. This will continue throughout the semester, making a cohesive package that will be effective for the students, and that meets the Chemistry Department standards.

Activity #6 will commence near the end of the project, to be submitted by the deadline.

Statement of Purpose

This sabbatical leave project was designed to gather knowledge about online courses and their components (lecture, discussion, homework, reports, quizzes, exams, etc.), which could then be used by Mt. SAC faculty and staff to further the creation, development, implementation, and promotion of quality online courses for Mt. SAC students. The knowledge that was sought was information on the effectiveness of various online components currently being used in online courses, and how these online course components compared with on-campus course components. This project also explored the incorporation of video and audio components into an online course. Finally, this project stimulated the creation, development, approval, and offering of an online CHEM 2A (Introductory Chemistry) course through Mt. SAC's Virtual Classroom server.

This sabbatical leave proposed the following activities and timeline, with the following measurable outcomes:

Project Activities and Timeline

Activity #1: *Create a database of current on-line courses and components by contacting faculty, colleges, universities, organizations, and searching appropriate web sites. This information may be stored in a database program which can be cataloged and sorted by component or discipline.*

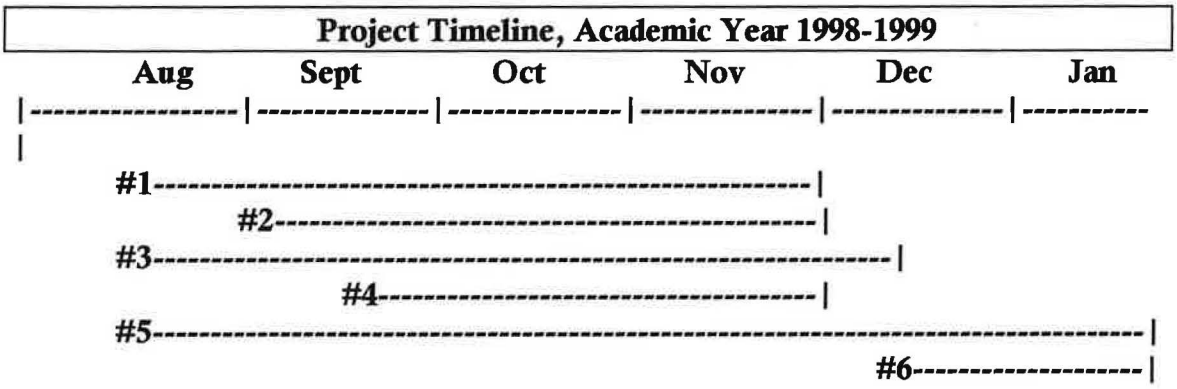
Activity #2: *Enlist 10 to 20 Mt. SAC faculty and staff across the curriculum to assist me in evaluating on-line courses and components in the database.*

Activity #3: *Record evaluations by Mt. SAC faculty and staff in an On-line Resource Guide and/or in the database.*

Activity #4: *Explore the possibilities of including audio and video components in an on-line chemistry course.*

Activity #5: *Begin development of an on-line CHEM 2A course using effective on-line components.*

Activity #6: *Write and submit a comprehensive sabbatical report, detailing the progress and results of the project. Two complete copies will be submitted to the Salary and Leaves Committee by the first working day of February 1999.*



Anticipated Outcomes and Benefits

Measurable Outcomes:

- A database of current on-line courses and components, in various disciplines
- A resource guide of effective on-line course components, in various disciplines
- Development of video and audio on-line components
- Initial development of an on-line CHEM 2A course
- Complete, detailed sabbatical report.

In this report, I will detail the work on each activity, and then I will discuss issues and concerns which were raised regarding online courses during this period of sabbatical leave.

This report also contains six appendices which contain survey information about online course components and effectiveness, research from the Internet and faculty interviews, and a copy of my sabbatical leave application.

Discussion of Sabbatical Leave Activities

Activity #1 (*Create a database of current on-line courses and components by contacting faculty, colleges, universities, organizations, and searching appropriate web sites. This information may be stored in a database program which can be cataloged and sorted by component or discipline.*) entailed the creation of a database of online courses and components from around the nation. Through discussion with professors from Mt. SAC and other schools, I have gained much knowledge about the number and types of online courses offered in many disciplines. I focussed much of research on chemistry and science courses, as that is my field of interest. But, I was also drawn to several other disciplines when their courses offered interesting and unique solutions to various course components. As the list of online courses is growing by leaps and bounds everyday, I felt it was more appropriate to provide a list of a number of links currently on the Web, that connect to excellent resource web pages with links to these online courses. This list of online course URLs (***U**niform **R**esource **L**ocators*) can be found in Appendix I at the end of this report. These links either represent web pages that have numerous links on them or directly link to the online course or institution, and/or course components. The list varies with discipline, and only the best examples are listed. If the list was to contain courses that have placed only a portion of their course materials on the Web, the list would be nearly endless. I found that every institution of higher learning that I visited on the Web, has courses with course materials on the Web (syllabi, instructor information, etc.). These are not to be confused with

what is commonly called an online course, where a significant portion (if not all) of the course learning is experienced by the students from a remote location (not on-campus).

Here at Mt. SAC, we currently label our "online" courses as Distance Learning courses that have a minimum of mandatory on-campus meetings (usually an orientation meeting at the beginning of the semester, and meeting(s) during the semester for exams) and does not meet otherwise on the campus. We also have "hybrid" Distance Learning courses that regularly meet on the Mt. SAC campus for a portion of the course, and the rest of the course learning is experienced online. The Distance Learning online courses that Mt. SAC is currently offering or has offered are:

AMLA 55 - American Language Writing
ANTH 1 -- Physical Anthropology
BUSM 20 - Principles of Business
BUSM 51 - Principles of International Business
BUSM 61 - Business Organization and Management
BUSM 66 - Small Business Management
CHLD 10 - Child Growth and Development
ENGL 1A - Freshman Composition
ENGL 8B - Creative Writing – Poetry
JOUR 30 - Introduction to Mass Media
PHIL 5 - Introduction to Philosophy
SOC 1 - Sociology

Hybrid courses that are or have been offered at Mt. SAC include:

CHEM 2A - Introductory Chemistry
SOC 1 - Sociology

URLs to these Mt. SAC online and hybrid Distance Learning courses are listed in Appendix I also. Also included in the list are URLs to organizations

which provide services to higher education in the form of Web Design information, course management software, or online course development and service. These are commercially viable resources for information regarding online course offerings, and can provide us with a wealth of information on the various online services available in education today, as alternatives to the current format of offering online courses at Mt. SAC.

Activity #2 (*Enlist 10 to 20 Mt. SAC faculty and staff across the curriculum to assist me in evaluating on-line courses and components in the database*) entailed the creation, distribution, and collection of three different surveys regarding online course components. The first survey was designed for Chemistry faculty only, and it was developed in order to gain knowledge from my colleagues about various Chem 2A course components - the course textbook, skills to be learned by the students, and difficult-to-teach/learn topics. Here is a sample of Survey #1:

Online Course Development **Name**_____

Survey #1

I would like to get Chemistry faculty opinions on some Chem 2A course components, so that there is a general, unified direction for the development of the new online Chem 2A course. Please answer any or all of the questions listed below. This is purely optional – if you are not familiar with the Chem 2A course or components, do not feel compelled to give input.

Which textbook/publisher package would the most suitable for students in an online situation?

(I have these particular textbooks available in my office for your perusal, if you need refreshing…a brief summary of each publisher package (omitting the standard instructor's guide, test banks, solutions manuals, and study guides which are available from every publisher)).

My choice: _____

1. ***Basic Concepts of Chemistry*** by Malone (5th edition) from Wiley; no electronic ancillaries

2. ***Introductory Chemistry: A Foundation*** by Zumdahl (3rd edition) from Houghton-Mifflin; *The Chemistry Place* – online interactive exercises and chemical data accessible to textbook adopters; *The Chemistry Resource Center* – links to relevant chemistry sites for professors; *Chemistry: Interactive 3.0 for Introductory Chemistry CD-ROM* – periodic table data, molecular models, animations, video clips, and problem sets.

3. ***Introductory Chemistry*** by Ebbing (1st edition) from Houghton-Mifflin; same electronic ancillaries as Zumdahl, listed above

4. ***Introductory Chemistry*** by Corwin (3rd edition) from Prentice-Hall; *Chemistry SKILLBuilder CD-ROM* – nomenclature, reactions, and stoichiometry tutorials and exercises; *Chemistry on the Internet* book included free with textbook; *Central Science LIVE* – online interactive exercises, quizzes, practice exams, useful chemical data; *Interactive Chemistry Journey CD-ROM* – currently used in our Molecular Science curriculum – electronic tutorials, exercises, animations).

5. ***Basic Principles of Chemistry*** by Peters (6th edition) from Saunders; *Interactive General Chemistry CD-ROM 2.5 with ActivChemistry* – interactive exercises and simulated experiments encouraging experimental design; *Getting Started with Computers: Internet Module* book.

Please identify the *Top 10* most difficult-to-teach concepts or skills you have encountered in Chem 2A lecture. Indicate, if you would, what method you currently employ to get these concepts/skills across to students (for example: extra time spent in class on topic, time spent in discussion class, handouts, more exercises, etc)?

	Concept/Skill	**What you do to affect learning**
1.	_____	_____
2.	_____	_____
3.	_____	_____
4.	_____	_____
5.	_____	_____
6.	_____	_____
7.	_____	_____
8.	_____	_____
9.	_____	_____
10.	_____	_____

Below is the current list of Chem 2A Exit Skills. **Do you have any modifications or comments regarding this list?** Make deletions/additions as you wish.

CHEMISTRY 2A

Exit Skills

Chemistry Concepts

A good comprehension, not necessarily quantitative, of the these topics:
dimensional analysis (show correct math set-up with units)
quantitative calculations about substances (moles, percent composition, empirical and molecular formulas)
complete and balance chemical equation for the simple or fundamental reaction patterns gas law
atomic structure and electronic configuration
chemical nomenclature (names and formulas)
stoichiometry
periodic properties of the elements and the periodic table
chemical bonding and introductory molecular geometry
precision and accuracy
elementary behavior and properties of solids, liquids, gases, and solutions
concentration calculations
measurements using the SI(metric) system
forms of energy and its changes
scientific method
properties of acids, bases, and salts

Additions:_____

Laboratory Skills

ability to follow written and oral instructions
ability to collect, record, analyze data, given blank report sheets and step by step directions
ability to properly use a burner, balance, graduated cylinder, pipet, buret, thermometer, evaporating dish, crucible, filtering apparatus
ability to make and accurate measurements.
ability to make quantitative observations and describe them in written form
ability to draw conclusion(s) from observations and written, tabulated, graphed data, e.g., identify and unknown sample
ability to identify pieces of basic lab equipment and their uses
ability to perform basic lab techniques: weighting, heating, measuring, filtering, evaporating, titrating
familiarity with proper handling of reagents, proper methods of dispensing reagents from containers
ability to identify trends and pattern in data.

Additions:_____

Math Skills

use a calculator (+,-,x,/,exp) quickly and reliably
competence in solving for X in a algebraic equations
competence in graphing and interpreting a graph
ability to use scientific notation in problem solving
easily translate word problems into appropriate algebraic equation(s)

Additions:_____

Written Skills

comfortably and easily write complete, clear grammatically correct sentences, paragraph and short themes

Additions:_____

Safety Skills

proper use of safety goggles
proper use of fume hood
proper chemical waste disposal techniques in an experiment
compliance with safety rules
proper response to lab accident(s)
improved ability to follow oral and written directions, especially in a emergency situation
avoidance of contamination of stock (class) reagents
responsibility for order's safety
red labels a reagent containers every time
be aware of contamination problems

Additions:_____

Other Skills

ability to produce neat, organized, complete work every time
know when and how to obtain help (office hours, discussion sections, appointments tutoring sessions, review sessions, study groups)
ability to work independently and cooperatively in both lecture and lab
ability to organize, tabulate, match, fill-in, list, compare and contrast, explain, define distinguish, differentiate, describe, choose

Additions:_____

The information I gained in this survey, from the input of many Chemistry faculty, gave me more direction in the creation and development of an online Introductory Chemistry course, Chem 2A, which is **Activity #5**. It helped me in selecting an appropriate textbook, and in developing a portion of the online web pages for special help on several difficult-to-learn topics (later described as Chem Clues). The results of Survey #1 are in Appendix II.

The second survey was distributed to Chemistry faculty as well as other Mt. SAC faculty across the curriculum. These faculty were chosen because of

their previous or current involvement in computer technology, which would have given them the knowledge needed to complete the survey. This survey was designed to gain feedback on the various course components used in courses of many disciplines, and how online components compare to the in-class components. A sample of Survey #2 is shown below:

Sabbatical Project, "What Makes an Online Course Effective?"

Terri Beam, Fall 1998

Attached is a Survey, in the form of a table, which addresses the use of various course components, both on-campus and off-campus. This information (your own opinion) would greatly help me in the development of an On-line Course Resource Guide, which I am contracted to deliver with this sabbatical leave. My goal is to develop a comprehensive resource for Mt. SAC faculty *that will help to define and clarify the issues involved with the development and delivery of on-line courses, and provide a methodology for evaluating the effectiveness of on-line courses.* You were specifically chosen for this Survey, because of your continuing interest in technology. I know that some of you do not currently teach an on-line course, but your opinion about these various course components can help Mt. SAC faculty who are thinking of developing on-line courses now or in the future. Questions, such as "how should we do this?" and "should we do that?" and "is it necessary or possible to do it that way?" have come up as we develop courses for on-line delivery. We are trying to develop the most effective components as possible for a variety of disciplines. Your opinions are important! Please help us to answer some of our questions. The compilation of survey results will be sent to you upon completion of this project. Feel free to contact me regarding any of these questions at tbeam@ibm.mtsac.edu . Thanks in advance for your help and cooperation. Return this Survey to Terri Beam, Building 11, Room 14.

Name:_____ Extn:_____

Course Component	Currently used in on-campus courses? (Y/N)	Should this be used/is it being used in on-line courses? (Y/N)	How should it be/is it being administered or delivered in an on-line course?	What makes this component, or how it is delivered, effective for student learning? (in an on-campus or on-line course)
Lecture				
Discussion				
Homework				

Laboratory				
Written assignments				
Multimedia				
Quizzes				
Exams				
Projects				
Other:				
Other:				
Other:				

This survey was distributed through the faculty mailboxes in the Mail Room, and was given to members of the Chemistry Department, Online Learning Discussion Group, the Distance Learning Committee, Multimedia Discussion Group, teachers of online courses, faculty I had met in previous Staff Development technology workshops, and other technology-oriented faculty and managers. This survey was created in an online form and placed at http://vclass.mtsac.edu/~tbeam/survey2.asp for the convenience of many faculty who like to respond in an electronic fashion, rather than in written form. The responses to this survey appear in Appendix III, and also in an electronic database that can be accessed and viewed in EXCEL '97 format. This completes **Activity #3 (***Record evaluations by Mt. SAC faculty and staff in an On-line Resource Guide and/or in the database.*). Overall, these responses indicate to me that most professors feel that the more interaction, both electronically

(email, chat, and discussions) and personally (meeting on campus) with the students in an online class will provide the most effective online course, and the best chance for student success (retention and grades). This leads me to believe that our online courses will continue to keep precious the personal component of instructor-student interaction, in which we excel, here at Mt. SAC. This knowledge has directly helped me in the creation and development of the online course components for the online Chem 2A course by making them as interactive as possible, and has indirectly reached the Mt. SAC Distance Learning Committee and the Academic Senate in my discussions in those two forums.

A third survey was created with the help of the Distance Learning Committee, and with input from several Mt. SAC professors currently teaching online courses. This survey was designed especially for students in online courses, especially the online Chem 2A course. This survey was based on an earlier survey used in the Spring '98 semester and the Fall '98 semester to query students in online courses to gain information on how they heard abut their courses, how they enrolled in their courses, how they performed in their courses. I expanded on these questions, and tried to modify the questions so they could be used to survey students in any Mt. SAC online course. The survey was placed online at http://vclass.mtsac.edu/394896/survey.asp so that students in the online Chem 2A could answer these questions. The

results have been tabulated, and can also be accessed in EXCEL'97 format.

Survey #3 looks like this:

Online Course Student Survey

1) Have you taken this online course as an on-campus course at Mt. SAC in a previous semester?

- ○ Yes
- ○ No

---

2) How many times have you attempted this course before?

- ○ Zero
- ○ One
- ○ Two or more
- ○ I took this course at another school.

---

3) Have you taken an online class before?

- ○ Yes
- ○ No

If yes, which one(s)? [ ]

---

4) What are your reason(s) for taking this particular course with online delivery? (check all that apply)

- ☐ unable to get into an on-campus class
- ☐ wanted to have this teacher
- ☐ more convenient - don't need to come to campus as often
- ☐ independent worker - want to work at my own pace and convenience
- ☐ like computers/the Internet - seemed interesting to take a class this way
- ☐ have taken online classes before and were successful in them

Other: [ ]

---

5) How did you learn about this online course offering? (check all that apply)

- ☐ Class schedule
- ☐ Posted notices
- ☐ Word of mouth
- ☐ Mt. SAC virtual classroom/Distance learning web pages
- ☐ Letter from Mt. SAC

Other: ☐

6) How do you feel about coming to campus once a week for class? (check all that apply)

- ☐ hard to get here
- ☐ wish it was not so early in the morning
- ☐ wish it was in the evening
- ☐ wish it was on a weekend day
- ☐ it is working out just fine
- ☐ N/A

7) How do you feel about taking exams on campus versus online? (check all that apply)

- ☐ It is better for accurate assessment of my understanding
- ☐ I don't like having to come to class to take exams
- ☐ I believe it is a more secure situation on campus
- ☐ I don't mind coming to campus to take exams

8) How important is it for you to have regular, face-to-face personal contact with...?

your instructor

- ○ very important
- ○ somewhat important
- ○ not important

other students

- ○ very important
- ○ somewhat important
- ○ not important

9) How often do you have any kind of contact with...?

your instructor

- ○ every day
- ○ several times a week
- ○ once a week
- ○ rarely
- ○ never

other students

- ○ every day
- ○ several times a week
- ○ once a week
- ○ rarely
- ○ never

10) Which learning resource(s) did you utilize while taking this course? (check all that apply)

- ☐ Textbook
- ☐ Solutions manual
- ☐ Lab manual
- ☐ Online interaction with instructor and/or students

- [ ] Class web pages
- [ ] On-campus interaction with instructor and/or students
- [ ] CD-ROM supplement to textbook

---

11) In your opinion, what is the <u>most</u> important learning resource available to you in this course?

- ○ Textbook
- ○ Solutions manual
- ○ Lab manual
- ○ Online interaction with instructor and/or students
- ○ Class web pages
- ○ On-campus interaction with instructor and/or students
- ○ CD-ROM supplement to textbook

Comments:

---

12) How would you rate the amount of the learning resources available to you (to be successful) in this online class?

- ○ Excellent
- ○ Good
- ○ Unsatisfactory
- ○ Very Poor

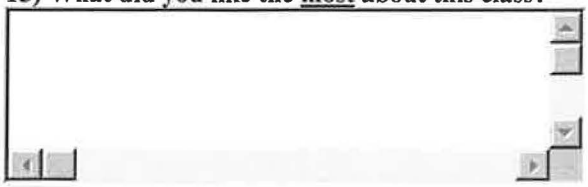
---

13) How did you feel about meeting the deadlines in this class?

14) What would you consider to be the <u>most</u> important student prerequisite to taking this online course?

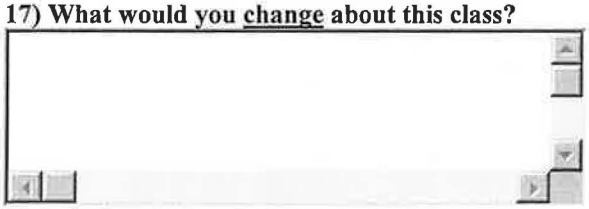
- ○ Previous Chem 2A experience/attempt
- ○ Self-motivation to study independently/meet deadlines
- ○ Experience with computers/the Internet
- ○ Math background

15) What did you like the most about this class?



16) What did you like the least about this class?

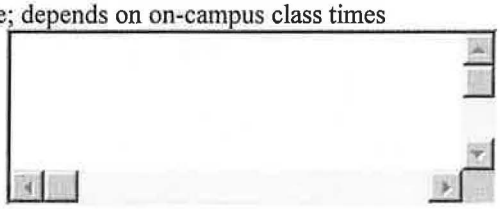
17) What would you change about this class?



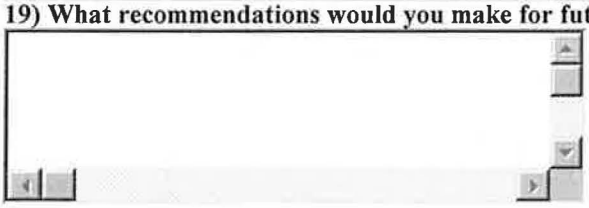
18) Would you recommend this class to other students?

- ○ Yes, definitely
- ○ No, definitely
- ○ Maybe; depends on on-campus class times

Comments:



19) What recommendations would you make for future students taking this course online?



20) Please rate the following course components and learning resources:

Course Components	Great	Good	Fair	Poor	N/A
Course Web Pages (to inform)	◉	○	○	○	○
Discussion Forum (for interaction purposes)	○	○	○	○	○
On-campus labs (lab skills/interaction)	○	○	○	○	○
On-campus exams (for learning assessment)	○	○	○	○	○
Instructor (contact and learning)	○	○	○	○	○

Student interaction (collaborative learning)	○	○	○	○	○
Mandatory first meeting(to inform)	○	○	○	○	○
Online quizzes	○	○	○	○	○
Online student grades	○	○	○	○	○
My understanding of course "expectations" (independent, guided study and self-motivation to meet course deadlines)	○	○	○	○	○
Course Learning Resources	**Great**	**Good**	**Fair**	**Poor**	**N/A**
Textbook	○	○	○	○	○
Solutions manual	○	○	○	○	○
Lab manual	○	○	○	○	○
Online interaction with instructor and/or students	○	○	○	○	○
Class web pages	○	○	○	○	○
On-campus interaction with instructor and/or students	○	○	○	○	○
CD-ROM supplement to textbook	○	○	○	○	○
Overall course	○	○	○	○	○

21) Would you take another Mt. SAC online class?

○ Yes

○ No

22) Optional information:

Name:

Online Course:

Email Address:

Thank you for your valuable input.

Submit Survey | Reset

This survey returned a lot of valuable information to me that will be used to modify the Chem 2A online course for the next time it is taught (Fall 1999). The student responses to this survey indicate that the interaction with the instructor of the course, as well as the course web pages, provided the greatest resources for student success in this course. It validated many of my thoughts

regarding this online Chem 2A course delivery and management. It makes me very happy to know that all of the effort that was spent in creating the seventy or so course web pages was appreciated and that the web pages were used as they were intended. This information has also been shared with the Chemistry Department and the Distance Learning Committee so they can better understand the issues regarding online courses and online students. The tabulated results of Survey #3 appear in Appendix IV.

Activity #4 (*Explore the possibilities of including audio and video components in an on-line chemistry course.*) entailed the videotaping of several chemical demonstrations with molecular models and chemical reactions in a Chemistry Department lecture room. I used my own camcorder on a tripod, with the illumination provided by two overhead projectors, and I used my own set-up of molecular models and chemical reagents, located on the benchtop. Sequentially I displayed, rotated, and discussed six different ball and stick models of various molecular geometries or shapes. I also performed four different chemical reactions representing precipitation, gas-forming, color change, and neutralization reaction types. This video tape was then taken to the Information Technology Center (ITC) in Building 9D, and was digitized into three different resolution formats for placement onto the online Chem 2A web pages. The highest resolution video format was used for high speed downloading from the course web pages with a superior computer. Many students would not have the capability of viewing the video clip in this format

(too large a file size, not fast enough computer to "stream" the video smoothly), so a lower resolution video clip was also developed. This was manageable by most slower computers. A third version, consisting of only "snapshots" along the video sequence, were placed on the web pages, so that students without the ability to access streaming video would be able to see portions of the video clip in a series of individual pictures. We removed the audio from these initial video segments, to keep the file size reduced. In the future, the audio portion may be placed on the course web pages for separate access, and then the student can determine which portion of the video/audio they wish to access at any one time. File sizes were just too big to keep audio and video portions together on the Virtual Classroom server (www.mtsac.edu) we are currently using, and when the majority of students have less than superior computers. The students liked viewing the snapshots as well as the video clips, with no adverse comments, except "There is no sound!"

With the release of the Sony digital camera that Staff Development and the Online Learning Resource Center (OLSC) now owns, the filming and digitizing of video clips is simplified into one, easy step. This new camera can take up to 15 seconds of digitized video and store it on a simple 3 ¼" diskette, for ease in transferring to web pages. This will make obsolete the process that I performed during this project. It took me, and some others performing technical help, weeks to digitize, cut, and view the video clip during this project. Now, with the help of this new camera, it will take only minutes to

see the finished video clip on the web pages. If the video clip does not turn out the way you would like, you can just take another one!

Activity #5 (*Begin development of an on-line CHEM 2A course using effective on-line components.*) entailed the largest portion of my efforts during my sabbatical leave. It was suggested to me by the Salary and Leaves Committee that this activity could be completed by the end of this leave, instead of just "initiated" as proposed. That was a strong suggestion, which I took seriously. Instead of just initiating the development of an online Chem 2A course, I far surpassed this goal, and completed the development and approval process for this new course. Little did I know at that time, all of the obstacles that I would need to overcome to complete this activity. The process of getting approval for an online course can be long and harried. First of all, I needed the support and approval for the development of an online Chem 2A course from the Chemistry Department. I invited the current Distance Learning Faculty Representative, Bruce Williams, to a Chemistry Department meeting to talk with my colleagues, and discuss with them any issues or concerns they had regarding online and distance learning here at Mt. SAC. He already had created and implemented an English 8B online course, so I thought he would be a good candidate to provide them with information about the pros and cons associated with an online course. Having a faculty member from another department than my own, and one who had been through the development and approval process helped all of us tremendously in our

furthering our understanding of Distance Learning here at Mt. SAC. Before this meeting, I wanted to create some web pages so they could see for themselves how this course could work in an online format. The previous spring semester (S'97) I had completed a six-week workshop offered by Staff Development on using Microsoft FrontPage98 for creating web pages, but I was not very proficient in creating exciting and effective web pages yet. So I got some books on using FrontPage98 from the ITC library and got started. If I did not know how to do something, I read as much as I could in the books I had, researched the topic on the Internet, and worked with the technical help from the ITC until I got some initial web pages for the Chemistry Department to look at and try out. Then I proposed to them how the various course components of this new online Chem 2A course could be compared with the current on-campus course components:

Delivery of Online Course Components, 8/98
Chem 2A

This is the current plan for online delivery of the various components of the Chem 2A course. Feel free to add your comments.

Traditional Delivery	**Component**	**Online Delivery**
Lecture	content	textbook with strong emphasis on examples and problem-solving, coordinated with a detailed, extended course outline with imbedded hyperlinks to voice-over animations, lecture examples, video/audio clips; links to many interactive Chemistry web sites, CD-ROMs available
Homework, turned-in and scored/returned	practice	homework, turned-in and scored/returned
Review sessions, on-campus	extra practice/ prep for	interactive chapter reviews,

	assessments	last hour of each weekly lab class devoted to Q & A; designated virtual office hours, hyperlinks to voice-over animations, examples, video/audio clips; links to many interactive Chemistry web sites, CD-ROMs available
Quizzes, in class Graded/returned	assessments	online quizzes – form that is submitted to instructor by a posted deadline; graded/returned in lab
Exams, in class Graded/returned	assessments	exams, held during lab sessions, after exam review; graded/returned in lab
Discussion	informal and formal Q & A, mini-lectures	required weekly discussion postings on at least one topic of instructor's choosing, additional postings initiated by student; last hour of each weekly lab class devoted to Q & A and mini-lectures; designated virtual office hours
On-campus labs	lab skills	on-campus labs

They gave me some input on which components they felt would be conducive to online learning, and they asked how I could accomplish the lecture, quizzes, and exams of the course. I showed them my newly created web pages in September 1998, they approved the idea, and signed my Distance Learning Course Proposal Form. This completed the first step of the process of getting a course online here at Mt. SAC.

The second step is approval from the Dean, and I presented the newly created web pages to Larry Redinger and Debbie Boroch, and they approved also.

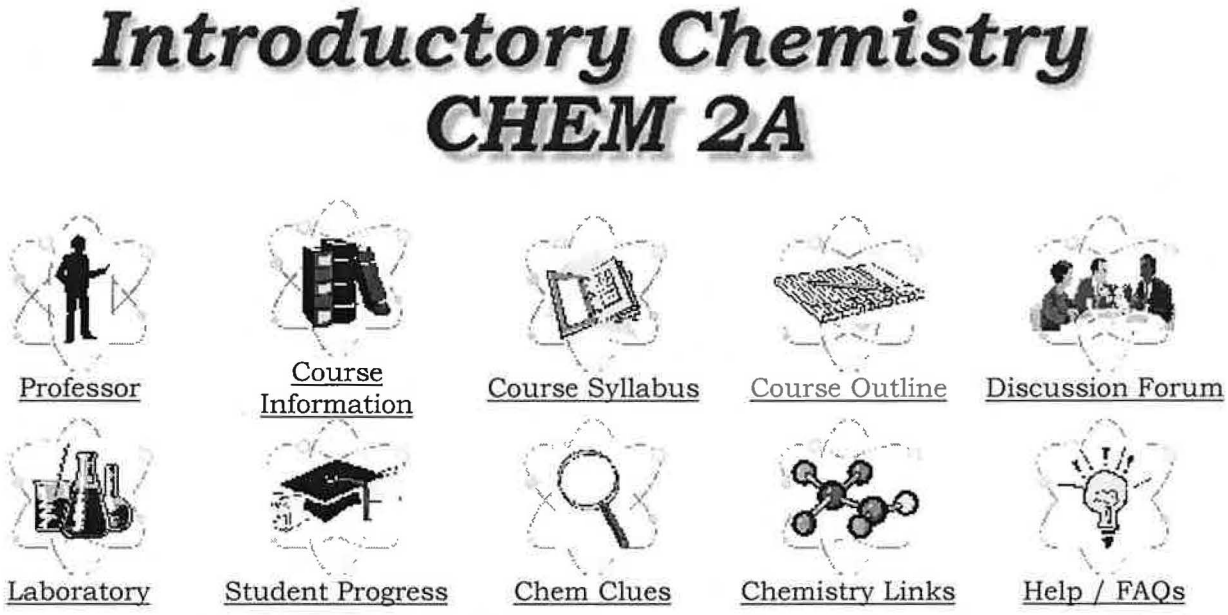
The next step was the Curriculum Committee. Over the past few years, this particular step of this process has been in transition. In order to "fast-track" some courses for online Distance Learning, the Curriculum Committee had been asking the Distance Learning Committee to review them for the delivery mode – if it is feasible and reasonable for our Virtual Classroom server to deliver. Since it is the responsibility of each department to review the content of the new online course (as it compares to the on-campus equivalent), it now remains the purview of the Distance Learning Committee to review the delivery of the online course. Various delivery modes are discussed with the Committee, they make recommendations, and then the course is approved. Once the Distance Learning Committee has approved a course for online delivery, a new ticket number is issued for it, and the course is placed into the Mt. SAC schedule in the list of courses in that appropriate discipline as well as in the Distance Learning section of the Schedule. This new online "hybrid" (labs were held regularly on-campus, once-a-week for three hours) Chem 2A course went into the Spring 1999 schedule, and was taught with 12 students in the class.

The timeline for this approval process can be on the order of two months, or up to 18 months, depending on how fast the course is developed, discussed, and approved by all parties. Often a course cannot be approved and offered to students any sooner than two semesters, due to the many approval steps. In a rapidly changing, technological world, this approval process takes quite a long

time. If there is any way that this process can be speeded up, it would be more motivating to the instructor who is responsible for the development and teaching of that course.

During the development of this new online Chem 2A course, many aspects of the course delivery had to be thoughtfully considered. Questions such as "Will these web pages be held behind a password, only given to students who enroll in the class?", "How do I get across (in an online delivery) the more difficult topics that are in this course, that I usually spend hours in lecture going over them for the benefit of the slowest students?", "How will the students understand the concepts that I usually demonstrate in a lecture setting?", "How do I give a quiz online so that students don't cheat?", "How do I motivate these students to stay on schedule?" and so on. I'd like to share some of my solutions to these questions. The first question deals with access to the web pages that were created expressly for guiding the students in this online course. If a student were to enter campus to find out information about a particular course or instructor, they could probably find much information from various sources (students, faculty, Division Office, Student Learning office) about the prerequisites or requirements for that course, when it meets, who the instructor is (and a little bit about him or her), and what is expected of the student in terms of purchasing a textbook, lab manual, study guide and supplies for that particular course. This type of information I wanted all students to be able to access on the online Chem 2A course web pages. So, at

the Chem 2A online course home page, http://vclass.mtsac.edu/394896 (soon to be changed because of new ticket numbers for all classes), anyone can access the Course Information web page, the Instructor web page, the Laboratory web page, and the Help/FAQs web page without knowing a password. But the actual course information (the Course Syllabus, Course Outline, Student Progress, Discussion Forum, Chem Clues, and Chem Links web pages) are accessible only by students in the class each semester, using a password. All of the web pages accessible by students can be accessed at http://vclass.mtsac.edu/394896 and some of these pages appear in Appendix V. The Chem 2A Home Page looks like this:



The question above regarding getting across difficult concepts to students was solved mainly by a combination of several things. First of all, during the time that I do meet, once-a-week, with these students in a laboratory setting, is invaluable. There is time during that laboratory session to discuss topics from the chapters or CD-ROM, go through calculations step-by-step, explain homework problems, or show them extra resources on various web pages. This usually helps the struggling student to stay current with the syllabus and the rest of the class, and to be able to take assessments on schedule. For the most difficult topics in this course, I created a series of web pages, called Chem Clues, which takes the student through examples and additional explanations, in my own words, that I would usually impart to students in a lecture or discussion setting in an on-campus class. These instructor aids are very helpful, as the students gain information directly from me, in the way that I usually discuss them in an ordinary classroom. So they are not missing that aspect of learning, even though they are in an online course. It took quite a good deal of my time and effort to create these pages, and I feel that these ideas expressed by me on these pages contribute to making this course work as well as it does. I have always felt that a particular professor adds their own touches to each course they teach, and that is why Mt. SAC and community colleges in general, are so good at teaching their courses (and why students enjoy our classes so much!) These Chem Clues web pages are a very valuable portion of this course. Another part of the solution to this question, has been

the use of a Discussion Forum, that the students respond to once-a-week for points in the course. I have become much more familiar with ALL of the students in the online Chem 2A course because they are required to respond to select messages from me about some of the difficult topics of the course. I get to know my students in ways that I never did in an on-campus class. In an on-campus class, some of my students never say a word to me (except during roll call) the entire semester! In the online course, I hear from each student every week, and they tell me and ask me all sorts of things! They get so they feel very comfortable about asking me for help, and they do ask me regularly. I now have more opportunities to interact with my students in an online environment in ways that I could not always do in an on-campus class. It makes it very exciting for me. This helps the students to overcome the more difficult topics in the course.

In order to be able to demonstrate ideas or chemical reactions to the online students in this course, I either take a few minutes of time during the lab meeting to show the demonstration or chemical reaction, or I ask the students to view the video clips and "snapshots" I have placed on the Chem Clues web pages. I also direct my students to view certain demonstrations on the CD-ROM that is a part of their textbook package, so that they may visually see the results. Chemistry is very visual, and the students must be able see color changes, gasses forming, and temperature changes occurring to truly understand some types of chemical reactions.

I have developed online quizzes for these Chem 2A students to take online. The quizzes do not count as much toward their overall grade as in an on-campus class, but they are primarily used to help the student prepare him or her for an upcoming exam. The parameters for taking the quizzes do not motivate the students to cheat. They have about 48 hours to access and "take" the quiz, and submit it to me. They may use any resources of their own that they wish. They need to tell me which resources that they used in completing the quiz. They are advised to use only certain resources, and complete the quiz in a particular time frame, if they really wish to prepare for the next exam. The quiz scores that the students have received during the Spring Semester '99 indicates that they still have a ways to go to completely master these quizzes. I deduced from those scores that they are not cheating during these quizzes. They really enjoy taking quizzes this way, too. It is a more relaxed setting, and often learn a lot more through this mechanism. It is these reasons that I will continue to keep this course component in this course, even though it is not carried out in the same manner as it is in an on-campus class. The online quiz has value for their learning process in an online course.

Now, there were more issues that I had to address and resolve to get all of the course web pages up and running for the Spring Semester '99. I credit Dwight Ayle of the new Online Learning Support Center (OLSC), his web design technical help Vincent Pham and Brian Heffley, and Distance Learning

Committee Chair, Kerry Stern for their immense help through this process. They were always encouraging me and helping me to achieve this goal. It would have been really helpful to me, had there been another faculty member who could have mentored me in this process. Hopefully, in the future, I can mentor other faculty members here at Mt. SAC to achieve a similar goals for future online courses.

Activity #6 (*Write and submit a comprehensive sabbatical report, detailing the progress and results of the project. Two complete copies will be submitted to the Salary and Leaves Committee by the first working day of February 1999.*) is evident in the form of this report, with the date of submission as September 1, 1999, not February 1999.

Discussion of "Effective" Issues

As I wrote my sabbatical leave proposal, the definition of "effective" was not in doubt to me. The "effectiveness" of an course seemed (to me) to be reflected in the quality of the student's experience in that course, with respect to retention and grades. In an ideal world, a truly effective course and/or course components would permit a student to remain in the class the entire semester and be able to attain a grade of "A". A truly effective course would also be interesting for the student, and be enjoyable for the instructor too. A truly effective course would inspire a student to learn for the sake of learning. In designing a course for online delivery, these ideas should be kept in mind, and aspired to if possible. I realize that the above-mentioned definition is mine, but I feel that it is something to which all good instructors try to accomplish with their courses. The new online Chem 2A course that was developed during this sabbatical leave can be considered effective because it meets the needs of those students, and it permits those students to remain in the class the entire semester and be able to attain a grade of "A". The information that I have gained from this project has opened my eyes to more definitions of "effective" with regard to online courses, and I would like to share some of these ideas.

First of all, my definition of "effective" mentioned above revolves around the student's experience in an online course. I have found that an online course "effectiveness" can be viewed from other perspectives than the student's view. Questions like these come to mind: "Can this online course be effectively created by

me, a faculty member?", "Is this online course effective to manage as an instructor?", "Is this online course effective to manage on the Mt. SAC Virtual Classroom server?", and finally, "Is this online course effective for Mt. SAC to be offering?" I bring up these questions, because I feel that they are being asked more often these days. The first question is asked by faculty who are considering the development of an online course. These faculty have noticed the amount of time and effort that can be expended in online course development, and it can be somewhat overwhelming to them. Some of these faculty doubt their ability to create the kind of course which will return the same student success as their current on-campus equivalents. What I would like those faculty to know about online courses is this – the online course that you develop will never be the same as the on-campus course, but you can make an online course which will allow those students who cannot get to school to take the on-campus course to be successful if they so choose. The success of students in online classes is so much more dependent on the motivation and dedication of the online student, rather than on how well an instructor lectures. That is a hard concept to swallow for some instructors. Instructors must place all of the resources that online students need to be successful at the student's fingertips, and then there will only so much that an instructor can do to make an online course effective for their students - the "effect" is more or less placed in the student's hands. This is a distinct shift in the responsibility in learning from mostly on the instructor's shoulders to those of the student. This shift is reflected in many of the reforms of education seen today. It is also present in online learning.

The second question deals with the amount of time which is required by an online instructor to respond to the many email messages, create online quizzes, create and modify web pages, keep up interaction with online students to ensure that they stay on schedule and be successful, etc. Some of the time which is spent doing these and other online tasks would have ordinarily been spent doing the similar tasks for an on-campus class anyway. The time in creating new and different web components takes a lot of time, because it is new and different for the professor, and sometimes requires technical help from other sources. The only solution that I can suggest as a solution for this time input by instructors of online courses, is to either have a different teaching load placed on online courses, or hire more permanent staff to help faculty in the ongoing and regular creation of online quizzes or other online components. This would encourage more faculty to consider developing new courses for online delivery.

The question regarding the Mt. SAC Virtual Classroom server is a question that was asked in a past Distance Learning Committee meeting. It was discussed because there had been several instances where the server was inaccessible for periods of time, and online students could not reach their course web pages. Most of those problems have been ironed out since then, but it caused the Distance Learning Committee to seek out viable alternatives to hosting our own courses on our Virtual Classroom server. The Committee consequently learned about server host services and online course development services that are currently being offered for higher education online courses by commercial organizations. URLs to these commercial

organizations can be found in Appendix I. These services are an alternative to creating and hosting our courses on the Mt. SAC Virtual Classroom server. Personally, I am very glad that we have total control over the delivery of our own courses, and I hope that it remains that way. At the present time though, there is only one person on this campus who is familiar with the administration and management of that server, and I think there should be more technical people around who can address the needs of that server from time to time.

The final question about offering these online courses at Mt. SAC is not mine to answer. I hope that this trend of online course development and support continues because it definitely fills a need for those students who have difficulty getting to campus. As Mt. SAC continues to grow, the demand for online courses will only increase.

Conclusions and Measurable Outcomes

The conclusions of my sabbatical leave project are these:

1) Effective online courses can be developed to include as many interactive components as possible, with interaction with the instructor and the course web pages as being the most important components.
2) There are many courses on the Web which have an online component, but not that many courses which are completely online courses. There are no entirely online Chemistry courses that also include a laboratory component, that I could locate on the Web. Mt. SAC has the only "hybrid" version I could find.
3) "Effectiveness" with regard to online courses can have more than one definition, and the "effectiveness" of issues surrounding online courses should be addressed some time in the future.
4) It took much more effort than I expected to develop and manage (offer and teach) an online course, and I hope for more help and support for faculty in their online course development and teaching in the future.

The measurable outcomes of my sabbatical leave are:

1) Online courses and various course components in a variety of disciplines that can be used by faculty who are considering development of an online course can be accessed in Appendix I of this report and at http://vclass.mtsac.edu/~tbeam/components.htm
2) URLs to web design information, course management software, or online course development and host services can be accessed in Appendix I of this report and at http://vclass.mtsac.edu/~tbeam/components.htm

3) A survey for online students that can be used by any instructor of an online course, to help in the evaluation of that course, can be accessed in Appendix IV of this report and at http://vclass.mtsac.edu/394896/survey.asp

4) A new online Chem 2A (Introductory Chemistry) course was created, developed, approved, and offered in Spring '99 semester, which included exploratory video components. Some of these course web pages can seen in Appendix V, but viewed in their entirety at http://vclass.mtsac.edu/394896.

Merit and Value to the College:

A variety of effective online course components has been explored and evaluated by qualified Mt. SAC faculty and staff, and has been placed in Appendix I and at http://vclass.mtsac.edu/~tbeam/components.htm . Faculty can access these URLs to get more ideas how to improve the effectiveness of online learning, which in turn, will create many more opportunities to offer online courses as suitable alternatives to impacted scheduling and high demand for courses. The exploration of audio and video components for use as alternatives for intricate online lecture or laboratory components will benefit the any course that wishes to include these types of components in their future online courses here at Mt.SAC. The possibilities for online course development across the curriculum will expand with increased faculty knowledge of effective online course components.

I have volunteered to be the Faculty Representative for Distance Learning (beginning Spring '00), and will be able to interface with the Academic Senate, the Distance

Learning Committee and other faculty and staff about distance learning issues here at Mt. SAC. In that capacity, I hope to increase the opportunities for faculty to be mentored during the online course development process, better help the Academic Senate to understand the issues facing online learning, and help the campus to move forward with distance learning, especially online learning.

A survey for online students, that can be used to help in the evaluation of any online course, has been developed and is accessible for anyone to view or use at http://vclass.mtsac.edu/394896/survey.asp .

I have taught three workshops for Mt. SAC faculty on FrontPage2000 for Web Design for the Staff and Organizational Development office this past summer, and I plan to continue to teach these and other workshops for them in the future.

I have presented "The Online Delivery of Introductory Chemistry" at the last 2YC3 (Two Year College Chemistry Conference) at East Los Angeles College in March 1999. At that time, I spoke at length with numerous Chemistry faculty from community colleges around the nation, and got tremendous praise and suggestions for my efforts regarding this online course development. There are practically no colleges, that I know of, offering Introductory Chemistry in this online "hybrid" format.

Merit and Value to the Chemistry Department:

The Chemistry Department now has another option available to them when offering Chem 2A to our students. This special section of this course will be able to allow students who have difficulty reaching campus to fulfill a necessary requirement for many of our programs here at Mt. SAC. I am now in a position to be able to encourage other Chemistry faculty to develop other online courses for our Department. At this time, I have discussed the possibility of developing an online version of our Chem 1A course with Jenny Chen.

Merit and Value to Terri Beam:

I have continued to grow in my technological as well as teaching skills. I am now a campus resource for all Mt. SAC faculty and staff for future online course development. I am happy to share my gained knowledge with anyone who is interested in developing quality online courses. I truly enjoy helping others to develop effective online courses in their own disciplines, because I can learn and grow from those situations also. That is why I feel it is very important to teach FrontPage 2000 to Mt. SAC faculty, and to mentor them in their technological growth. Information learned from the exploration of using video and/or audio online components could be easily adapted to future online course development, especially with the new Sony camera that makes this process so easy to do. I am happy to teach this new Chem 2A online course and to help others in the Chemistry Department to learn to teach it also.

Online Courses/Components Database

Description of Web Site	URL
Course components for online courses	
Mt. SAC's Virtual Classroom	Vclass.mtsac.edu
Tech tools - online quizzes	Motted.hawaii.edu
WebCT at Grossmont Collge	Griffin.gcccd.cc.ca.us:8080/~WELL
Britannica Online	www.eb.com
Mind/Extension University (ME/U)	www.meu.edu
National Geographic Online	www.nationalgeographic.com
EXTEND for math chat	www.stolaf.edu/other/extend
NASA KidSat	www.jpl.nasa.gov/kidsat/
Scholastic Online	Scholastic.com
Virtual Chat Rooms	www.thepalace.com
WebTester	www.webtester.com
EDSITE for Humanities	Edsitement.neh.fed.us
OU/FSU Resource and Production Center	www.idl.fsu.edu
Distributed Learning at Kent State University	www.dl.kent.edu
Text-based chat	www.icq.com
Microsoft Clip Art Gallery	www.microsoft.com/
FrontPage Resources at Mt.SAC	vclass.mtsac.edu/fp
Web design resources	www.mtsac.edu/images
Web design resources	olsc.mtsac.edu/resources
Education World search engine	www.education-world.com
The House the West Built	www.usd.edu/honors.hwb.html1
CollegeNET search service	www.collegenet.com
Psychology Place	www.psychplace.com
MathMedia	www.interaccess.com/mmel/mathmedia
Virtual laboratory at Ole Miss	Nasacci.cs.olemiss.edu
WebTest	www.webtest.com
MathView Internet	www.cybermath.com
WWW course tools - WebCT	www.webct.com
Course components for online chemistry or science courses	
WWW table of isotopes	Csa5.lbl.gov/~fchu/toi.html
Pictorial periodic table	Chemlab.pc.maricopa.edu/periodic/periodic.html
Chemicool Periodic Table	wild-turkey.mit.edu/Chemicool
Periodic Table at LANL	Mwanal.lanl.gov/CST/imagemap/periodic/periodic.html
SciFinder search engine	www.cas.org

Beyond Bio101	www.hhmi.org
Computers in Chemistry at Cabrillo College	C4.cabrillo.cc.ca.us
CyberChem	www.mhhe.com/physsci/chemistry/cyberchem
Chemistry conversion factors	www.prenhall.com/~bookbind/pubboks/blb_demo/medialib/tools/useful.html
Chemistry common ions	www.prenhall.com/~bookbind/pubboks/blb_demo/medialib/tools/common.html
Chemistry table of constants	www.prenhall.com/~bookbind/pubboks/blb_demo/medialib/tools/fundamen.html
Chemistry online resources	www.hmco.com/hmco/college/chemistry/resources ite/chemreso/undergra.htm
College chemistry onine resources	www.hmco.com/hmco/college/chemistry/resources ite/chemreso/metasite.htm
Molecular images	www.molecules.com/cca_fs.htm
Interesting Chemistry	www.chemcenter.org/vc2/index.html
Mt. SAC Disclaimer	www.mtsac.edu/disclaim.html
Introductory Chemistry Practice Quizzes and Exams	www.prenhall.com/corwin
Science Education	www-hpcc.astro.washington.edu/scied/science.htm
Search engine – chemistry	Chemfinder.com
General Chemistry resources	Antoine.fsu.umd.edu/chem/senese/101/index.html
Search engine – chemistry	Webbook.nist.gov
WebLab Viewer – chemistry	www.msi.com
Chemical Education resources	www.ums.edu/~chemistr/books/index.html
ChemTutor	www-hpcc.astro.washington.edu/scied/chemistry.html
CIRRUS – chemistry resources	www.chem.plu.edu/cirrus.html
Chemistry class on WebCT	g-chem.gcccd.cc.ca.us:8900
Atom builder	www.pbs.org/wgbh/oso/
Science Hypermedia	www.scimedia.com/chem-ed/scidex.htm
ChemWeb International Young Writer of the Year	Chemweb.com/home/events.html
Working Chemists with Disabilities	www.acs.org/memgen/workchem/start.htm
Inquiry-based learning in biology	www.biology.com
Course development or management services for online courses	
Sixth Floor Media	www.sixthfloor.com
Course Advantage	www.edt.bsu.edu/advantage.html
FirstClass Collaborative Classroom	www.education.softarc.com/
LearnLinc	www.ilinc.com
Toolbook II	www.asymetrix.com/products/toolbook2/instructor
Convene	www.convene.com
CourseInfo	www.blackboard.net/courseinfo_frame.htm
Learning Space	www.lotus.com/learningspace

MentorWare	www.mentorware.com/
TopClass	www.wbtsystems.com/index.html
Web Course in a Box	www.madduck.com/wcbinfo/wcb.html
WebMentor Enterprise	Avilar.adasoft.com/avilar/msubfrm.html
Question Mark	Questionmark.com
Virtual Campus	www.uol.com
WebTester	www.webtester.com
Text-based chat	www.icq.com
MeetingPlace 97	Latitude.com
ExperTechnology Classroom Management System	www.experttesting.com
Custom Course Web	cbs1.cornell.edu/testsite/
The Distance Learning Environment	www.pathlore.com
Relevant bibliography regarding online courses/components	
The Chemical Educator	journals.springer-ny.com/chedr/
American Center for the Study of Distance Education	www.edpsu.edu/acsde/
Web-Teaching: A Guide to Designing Interactive Teaching for the World Wide Web by David Brooks	www.clark.cc.oh.us:8900/public/WBE601/index.html
Web-based Education Systems	www.clark.cc.oh.us:8900/SCRIPT/WBE601/student/serve_home?_homepage
How to go From Class-room to Web-room as Painlessly as Possible – (course components)	wellspring.isinj.com/rikhall.html
Courseware delivery	www.unb.ca/web/wwwdev/naweb98/
Web-based Instruction	www.unb.ca/web/wwwdev/
Distance Education Online Symposium (DEOS)	www.ed.psu.edu/ACSDE or Listserv@psuvm.edu
Association for Media and Technology in Education (Canada)	www.camosun.bc.ca/~amtec
Canadian Association for Distance Education	www.cade-aced.ca/
Education Technology Planners	www.edtechplanners.com
T.H.E. Journal	www.thejournal.com
Syllabus	www.syllabus.com
Copyright Law in the Digital World: Fair Use, Education and Libraries after CONFU	oregon.uoregon.edu/~csundt/documents.htm
The Conference on Fair Use	www.uspto.gov/web/offices/dcom/olia/confu
Copyright and Distance Education: Lawful Uses of Protected Works	www.ind.net/IPSE/fdhandbook/copyrt.html
The Virtual University and Education Opportunity	www.collegeboard.org

The Chemistry Place	www.chemplace.com
Criminology Distance Education at Florida State University	www.fsu.edu/~crimdo/greek.html
World Campus	psu.edu
Latest Issues Concerning Distance Learning	www.petersons.com
Online Scientific Images for the Blind	www.taevisonline.purdue.edu
A Review of Contemporary Research on the Effectiveness of Distance Learning in Higher Education	www.aft.org

Online Course Development **Name**_____
Departmental Survey #1

I would like to get faculty opinions on some Chem 2A course components, so that there is a general, unified direction for the development of the new online Chem 2A course. Please answer any or all of the questions listed below. This is purely optional – if you are not familiar with the Chem 2A course or components, do not feel compelled to give input.

Which textbook/publisher package would the most suitable for students in an online situation?
(I have these particular textbooks available in my office for your perusal, if you need refreshing...a brief summary of each publisher package (omitting the standard instructor's guide, test banks, solutions manuals, and study guides which are available from every publisher)).

My choice: _____

1. ***Basic Concepts of Chemistry*** by Malone (5th edition) from Wiley; no electronic ancillaries

2. ***Introductory Chemistry: A Foundation*** by Zumdahl (3rd edition) from Houghton-Mifflin; *The Chemistry Place* – online interactive exercises and chemical data accessible to textbook adopters; *The Chemistry Resource Center* – links to relevant chemistry sites for professors; *Chemistry: Interactive 3.0 for Introductory Chemistry CD-ROM* – periodic table data, molecular models, animations, video clips, and problem sets.

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4. ***Introductory Chemistry*** by Corwin (3rd edition) from Prentice-Hall; *Chemistry SKILLBuilder CD-ROM* – nomenclature, reactions, and stoichiometry tutorials and exercises; *Chemistry on the Internet* book included free with textbook; *Central Science LIVE* – online interactive exercises, quizzes, practice exams, useful chemical data; *Interactive Chemistry Journey CD-ROM* – currently used in our Molecular Science curriculum – electronic tutorials, exercises, animations). Comment: most of our labs are Corwin's.

5. ***Basic Principles of Chemistry*** (6th edition) or ***Introductory Chemistry Flextext*** by Peters from Saunders; *Interactive General Chemistry CD-ROM 2.5 with ActivChemistry* – interactive exercises and simulated experiments encouraging experimental design; *Getting Started with Computers: Internet Module* book.

Please identify the *Top 10* most difficult-to-teach concepts or skills you have encountered in Chem 2A lecture. Indicate, if you would, what method you currently employ to get these concepts/skills across to students (for example: extra time spent in class on topic, time spent in discussion class, handouts, more exercises, etc)?

	Concept/Skill	**What you do to affect learning**
1.	_____	_____
2.	_____	_____
3.	_____	_____
4.	_____	_____
5.	_____	_____
6.	_____	_____
7.	_____	_____
8.	_____	_____
9.	_____	_____
10.	_____	_____

Below is the current list of Chem 2A Exit Skills. **Do you have any modifications or comments regarding this list?** Make deletions/additions as you wish.

CHEMISTRY 2A
Exit Skills

Chemistry Concepts
A good comprehension, not necessarily quantitative, of the these topics:
dimensional analysis (show correct math set-up with units)
quantitative calculations about substances (moles, percent composition, empirical and molecular formulas)
complete and balance chemical equation for the simple or fundamental reaction patterns gas law
atomic structure and electronic configuration
chemical nomenclature (names and formulas)
stoichiometry
periodic properties of the elements and the periodic table
chemical bonding and introductory molecular geometry
precision and accuracy
elementary behavior and properties of solids, liquids, gases, and solutions
concentration calculations
measurements using the SI(metric) system
forms of energy and its changes
scientific method
properties of acids, bases, and salts

Additions:_____

Laboratory Skills
ability to follow written and oral instructions
ability to collect, record, analyze data, given blank report sheets and step by step directions
ability to properly use a burner, balance, graduated cylinder, pipet, buret, thermometer, evaporating dish, crucible, filtering apparaus
ability to make and accurate measurements.
ability to make quantitative observations and describe them in written form
ability to draw conclusion(s) from observations and written, tabulated, graphed data, e.g., identify and unknown sample
ability to identify pieces of basic lab equipment and their uses
ability to perform basic lab techniques: weighting, heating, measuring, filtering, evaporating, titrating
familiarity with proper handling of reagents, proper methods of dispensing reagents from containers
ability to identify trends and pattern in data.

Additions:_____

Math Skills
use a calculator (+,-,x,/,exp) quickly and reliably
competence in solving for X in a algebraic equations
competence in graphing and interpreting a graph
ability to use scientific notation in problem solving
easily translate word problems into appropriate algebraic equation(s)

Additions:_____

Written Skills
comfortably and easily write complete, clear grammatically correct sentences, paragraph and short themes

Additions:_____

Safety Skills

proper use of safety goggles
proper use of fume hood
proper chemical waste disposal techniques in an experiment
compliance with safety rules
proper response to lab accident(s)
improved ability to follow oral and written directions, especially in a emergency situation
avoidance of contamination of stock (class) reagents
responsibility for order's safety
red labels a reagent containers every time
be aware of contamination problems

Additions:_____

Other Skills

ability to produce neat, organized, complete work every time
know when and how to obtain help (office hours, discussion sections, appointments tutoring sessions, review sessions, study groups)
ability to work independently and cooperatively in both lecture and lab
ability to organize, tabulate, match, fill-in, list, compare and contrast, explain, define distinguish, differentiate, describe, choose

Additions:_____

****

Subject: Re: Hi there!
Date: Tue, 11 Aug 1998 21:30:49 EDT
From: <RDeroo3713@aol.com>
To: tbeam@ibm.mtsac.edu

Dear Terri,
Yes, I really believe that a whole year would be a more appropriate time frame. The development should be a semester, and then the taping, in studio time, etc should be another semester. Otherwise, you will be in the same boat as I was, developing and teaching at the same time. It was murder! They only gave me two months development time before the course started.
It helps to develop a repore (sp?) with the graphics artist from the get go. The first one I had was okay, and tried hard. But the second one was so much better, just because she knew that everything had to be perfect, and she just knew her stuff better. At this point, I would ask your graphic artist for some of his/her "work". i.e. if you want to show formulas, reactions, etc, can this person handle it. What are their standards regarding mistakes. I spent a lot of time working with the graphic artist to make sure that there were no errors. Of course, there always are a few, but we caught almost everyone. She was willing to work at home, on weekends, and get the job done. If you don't have the work from the graphic artist, you may not be able to shoot. She was really a professional.
Okay, my two cents: hardest concepts
1. dimensional analysis: i.e. conversions, especially multistep ones
2. sig figs: it seems like this is tough for them all semester, especially in lab because each device is different, and they have a hard time with this
3. nomenclature: we do so many worksheets. I have developed a lot, and there could be the same on the computer.i.e. computer drill
4. oxidation numbers
5 balancing equations
6. atomic structure, especially the theory behind the quantum numbers
7. complex Lewis structures: I use the 6N + 2 rule to help them with single, double and triple bonds
8 Gas laws: just doing the algebra and deciding which law to use.

Gee, this is almost the entire semester, isn't it? Well, it is hard to narrow it down to five, and these are topics that students that I have taught seem to struggle with.
When I made the tapes, I assumed that they knew nothing, and explain step by step. Students have given me feedback that it was very helpful. Those who needed to, watched the tapes again, and the others got it the first time and moved on. Also, I tried to remember every question that students ask during my live class and incorporate the answers into the tapes. That seemed to help a lot!
When do you have to start this class?
Robin

Online Course Development
Departmental Survey #1

Name Clyde Anderson

I would like to get faculty opinions on some Chem 2A course components, so that there is a general, unified direction for the development of the new online Chem 2A course. Please answer any or all of the questions listed below. This is purely optional – if you are not familiar with the Chem 2A course or components, do not feel compelled to give input.

Which textbook/publisher package would the most suitable for students in an online situation?
(I have these particular textbooks available in my office for your perusal, if you need refreshing...a brief summary of each publisher package (omitting the standard instructor's guide, test banks, solutions manuals, and study guides which are available from every publisher)).

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Please identify the *Top 10* most difficult-to-teach concepts or skills you have encountered in Chem 2A lecture. Indicate, if you would, what method you currently employ to get these concepts/skills across to students (for example: extra time spent in class on topic, time spent in discussion class, handouts, more exercises, etc)?

	Concept/Skill	What you do to affect learning
1.	Nomenclature	Use discussion sections before topic is covered in lecture – handout
2.	Net-Ionic equations	Drill have students do examples on board.
3.	Gas Laws	extra lecture period
4.	Stoichiometry	extra lecture period
5.	pH	use discussion to show students how to use calculators
6.	acid/base	no time to do anything
7.		
8.		
9.		
10.		

Online Course Development
Departmental Survey #1

Name Bob R

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(I have these particular textbooks available in my office for your perusal, if you need refreshing…a brief summary of each publisher package (omitting the standard instructor's guide, test banks, solutions manuals, and study guides which are available from every publisher)).

My choice: CORWIN

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Please identify the *Top 10* most difficult-to-teach concepts or skills you have encountered in Chem 2A lecture. Indicate, if you would, what method you currently employ to get these concepts/skills across to students (for example: extra time spent in class on topic, time spent in discussion class, handouts, more exercises, etc)?

	Concept/Skill	What you do to affect learning
1.	atomic STRUCTURE Model of atom	more (TIME) in trying to Relate to P Table; handout
2.	orbital models	
3.	light IR UV	lab + ditto 20-25?? from lab author as a post lab.
4.	excess / limiting Reagent	more problems exercises
5.		
6.	Important other concepts – as FORMULAS, Equations, M:I-mole etc, %comp,	
7.	NOT DIFFICULT	metric-English, lab calc.
8.		MOST students can grasp some
9.		understanding at least C level or
10.		better

Sabbatical Project, "What Makes an Online Course Effective?"

Terri Beam, Fall 1998

Attached is a Survey, in the form of a table, which addresses the use of various course components, both on-campus and off-campus. This information (your own opinion) would greatly help me in the development of an On-line Course Resource Guide, which I am contracted to deliver with this sabbatical leave. My goal is to develop a comprehensive resource for Mt. SAC faculty *that will help to define and clarify the issues involved with the development and delivery of on-line courses, and provide a methodology for evaluating the effectiveness of on-line courses.* You were specifically chosen for this Survey, because of your continuing interest in technology. I know that some of you do not currently teach an on-line course, but your opinion about these various course components can help Mt. SAC faculty who are thinking of developing on-line courses now or in the future. Questions, such as "how should we do this?" and "should we do that?" and "is it necessary or possible to do it that way?" have come up as we develop courses for on-line delivery. We are trying to develop the most effective components as possible for a variety of disciplines. Your opinions are important! Please help us to answer some of our questions. The compilation of survey results will be sent to you upon completion of this project. Feel free to contact me regarding any of these questions at tbeam@ibm.mtsac.edu . Thanks in advance for your help and cooperation. Return this Survey to Terri Beam, Building 11, Room 14.

*Name:*_____ *Extn:*_____

Course Component	Currently used in on-campus courses? (Y/N)	Should this be used/is it being used in on-line courses? (Y/N)	How should it be/is it being administered or delivered in an on-line course?	What makes this component, or how it is delivered, effective for student learning? (in an on-campus or on-line course)
Lecture				
Discussion				
Homework				
Laboratory				

Course Component	Currently used in on-campus courses? (Y/N)	Should this be used/is it being used in on-line courses? (Y/N)	How should it be/is it being administered or delivered in an on-line course?	What makes it effective for student learning? (in an on-campus or on-line course)
Written assignments				
Multimedia				
Quizzes				
Exams				
Projects				
Other:				
Other:				
Other:				

Subject: FW:
Date: Mon, 9 Nov 1998 17:31:37 -0800
From: "Dwight Ayle" <dayle@mtsac.edu>
To: "Terry Beam" <tbeam@ibm.mtsac.edu>

Terri:

I made the changes you indicated. Here's the current list.
Dwight

-----Original Message-----
From: Mail Server [mailto:Maiser@mercury.mtsac.edu]
Sent: Monday, November 09, 1998 5:17 PM
To: dayle@mtsac.edu
Subject:

Members of list 'ONLINE' as at Mon, 9 Nov 98 17:16:53 -0800:

wlutz@ibm.mtsac.edu
dayle@ibm.mtsac.edu
jmedina@ibm.mtsac.edu
jbradley@ibm.mtsac.edu
EAdams2791@aol.com
tbeam@ibm.mtsac.edu
dmedina@mtsac.edu
kirvine@mtsac.edu
tmcfarla@mtsac.edu
rjagodka@mtsac.edu
shulling@mtsac.edu
mjohnso2@mtsac.edu
bmezaki@mtsac.edu
ehillenr@mtsac.edu
ahenders@mtsac.edu
lbrown@mtsac.edu
pbarnhar@mtsac.edu
gbro@mtsac.edu
hbauch@mtsac.edu
jfortner@mtsac.edu
jstubbe@mtsac.edu
amillspa@mtsac.edu
jjenkins@mtsac.edu
pbower@mtsac.edu
shuang@mtsac.edu
hcramsie@mtsac.edu
barbarav@deltanet.com
profjean@ix.netcom.com
bmcbride@ix.netcom.com
jbrownri@mtsac.edu
ctunstal@mtsac.edu
jheneise@mtsac.edu
slange@mtsac.edu

Subject: Data posted to form 1 of http://vclass.mtsac.edu/~tbeam/survey2.htm
Date: 12 Nov 1998 10:20:38 -0800
To: <tbeam@mtsac.edu>

****

Name: Ralph Jagodka
Eaddress: rjagodka@mtsac.edu
lec1: Yes
lec2: No
disc1: Yes
disc2: Yes
home1: Yes
home2: Yes
lab1:
lab1: No
lab2: No
write1: Yes
write2: Yes
multi1: Yes
multi2: Yes
quiz1: No
quiz2: No
exam1: Yes
exam2: Yes
proj1: Yes
proj2: Yes
other1: Please Share Results of your inquiry with me.
other2:
otherx1:
otherx2:
B1: Submit
Date: 11/12/98
Time: 10:20:37 AM

lec3:

Combination of reading assignments, hyperlink visits to other web pages related to t

lec4:

Student learning occurs through the use of various "tools". One of the traditional

disc3:

Weekly discussion topics that encompass understandings and insights gained from read

disc4:

As stated above, student learning occurs from reflective processes, as well as expla

home3:

Similar fashion to classroom course.

home4:

Relevance to topic (reality and applicability)

Sabbatical Project, "What Makes an Online Course Effective?"

Terri Beam, Fall 1998

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Name: Helen Bauch ***Extn:*** X4564

Course Component	**Currently used in on-campus courses? (Y/N)**	**Should this be used/is it being used in on-line courses? (Y/N)**	**How should it be/is it being administered or delivered in an on-line course?**	**What makes this component, or how it is delivered, effective for student learning? (in an on-campus or on-line course)**
Lecture	Y Minor component in foreign language courses	Y some	until video streaming is perfected - video tapes work.	make units short include lots of examples - use visual aides
Discussion	Y	Y group exercises	e-mail for writing + reading practice with other students & classmates. telephone practice for oral component	low stress environment instant feedback
Homework	Y	Y	worksheets or exercises delivered via web. Ideally answers available immediately after student answers on-line	feed back from teacher or other students or answer key
Laboratory	Y	Y	for languages this is like homework	repetition for building competency + relevant feedback

* My answers use foreign languages as my base of reference

Course Component	Currently used in on-campus courses? (Y/N)	Should this be used/is it being used in on-line courses? (Y/N)	How should it be/is it being administered or delivered in an on-line course?	What makes it effective for student learning? (in an on-campus or on-line course)
Written assignments	Y	Y	drafts can be sent to fellow student + final filed in teachers account	feedback
Multimedia	Y	Y	via web	instant responses
Quizzes	Y	Y	via internet - answers should be corrected + sent to teachers account + correct answers sent to students	feedback keeps students consistent + current w. practicing skills
Exams	Y	Y	If security issues can be resolved on-line tests are OK. I'd like mine taken in an open lab	feedback concerning mistakes
Projects	Y	Y	students can formalize project contracts via e-mail + electronically send papers to teachers account	Showing + comments of colleagues + teacher
Other:				
Other:				
Other:				

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Terri Beam, Fall 1998

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Name: Robin De Roo ***Extn:*** none!

Course Component	Currently used in on-campus courses? (Y/N)	Should this be used/is it being used in on-line courses? (Y/N)	How should it be/is it being administered or delivered in an on-line course?	What makes this component, or how it is delivered, effective for student learning? (in an on-campus or on-line course)
Lecture	Y	N	Information explained in a traditional lecture must be conveyed via video, student centered learning	That all learning styles are addressed: audio & visual learners; drill is necessary for 2A
Discussion	Y	Y	Worksheets used in discussion can easily be modified for computer use; computer drill would be perfect here	Students need to do many examples at the 2A level
Homework	Y	Y	could be on line submission of homework completed on line, or assignments can be given as in a traditional course	the more problems 2A students do, the better the comprehension
Laboratory	Y	Y	must come to campus	students see rxns & learn lab techniques

Robin DeRoo

Course Component	Currently used in on-campus courses? (Y/N)	Should this be used/is it being used in on-line courses? (Y/N)	How should it be/is it being administered or delivered in an on-line course?	What makes it effective for student learning? (in an on-campus or on-line course)
Written assignments	Y	Y	There are short essays that students can email in easily	Students relate to people. When they find out interesting information on Nobel prize winners, they can relate more to the people involved in chemistry
Multimedia	Y	Y	video clips, CD rom, all forms of multimedia should be incorporated	Students can see demos that are too dangerous and some videos are better at explaining 3D concepts
Quizzes	Y	Y	Could be given during the beginning of lab or online during a specific time period - i.e. "take home quiz"	Students need a push with multiple quizzes, exams
Exams	Y	Y	A lab period may be necessary	Really motivates Students to study
Projects	Y	Y	Definitely online! Heck - they have access to the internet & should use it	Students can go beyond the information in the text book & feel a sense of pride in their work - like they "discovered" something
Other: WWW	N	Y	The internet should be used! I have assigned WWW for students to go to	Students learn that there are many resources on line
Other: listserve	N	Y	Students need to interact with each other as they do in class	Students learn from each other!
Other: bulletin board	N	Y	Students need a place to read messages posted from instructor about the dept, activities, chem club, etc.	On campus, students use the glass case to see posted messages, a BBS can also do this

has a parallel on campus section. My answers are for

Sabbatical Project, "What Makes an Online Course Effective?"

Terri Beam, Fall 1998

a class that will be given credit that is equal to an

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Name: _____ ***Extn:*** _____

Course Component	Currently used in on-campus courses? (Y/N)	Should this be used/is it being used in on-line courses? (Y/N)	How should it be/is it being administered or delivered in an on-line course?	What makes this component, or how it is delivered, effective for student learning? (in an on-campus or on-line course)
Lecture	Y	N	Should be activities that are interactive	Student needs to be provided with course curriculum in a meaningful way
Discussion	Y	Y	Chat room, Instructor e-mail	Student must be able to interact with instructor/peers
Homework	Y	Y	E-mail or mail assignments to instructor	Students need to be able to get feedback from instr. as well as practice
Laboratory	Y	Y	Exactly the same. Cannot be separated from on campus	Students must be able to apply the principles they have learned in a practical setting.

Course Component	Currently used in on-campus courses? (Y/N)	Should this be used/is it being used in on-line courses? (Y/N)	How should it be/is it being administered or delivered in an on-line course?	What makes it effective for student learning? (in an on-campus or on-line course)
Written assignments	Y	Y	E-mail or mail to instructor.	Improves writing skills. Feedback from teacher
Multimedia	Y	This should be part of how on-line course is presented.	Activities used for on-line course should incorporate all multi media possible. Should be interactive	Effective for different types of learners. Lecture & note taking does not work well for everyone
Quizzes	Y	Y	If it counts towards a grade, must be done on campus w/ supervision.	Feedback on how well concepts have been mastered.
Exams	Y	Y	Exactly the same. The integrity of the exam must be maintained, or the course grade is meaningless. MUST NOT BE DONE ON-LINE W/O SUPERVISION	"
Projects	N	N		
Other:				
Other:				
Other:				

To: tbeam@mtsac.edu <tbeam@mtsac.edu>
Date: Monday, February 01, 1999 1:28 PM
Subject: Data posted to form 1 of http://vclass.mtsac.edu/~tbeam/survey2.htm

---

****

Name: Melanie Diederichs
Eaddress: Melmtsac@aol.com
lec1: Yes
lec2: Yes
disc1: Yes
disc2: Yes
home1: Yes
home2: Yes
1ab1:
lab1: No
lab2: Yes
write1: Yes
write2: Yes
multi1: Yes
multi2: Yes
quiz1: Yes
quiz2: Yes
exam1: Yes
exam2: No
proj1: Yes
proj2: Yes
other1:
other2:
otherx1:
otherx2:
B1: Submit
Date: 2/1/99
Time: 1:33:31 PM

lec3:

As interactive as possible! I am currently incorporating video clips to emphasize concepts of human development.

lec4:

I feel it helps students review, explore and comprehend information in a different modality than is possible with text only interaction.

disc3:

As interactive as possible! I feel this is the replacement of "in class" communication,

debate and discussion. This is a powerful component of online instruction since discussion can be facilitated in a "less risk" environment. Students who may not usu

disc4:

This is a powerful component of online instruction since discussion can be facilitated in a "less risk" environment. Students who may not usually participate in "in class" communication, debate and discussion will do so online.
Also responses can be thought out, researched and edited prior to posting which enhances the quality and depth of the discussion.

home3:

In the same way as in an "on site" section. Instead of receiving information inclass the material is available online. Instead of turning it in "on site," it is e-mailed to the instructor. Think of the trees we are saving by exchanging assignments wit

home4:

I feel it helps students review, explore and comprehend information in a different modality than is possible with text only interaction.

lab3:

I think the "hybrid" appraoch is a good idea for now. I am sure the technology will provide us with ways soon of actually designing "virtual" labs.

lab4:

I feel it helps students review, explore and comprehend information in a different modality than is possible with text only interaction.

write3:

Again, in the same way as in an "on site" section. Instead of receiving information inclass the material is available online. Instead of turning it in "on site," it is e-mailed to the instructor.

write4:

Again, I feel it helps students review, explore and comprehend information in a different modality than is possible with text only interaction.

multi3:

There is much that is currently available now. Video clips, slide shows, interactive websites, etc.

multi4:

Again, I feel it helps students review, explore and comprehend information in a different modality than is possible with text only interaction.

quiz3:

A secured system. Quizzes should be used if they are a part of the "on site" section. I find that there is little that can't be done online that is not part of an "on site" section. It takes creativity and imagination. Even "face to face" can be manag

quiz4:

Again, I feel it helps students review, explore and comprehend information in a different modality than is possible with text only interaction.

exam3:

At this point, I am testing on campus. I feel there should be some measure of accountability and exam taking with a photo ID accomplishes this for me.

exam4:

Again, I feel it helps students review, explore and comprehend information in a different modality than is possible with text only interaction.

proj3:

Students observe in field settings or utilize a previously developed series of video observations and prepare a case study. These same options are availble to my "on site' sections.

proj4:

Again, I feel it helps students review, explore and comprehend information in a different modality than is possible with text only interaction.

other3:

other4:

otherx3:

otherx4:

Subject: Data posted to form 1 of http://vclass.mtsac.edu/~tbeam/survey2.htm
Date: 11 Nov 1998 22:36:42 -0800
To: <tbeam@mtsac.edu>

****

Name: Stephen Lange
Eaddress: SLange@MtSAC.edu
lec1: Yes
lec2: Yes
disc1: Yes
disc2: Yes
home1:
home2: No
lab1:
lab1: No
lab2: Yes
write1: Yes
write2: Yes
multi1: Yes
multi2: Yes
quiz1: Yes
quiz2: Yes
exam1: Yes
exam2: Yes
proj1: Yes
proj2: Yes
other1:
other2:
otherx1:
otherx2:
B1: Submit
Date: 11/11/98
Time: 10:36:42 PM

lec3:

PowerPoint or presentation software.
Prep notes and/or post notes for guidance.
Put in some type of auditory, video, links, so that the
lesson can't totally be downloaded.
Video clip of an actual class lecture.

The main rationale I site is that.... without professor-student
contact, the success of the lesson is sub-par.

Email, chat, video conferencing would all make this more successful.

lec4:

Interaction with the material increases the probability the
learner will learn.

disc3:

This is the necessary part I spoke of earlier.

disc4:

Discussion requires elaboration on the part of the participants.

Elaboration moves the information through the students brain, increasing knowledge.

home3:

Portfolios, 'nuff said.

home4:

Porfolios are more insightful as to whether the student is going thru the motion or knowing how to make things move.

lab3:

Chat, study lessons, examples.

(I don't need this, but believe this is extremely important for other disciplines.)

lab4:

the application not the theory is necessary to give the lesson meaning for most (of us).

write3:

Necessary, required, no class should be without it.
Critical thinking, writing skills all involved.

write4:

fundamental to collegiate work.

multi3:

Multimedia, presentation software. The web courses can turn into books on TV if only text based. Only TV is to SHOW important.

multi4:

quiz3:

Inbedded in the lecture/presentation info.
On-line in real timecreates a closer to class environment.
Email the responses.
Post the answers, students have to find the questions.

quiz4:

exam3:

exam4:

proj3:

proj4:

other3:

other4:

otherx3:

otherx4:

I'm getting tired and have other questions to answer
(my regular stuff). I really appreciate this opportunity.

Steve Lange

Subject: Data posted to form 1 of http://vclass.mtsac.edu/~tbeam/survey2.htm
Date: 12 Nov 1998 21:25:26 -0800
To: <tbeam@mtsac.edu>

```
*********************************************************************************
Name:      Wayne Lutz
Eaddress:  wlutz@mtsac.edu
lec1:      Yes
lec2:      No
disc1:     Yes
disc2:     Yes
home1:     Yes
home2:     Yes
lab1:
lab1:      No
lab2:      No
write1:    Yes
write2:    Yes
multi1:    Yes
multi2:    Yes
quiz1:     Yes
quiz2:     Yes
exam1:     Yes
exam2:     Yes
proj1:     No
proj2:     No
other1:
other2:    No
otherx1:
otherx2:
B1:        Submit
Date:      11/12/98
Time:      9:25:25 PM

lec3:


lec4:

It's hard to imagine a future college course without a lecture component. That is on

disc3:

Chat sessions (scheduled) and discussion groups (on student's and instructor's time-

disc4:

Promoting on-line discussions can be difficult. We have found that Internet discussi

home3:

The biggest concern that I have is that only open-book quizzes and exams are possibl

home4:


lab3:
```

lab4:

write3:

Lengthy written assignments will have to be avoided until student Internet connectio

write4:

multi3:

Great opportunities exist here, but currently Mt SAC students do not have access to

multi4:

quiz3:

Limited to open-book (see above). This is a major limitation.

quiz4:

exam3:

Same comments as for quizzes.

exam4:

proj3:

It's a nice concept, but I'm not sure how to implement it.

Good luck with your project, Terri!

proj4:

other3:

other4:

otherx3:

Info only... You have two dupliate "Other" categories on this web page.

otherx4:

Subject: Data posted to form 1 of http://vclass.mtsac.edu/~tbeam/survey2.htm
Date: 11 Nov 1998 20:02:44 -0800
To: <tbeam@mtsac.edu>

```
**********************************************************************************
Name:      Barbara Vigano
Eaddress:  barbarav@deltanet.com
lec1:      Yes
lec2:      Yes
disc1:
disc2:     Yes
home1:     Yes
home2:     Yes
lab1:      Yes
lab1:
lab2:      Yes
write1:    Yes
write2:    Yes
multi1:    Yes
multi2:    Yes
quiz1:     Yes
quiz2:     Yes
exam1:     Yes
exam2:     No
proj1:     Yes
proj2:     Yes
other1:    Oral presentations and oral interviews
other2:
otherx1:
otherx2:
B1:        Submit
Date:      11/11/98
Time:      8:02:43 PM

lec3:

The most important element is interesting, varied display on the page.

lec4:

It should be interactive, with lots of hyperlinks and possibilities to inquire about

disc3:

Like a "discussion site" to which all participants in the course can / must contribu

Everybody sees everybody's contributions and should be encouraged to make comments.

disc4:

The mandatory writing (and reading) is beneficial. The mandatory contribution to the

home3:

Assignments should be sent to the instructor's mailbox. He/she should respond in a (

home4:
```

Labor intensive for the instructor, but (at least, initially) more interesting for s

lab3:

Similar to homework, with a record of the work done by the student kept either in a
Again, labor intensive for the instructor.

lab4:

write3:

Not different from written assignments handed to the instructor in class, except tha

write4:

I do not see a big difference here with paper and pencil assignments, except for the

multi3:

All online material should be enhanced with images and sound to make it more interes

multi4:

The addition of interactivity and sound is the big advantage of online material

quiz3:

To make quizzes effective, i.e. in order to eliminate "cheating" as much as possible

quiz4:

see above

exam3:

Mid-term and final exams should be taken in class as the "real" test of what has bee

exam4:

proj3:

proj4:

Encourages the use of all available techniques related to the web, email, and multim

other3:

Possible when telephony over computers is more commonly available.

other4:

otherx3:

otherx4:

lab3:

Depends upon subject matter - I do not use it either on-line or in campus. Any use

lab4:

As above

write3:

Term paper

write4:

Relevance, introspecgfion, application of course content

multi3:

To a limit - flash for the sake of flash is a waste of resources in my opinion. Rem

multi4:

Can enhance presentations - be careful about creating something that will take 20 mi

quiz3:

Depends on style of instructor - use of exams versus small quizes versus experientia

quiz4:

As above

exam3:

Use hybrid method - students come to Learning Assistance anytime during the week to

exam4:

Casn be made into useful tool if combined with other pedagogical augmentations

proj3:

Desgn appropriate to learning objectives

proj4:

As above

other3:

Please share results of your inquiry with me, as I am curious how others answered yo

other4:

otherx3:

otherx4:

7 ☐ Class schedule
3 ☐ Posted notices
☐ Word of mouth
☐ Mt. SAC virtual classroom/Distance learning web pages
☐ Letter from Mt. SAC
Other: ☐

6) How do you feel about coming to campus once a week for class? (check all that apply)

1 ☐ hard to get here
2 ☐ wish it was not so early in the morning
1 ☐ wish it was in the evening
☐ wish it was on a weekend day
6 ☐ it is working out just fine
☐ N/A

7) How do you feel about taking exams on campus versus online? (check all that apply)

2 ☐ It is better for accurate assessment of my understanding
☐ I don't like having to come to class to take exams
1 ☐ I believe it is a more secure situation on campus
7 ☐ I don't mind coming to campus to take exams

8) How important is it for you to have regular, face-to-face personal contact with...?

	your instructor		**other students**
4	○ very important	2	○ very important
3	○ somewhat important	5	○ somewhat important
1	○ not important	1	○ not important

9) How often do you have any kind of contact with...?

your instructor	other students
○ every day	○ every day
1 ○ several times a week	3 ○ several times a week
7 ○ once a week	5 ○ once a week
○ rarely	○ rarely
○ never	○ never

10) Which learning resource(s) did you utilize while taking this course? (check all that apply)

8 ☐ Textbook
3 ☐ Solutions manual
8 ☐ Lab manual
4 ☐ Online interaction with instructor and/or students
8 ☐ Class web pages
5 ☐ On-campus interaction with instructor and/or students
3 ☐ CD-ROM supplement to textbook

11) In your opinion, what is the <u>most</u> important learning resource available to you in this course?

3 ○ Textbook
○ Solutions manual
○ Lab manual
○ Online interaction with instructor and/or students
2 ○ Class web pages
3 ○ On-campus interaction with instructor and/or students
○ CD-ROM supplement to textbook

Comments:

12) How would you rate the amount of the learning resources available to you (to be successful) in this online class?

6 ○ Excellent
2 ○ Good
○ Unsatisfactory
○ Very Poor

13) How did you feel about meeting the deadlines in this class?

fine
adequate
keep on schedule
very important
can't miss
reasonable

very fair
not as flexible as other classes online

14) What would you consider to be the <u>most</u> important student prerequisite to taking this online course?

○ Previous Chem 2A experience/attempt
○ Self-motivation to study independently/meet deadlines
○ Experience with computers/the Internet
○ Math background

15) What did you like the <u>most</u> about this class?

instructor
frees up time
student/instructor interaction
instructor helping us to understand
messages

instructor
instructor
small class size
notecard for exams

16) What did you like the <u>least</u> about this class?

not much time - fast pace
lab makeup policy
exams
more contact w/instructor

lack of flexibility
chemistry
amount of work

17) What would you <u>change</u> about this class?

student progress - actual points !
later time for labs

% for homework
condense amt of work
more class meetings

18) Would you recommend this class to other students?

8 ○ Yes, definitely
○ No, definitely
○ Maybe; depends on on-campus class times

Comments:

19) What recommendations would you make for future students taking this course online?

be disciplined in study habits must have motivation
must read textbook
disable CALL-WAITING
if you want interaction - do online - there's more
do homework
read/surfing does not replace human contact
use web pages

20) Please rate the following course components and learning resources:

Course Components	Great	Good	Fair	Poor	N/A
Course Web Pages (to inform)	8				
Discussion Forum (for interaction purposes)	5	2	1		
On-campus labs (lab skills/interaction)	5	1	1	1	
On-campus exams (for learning assessment)	5	2	1		
Instructor (contact and learning)	8				
Student interaction (collaborative learning)	5	1	1	1	
Mandatory first meeting(to inform)	4	2			2
Online quizzes	5	2		1	
Online student grades	6	1		1	
My understanding of course "expectations" (independent, guided study and self-motivation to meet course deadlines)	3	4		1	
Course Learning Resources	**Great**	**Good**	**Fair**	**Poor**	**N/A**
Textbook	5	3			
Solutions manual	3				5
Lab manual	6	1	1		

	Great	Good	Fair	Poor	N/A
Online interaction with instructor and/or students	4	2	2		
Class web pages	6	2			
On-campus interaction with instructor and/or students	7	1			
CD-ROM supplement to textbook	6	1	1		
Overall course					

no date

21) Would you take another Mt. SAC online class?

8 ○ Yes

○ No

---

22) Optional information:

Name:

Online Course:

Email Address:

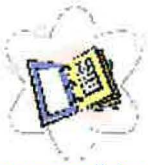
Thank you for your valuable input.

Submit Survey Reset

Introductory Chemistry
CHEM 2A


Professor


Course Information


Course Syllabus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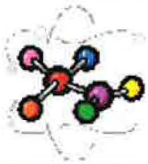
Chem Clues


Chemistry Links


Help / FAQs

[Mt.SAC | Chemistry Department | Terri Beam's Home Page | Chemistry Club]
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Last Updated by Terri Beam on 11 January 1999

Graphics by Vincent Pham

Introductory Chemistry
CHEM 2A

Class Announcement

Welcome to Chemistry 2A Online ! Check out these web pages to see what this course and your professor are like !

Chem 2A Home Page will load in one moment... ***Go Now***

Home | Course Information | Course Syllabus | Course Outline | Discussion Forum
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Professor

[Office/Phone/Email | Courses | Announcements]

Hello, my name is Terri Beam. I will be your instructor for this online Chem 2A course. We will have the opportunity to interact in several ways: e-mail, discussion forum, and in-person every Tuesday morning in lab class. The delivery of this course was designed to support your learning of the introductory concepts and skills of Chemistry in as many ways as possible. Your textbook package was specifically chosen because it will give you the best opportunity to learn in an online learning environment. Other learning materials are available to you in addition to these web pages: Internet books, Chemistry CD-ROMs, other Chemistry web pages, and FAQ (Frequently Asked Questions) lists. Be sure to take advantage of all of the learning resources available to you. If there is anything that I can do to enrich your experience, please let me know!

Contacting Terri Beam:

- Office: Building 11, Room 14
- Office Hours: M 9-11, T 8:30 -9, W 9:30-11
- Phone: (909) 594-5611, x4536 (Voice-mail available)
- E-mail: tbeam@ibm.mtsac.edu
- Web Page: vclass.mtsac.edu/~tbeam

Courses I am teaching Fall Semester 1999:

- Chemistry 2A: (online lec.& disc) + Lab: Tue 9-12, Rm 11-10
- Chemistry 1A: Lec TTH 12:30-2, Labs: MW 11-2
- Chemistry 2A: Lab Th 8-11 AM

Chem 2A Class Announcements:

- Let's get this course underway!!!
- Download a recent browser and multimedia plug-ins (Microsoft

Media Player) for the best use of these pages. Scroll down to the *Online Requirements* on the Virtual Classroom page for information on downloading a browser, or go to the Chem 2A Home Page.

Course Information

[Computer Requirements | Course Requirements | Expectations | Policies- Mt.SAC, Chemistry]

This course requires some computer experience, and a commitment to learning. Students must attend a Mandatory Meeting (see Mt. SAC Fall 1999 Schedule of Classes, p. 36) at the beginning of the semester, be able to show proof of enrollment in this section of Chem 2A and paid fees for this course, and demonstrate an active Internet account at that time. Success in this course will largely depend on the motivation and self-discipline of the student to study independently, actively use the resources provided, be prepared for lab classes, and to meet course deadlines.

Computer / Online Requirements

- must have moderate experience with computers and the Internet
- must have ISP (Internet Service Provider)
- must have an active e-mail account/address
- recommended browsers: Internet Explorer 4.0 or Netscape Navigator 4.0 - see Virtual Classroom page for downloads and additional information

Chem 2A Course Requirements

- currently enrolled (Section 00-5972) and paid fees for CHEM 2A at Mt.SAC
- publisher's package includes:
  - ***Introductory Chemistry, Concepts and Connections***, Charles H. Corwin, 2nd edition textbook
  - ***Chemistry on the Internet***, Thomas Gardner
  - ***Interactive Chemistry Journey CD-ROM***, Steven D. Gammon
- paid Lab Breakage fee at Bursar's Office prior to first lab class
- ***Chemistry 2A Laboratory Manual***, 3rd edition
- safety goggles (VisorGogs in bookstore) that protect from top and sides
- optional: ***Study Guide and Solutions Manual*** to accompany the textbook

Expectations of Student Conduct

- must attend every lab session: Tue, 9 am -12 noon, Room 11-10
- pre-labs must be completed prior to every lab meeting

- meet all textbook reading, quiz, homework, and lab report deadlines
- self-motivated study, especially in preparation for quizzes & exams

Mt. SAC Cheating Policy

"The College considers cheating a voluntary act for which there may be reasons, but for which there is no acceptable excuse. The term "cheating" includes but is not limited to:

- Plagiarism
- Receiving or knowingly supplying unauthorized information
- Using unauthorized material or sources
- Changing an answer after work has been graded and presenting it as improperly graded
- Illegally accessing confidential information through a computer
- Taking an examination for another student or having another student take an examination for you
- Forging or altering registration of grade documents

The instructor who determines that a student has cheated may give the student a failing grade for the assignment, for the course, or drop the student from the course." (Page 282, Mt. SAC Catalog)

Chemistry Dept. Cheating Policy

This policy will be strictly enforced by all instructors in all classes taught in the Chemistry Department:

1. No programmable calculators (except with an instructor's specific authorization) are allowed during an exam or quiz.
2. No talking, sharing of calculators, sharing of notecards or other materials is allowed during an exam or quiz.
3. Before entering the exam room, get all items needed for the exam from your notebook or backpack. Place the authorized items at your seat. Put all other items away as instructed.
4. A single act of cheating in any form shall result in a grade of F for the exam or quiz or piece of work, and a report to the Dean of Student Affairs. A second act of cheating shall result in a grade of F for the course, a report to the Dean, and possible expulsion from the College. Some examples of cheating are:

    - using multiple notecards
    - looking at another student's work
    - changing answers on an exam that has been returned and claiming that the instructor made a grading error
    - discussing what is on an exam or quiz with students in another section who have not taken the exam or quiz
    - turning in lab reports that were generated by other students or by the same student from data accumulated in a previous

your Makeup Slip.

3. After receiving permission to work, complete the makeup experiment.

4. Turn in your Makeup Slip, completed Pre-Lab, experiment report sheet, and any Post-Lab questions to either the makeup instructor or your own instructor before the makeup deadline.

Laboratory

[Student Conduct | Lab Schedule | Makeup Policy]

The Laboratory portion of this course will meet on-campus every Tuesday morning, from 9-12 in Room 11-10. Students must bring to the first lab meeting a receipt (pink) from the Bursar's Office, indicating that he/she has paid their Breakage Fees ($15.00) for this course. Students must also bring their own copy of the Chemistry 2A Laboratory Manual (3rd edition) - xerox copies will not be allowed. Safety goggles, dish soap, dish towel, and optional lab coat or apron will be required at the 2nd lab meeting. All graded lab reports will be kept by your lab instructor. The last day to check out of your locker is Thursday, December 9th. Last day to obtain a refund of your lab deposit (minus any charges) is Friday, December 17th.

Student Conduct

In order to achieve the most satisfying and rewarding laboratory experience for all (students and teacher) in the Chemistry 2A laboratory, the following conditions must be adhered to at all times:

1. Arrive at lab class on time - important information is revealed during the opening minutes, that can insure a safe and successful laboratory experiment and results. Tardy students may not have enough time to finish the experiment in the time left, and may be told by the instructor to do a makeup. Two tardies will be considered as an absence.
2. Only 2 makeups allowed per semester. Makeups must be performed and turned in to your instructor within one week of the missed experiment. Makeup slips must be filled out and turned in in accordance with the Chemistry Department Makeup Policy.
3. Students must complete the Pre-lab assignment before coming to lab class. If the Pre-lab is not completed, the student will complete it upon entering the lab class. When it is completed, there may not be enough time left for the student to complete the experiment, and the instructor may advise the student to do the experiment as a makeup.
4. No food, gum, or drinks at the lab benches. Long hair must be held back, and goggles must be worn.
5. All accidents and injuries must be reported to the lab instructor, no matter

Laboratory Schedule

This Lab Schedule is tentative and may be altered during the semester. These experiments are taken from the 3rd edition of the Mt. SAC Chemistry 2A Laboratory Manual.

WK	DATE	EXPERIMENT PERFORMED	PAGE
1	8/17	Check-in, Safety, A Chemical Search	13
2	8/24	How Heavy? How Big? How Hot?	17
3	8/31	Sink or Float?	33
4	9/7	Specific Heat of a Metal	83
5	9/14	*Exam Review, EXAM #1(Ch 1-4)*	
6	9/21	Bubbles, Colors, and Aromas	59
7	9/28	Atomic Fingerprints	93
8	10/5	Periodic Table Puzzler/Molecular Models*	109
9	10/12	*Exam Review, EXAM #2(Ch 5-7,12)*	
10	10/19	Single/Double Displacement Reactions	167, 173
11	10/26	Empirical Formula of a Hydrate	135
12	11/2	Analysis by Decomposition	145
13	11/9	Charles' Law	225
14	11/16	*Exam Review, EXAM #3(Ch 9-11)*	
15	11/23	Properties of Solutions	211
16	11/30	Percentage of Acetic Acid in Vinegar	235
17	12/7	pH Scale/Use of Indicators, Check-out	249
18	12/14	***FINAL EXAM, 7:30-10 AM***	

Makeup Policy

All Chemistry 2A experiments which are not completed at the regularly scheduled lab period must be madeup within one week, or the missed experiment will receive a grade of zero. Students requiring a makeup for any experiment are responsible for knowing and following this procedure:

1. Obtain a Makeup Slip from your regular instructor or the Chemistry Stockroom.

2. Obtain permission from the instructor in whose class you wish to perform the makeup (may not be your regular instructor.) Have the instructor sign

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Course Syllabus

[Syllabus | Homework | Discussion Forum | Quizzes | Exams | Final Exam | Grading Policy]

Chemistry 2A provides an introduction to the concepts, skills, and techniques of chemistry. Follow the Syllabus below to insure that you are proceeding through the assignments at the proper pace, and will able to meet the course deadlines and be prepared for course assessments (Quizzes and Exams). Various assignments are color-coded for ease in detection. All pre-lab, homework, and lab reports will be turned in during the lab class meeting (on-campus) on Tuesdays. The Discussion Forum postings will be due by midnight of each Sunday for the previous week's assignment. Exams will given during lab class according to this syllabus. Last day to drop this class is Friday, October 29th.

Syllabus

[Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | Week 7 | Week 8 | Week 9 | Week 10 |
| Week 11 | Week 12 | Week 13 | Week 14 | Week 15 | Week 16 | Week 17 | Week 18]

DF=Discussion Forum, HK=Homework, Q=Quiz, E=Exam, PL=Pre-Lab, LR=LabReport, TR=Textbook Reading

WEEK	Sun	Mon	Tues	Wed	Thurs	Fri
1	15(Aug)	16	17 **Mandatory Mtg @ 9:00 AM in Room 11-10 LR**	18 **TR-Ch1**	19	20
2	22 **DF**	23	24 **PL HK1**	25 **TR-Ch2**	26	27
3	29 **DF**	30	31 **LR PL HK2**	1(Sept) **TR-Ch3**	2	3 **Q1**
4	5 **DF**	6	7 **LR HK3**	8 **TR-Ch4**	9	10
WEEK	**Sun**	**Mon**	**Tues**	**Wed**	**Thurs**	**Fri**
	12	13	14	15 **TR-**	16	17

	DF		E1			
6	19 DF	20	21 PL HK5	22 TR-Ch6	23	24
7	26 DF	27	28 LR PL HK6	29 TR-Ch7	30	1(Oct) Q2
8	3 TR-Ch12 DF	4	5 LR LR PL HK7	6	7	8
WEEK	Sun	Mon	Tues	Wed	Thurs	Fri
9	10 DF	11	12 HK12 LR E2	13 TR-Ch8	14	15
10	17 DF	18	19 Ch8-rev PL	20	21	22
11	24 DF	25	26 PL LR HK8	27 TR-Ch9	28	29
12	31	1(Nov)	2 LR PL HK9	3 TR-Ch10	4	5 Q3
WEEK	Sun	Mon	Tues	Wed	Thurs	Fri
13	7 DF	8	9 LR HK10	10 TR-Ch11	11 Holiday - no school	12
14	14 DF	15	16 LR HK11 E3	17 TR-Ch13	18	19
15	21 DF	22	23 HK13	24 TR-Ch14	25 Holiday - no school	26 Holiday - no school
16	28 DF	29	30 LR HK14	1(Dec) TR-Ch15	2	3 Q4
WEEK	Sun	Mon	Tues	Wed	Thurs	Fri
17	5 DF	6	7 LR HK15 LR	8 TR-review	9	10 Last day for lab checkout
18	12 DF	13	14 Final Exam, 7:30-10 AM	15	16	17 Last school day

Homework

Homework will account for a major portion of your learning in this course. Homework must be completed as scheduled in order for it to be meaningful to your lab assignments and quizzes/exams. **Do not put off doing your homework!!** Assignments will be due at the beginning of lab class, on the dates indicated on the Syllabus. Homework turned in later than the due dates will receive only half credit. Only 12 of the Homework assignments will count toward your Homework point total, so each student has 15 opportunities (since there are 15 chapters that we will be covering) to record 12 scores, in order to achieve a high point total for homework. Each homework assignment can receive up to 20 points, and is scored (not graded) for effort and detail. All work must be shown, and all numerical answers must be circled. Homework assignment deadlines are shown in the Course Syllabus. Chapter homework assignments are listed below:

Ch1: 2,3,4,6,7,8,10,12

Ch2: 2,3,4,6,8,10,14,16,18,20,24,26,30,33,34,35,36,37,38,42,46,52,56,58, 59,62,66,68,72,74,80,84,90

Ch3: 1,3,4,6,8,11,12,13,14,16,18,24,30,31,32,37,38,40,42,45,46,48,50,53,54, 55,57,59,61,62,64,66,68,70,78,82,88,90,92

Ch4: 2,5,6,7,8,9,10,14,16,17,18,19,20,21,22,27,30,32,34,38,40,41,42,44,48, 52,54,58,59,60,62,68,71,72,73,74,76,90,94

Ch5: 1,3,7,8,12,16,17,18,20,22,28,32,33,34,38,39,42,44,47,54,56,58,59,60, 62,64,66,70,72,76,78,80,85,88,93,100*

Ch6: 4,6,9,10,11,12,14,16,18,25,28,30,32,33,34,37,38,41,42,44,47,48, 50,52,53,54,55,57,58,60,62,64,68,70,73,74,76,78,80,89,90

Ch7: 1,4,6,7,8,12,13,14,16,17,18,19,20,21,22,24,26,31,33,34,35,40, 43,44,46,49,50,54,59,60,62,71,72

Ch8: 1,2,5,7,10,12,14,16,17,18,20,22,24,26,28,32,40,42,46,50,54,56,58, 60,64,66,69,70,72,73,74,75,76,78,80,84,90

Ch9: 2,4,5,6,9,10,12,14,16,18,20,22,23,24,26,28,30,32,34,38,40,44,48, 52,54,56,68,62,70,80

Ch10: 2,4,8,10,12,13,14,15,16,17,18,19,22,24,26,28,30,33,34,37,38, 40,42,46,50,52,55,56,58,60,62,68,72,76,78,80,91

Ch11: 1,3,8,10,12,17,18,20,23,24,26,29,30,32,33,34,36,38,43,44,46,48, 53,54,55,56,63,64,66,68,69,70,71,72

Ch12: 1,2,3,5,6,7,8,11,12,14,17,19,20,22,24,26,27,28,30,32,34,36,37,39, 40,44,46,48,50,52,54,56,58,67,68,70,72,75,76,77,78,84,94,99

Ch13: 1,3,4,6,10,12,13,15,16,17,18,19,20,23,24,26,27,28,30,32,33,34,35, 36,41,42,44,45,47,48,50,52,56,58,64,66,68,72,74,76,78

Ch14: 2,4,7,8,10,12,14,16,17,18,20,22,23,26,28,29,32,34,36,38,40,42, 44,45,46,48,50,52,54,56,58,60,62,64,84,90

Ch15: 1,2,4,6,8,10,11,12,13,14,16,18,20,21,22,23,25,26,27,28,30,32,33, 34,36,38,40,45,47,48,49,50,51,54,56,58,60,62,63,64,65,66,69,70,72,73, 74,75,76,78,90

Discussion Forum Contents

The Discussion Forum postings will be due by midnight of each Sunday for the previous week's assignment. Each original, complete posting (at least 5 sentences long, and answering the intructor's question or comments) can receive a maximum of 3 points. Replies to other student postings can receive 1 point each. The total amount of points that can be earned through the Discussion Forum is 60 points. Procedures for posting your comments can be found on the Discussion Forum page.

Quizzes

There will be 4 quizzes given as indicated on the Syllabus, as well as listed below. Each quiz will cover approximately 1-3 chapters of the textbook. The quizzes will be taken online by each student, individually. The quizzes will be available to the student for a limited time, and must be completed and submitted to the instructor by the deadline. Once a quiz has been started by the student, it will be automatically timed, then submitted to Mrs. Beam. The quizzes comprise 5 % of your course grade (see Grading Policy). Each quiz will be due to Mrs. Beam by midnight of the following dates:

- Quiz 1: September 5 (Sun)
- Quiz 2: October 3 (Sun)
- Quiz 3: November 7 (Sun)
- Quiz 4: December 5 (Sun)

Exams

There will be 3 mid-term exams given as indicated on the Syllabus, as well as listed below. Each exam will cover approximately 3-4 chapters of the textbook.

The exams will be given during the Tuesday lab class from 10:00 -11:30 AM, with a review session just prior to the exam on the same day. The exams comprise 30 % of your course grade (see Grading Policy).

- Exam 1: September 14 (Tue)
- Exam 2: October 12 (Tue)
- Exam 3: November 16 (Tue)

Final Exam

- Tuesday, December 14th, (Tues) 7:30 -10 AM

Grading Policy

Grade	Percentage		Course Components	% of Grade
A	90-100 %		Homework	24 %
B	80-89 %		Quizzes	5 %
C	65-79 %		Discussion Forum	6 %
D	50-64 %		Exams	30 %
F	0-49 %		Laboratory	25 %
			Final Exam	10 %
			Course Total	100 %

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Course Outline

[Ch1 | Ch2 | Ch3 | Ch4 | Ch5 | Ch6 | Ch7 | Ch8 | Ch9 | Ch10 | Ch11 | Ch12 | Ch13 | Ch14 | Ch15]

This Course Outline is coordinated with the chapters of your textbook, and has the topics listed that you will be responsible for learning. To maximize your understanding of each listed topic, you should follow these steps:

1. take extensive notes as you read the sections of the chapter that correspond to the topics in the Course Outline, and the end of chapter Summary, "Key Concepts" and "Key Terms"
2. explore any of the hyperlinks (❁) in the Course Outline, to further your understanding of concepts and problem-solving that relate to each topic
3. investigate the Chem Clues ( ) provided by your instructor
4. search through any relevant Chemistry Links to continue your learning
5. complete your Homework assignment - (it is underlined to remind you that it is due at the beginning of lab class)
6. complete the Chapter Review questions
7. be prepared to take the Quizzes and Exams when indicated in the Syllabus

❁ - Hyperlink to more information on this topic

- Chem Clue available on this topic

Chapter 1: Introduction to Chemistry ❁

- Evolution of Chemistry
- Scientific Method ❁
- Alchemy
- Modern Chemistry ❁
- Learning Chemistry

Summary, Key Concepts, Key Terms, Homework, Chapter 1 Review

Chapter 2: Scientific Measurements ❁ ❁

- Uncertainty in Measurements
- Significant Digits
- Rounding Off Significant Digits
- Adding and Subtracting Measurements
- Multiplying and Dividing Measurements
- Exponential Numbers
- Scientific Notation
- Unit Equations and Unit Factors
- Unit Analysis Problem Solving
- The Percent Concept

Summary, Key Concepts, Key Terms, Homework, Chapter 2 Review

Chapter 3: The Metric System

- Basic Units and Symbols
- Metric Conversion Factors
- Metric-Metric Conversions
- Metric-English Conversions
- Volume by Calculation
- Volume by Displacement
- The Density Concept
- Temperature
- Heat and Specific Heat

Summary, Key Concepts, Key Terms, Homework, Chapter 3 Review
Cumulative Review (Ch 1-3)

Chapter 4: Matter and Energy

- Physical States of Matter
- Elements, Compounds, and Mixtures
- Names and Symbols of the Elements
- Metals, Nonmetals, and Semimetals
- Compounds and Chemical Formulas
- Physical and Chemical Properties
- Physical and Chemical Changes
- Conservation of Mass
- Potential and Kinetic Energy
- Conservation of Energy

Discussion Forum

[Contents | Post | Search]

Listed below are the contents of this week's Discussion Forum. Click first on Mrs. Beam's message to discover the topic(s) of the week, then post your own message in response to Mrs. Beam's posting. Click on any of the other postings to see comments from your classmates. All postings must be made by Sunday night at midnight to be given credit for the previous week's Discussion Forum assignment. No exceptions! Thoughtful, original, and well-developed postings will be given the maximum amount of credit (3 points per posting), up to a maximum of 40 points for the entire course. Be mature and responsible in your postings, or you will be excluded from this component of the course, and lose all the possible points for Discussion Forum.

Discussion Forum Contents

Note: refresh this page to see the most recent additions.

[Contents | Search | Post | Reply | Next | Previous | Up]

Contents of Chem 2A Discussion Forum

hi there *7/21/99 2:23:40 PM*

Postings cleared every Monday morning.

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Chem Clues

This page contains helpful information that was developed especially for this online course. This material is very similar to the teaching aids used in CHEM 2A when it is taught at Mt.SAC by Mrs. Beam. The Chem Clues are organized by topic:

Chemistry Links

Here are some relevant links to Chemistry web sites around the world, which provide useful physical and chemical data, as well as interactive exercises. Actively use these sites as a complement to the weekly assignments and homework problems. Feel free to include information you have learned from these sites in your weekly Discussion Forum postings. If you have any trouble with any of these sites, please contact Mrs. Beam. Enjoy!

- Introductory Chemistry Concepts, Quizzes, and Exams
- WORLD Chemistry
- MathMol HyperMedia Textbook
- Molecule of the Month
- Objectives, Hints, and Practice Quizzes from Corwin
- Conversion Factors and Unit Relationships
- List of Common Ion Names
- Table of Physical Constants
- Glossary of Chemistry Vocabulary
- Periodic Table Information
- CHEMICOOL Periodic Table
- Visual Periodic Table
- What are Quarks?
- Specific Labware and Laboratory Techniques

Have you found any interesting websites that you would like to share with Mrs. Beam?

Please type the web site address below, and SUBMIT it:

[FrontPage Save Results Component]

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Student Progress

Student progress in this course is displayed in the table below. Actual point totals for Homework, Quizzes, Exams, Labs, Final Exam, and Discussion Forum are posted. If you have any questions regarding your grades, please contact Mrs. Beam. Table updated on ?.

ID #	FINAL	HMWK	DF	LABS	QUIZZES	EXAMS	TOTAL	Percentage	Grade
Possible	150	100	40	250	60	400	1000	100.00%	A
Average									C

Applicant's Name Terri Beam

THE ACKNOWLEDGMENT SIGNATURES REFLECT AWARENESS OF THE SABBATICAL PLAN FOR THE PURPOSE OF PERSONNEL REPLACEMENT. COMMENTS REQUESTED ALLOW FOR RECOMMENDATIONS PERTAINING TO THE VALUE OF THE SABBATICAL LEAVE PLAN TO THE COLLEGE.

APPLICANTS MUST OBTAIN THE SIGNATURES OF ACKNOWLEDGMENT PRIOR TO SUBMITTING APPLICATION TO THE SALARY AND LEAVES COMMITTEE.

ACKNOWLEDGMENT BY THE DEPARTMENT/DIVISION

Signature of Department Chairperson _____ Date 11/24/97
Comments:

Signature of Dean _____ Date 11/26/97
Comments:
ATTACHED SHEET

ACKNOWLEDGMENT BY THE OFFICE OF STUDENT LEARNING

Signature of Vice President, Student Learning _____ Date 12/1/97
Comments:

NOTE: DEANS ARE REQUESTED TO SUBMIT A STATEMENT OF RECOMMENDATION REGARDING THE VALUE OF THE SABBATICAL PLAN TO THE COLLEGE, DIVISION/DEPARTMENT, AND INDIVIDUAL, IN CONSULTATION WITH THE APPROPRIATE DEPARTMENT CHAIRPERSON.

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FINAL ACTION BY THE SALARY AND LEAVES COMMITTEE:

X Recommend approval to the Board of Trustees

___ Not recommend approval to the Board of Trustees

_____ 2/25/98
Signature - Chairperson, Salary and Leaves Comm. Date

_____ 3-2-98
Signature - Authorized Agent of the Board Date

Sabbatical Proposal Revisions, 1/12/98
Terri Beam, Dept. of Chemistry

Committee Recommendations (taken from Preliminary Evaluation, only numbered here):

1) Explore putting laboratory courses online.
2) Investigate what other schools are doing online.
3) The committee questions the relevancy of creating a database because it would be out-of date by the time it was completed.
4) The committee suggests you explore ways to offer the lab component for this course as well.
5) Interview schools throughout the U. S. or Western United States that offer effective online chemistry/science courses.
6) Give more specifics on who you will contact and when.
7) Month by month timeline needs to be more specific.
8) The committee considers a developed online Chemistry 2A course a reasonable result.

Project Activities and Timeline - Fall 1998 (taken from Sabbatical Proposal)

Activity #1: Create a database of current on-line courses and components by contacting faculty, colleges, universities, organizations across the nation, and searching appropriate web sites. This information can be stored in a database program which can be cataloged and sorted by component or discipline.

Activity #2: Enlist 5-15 Mt. SAC faculty and staff across the curriculum to assist me in evaluating on-line courses and components in the database.

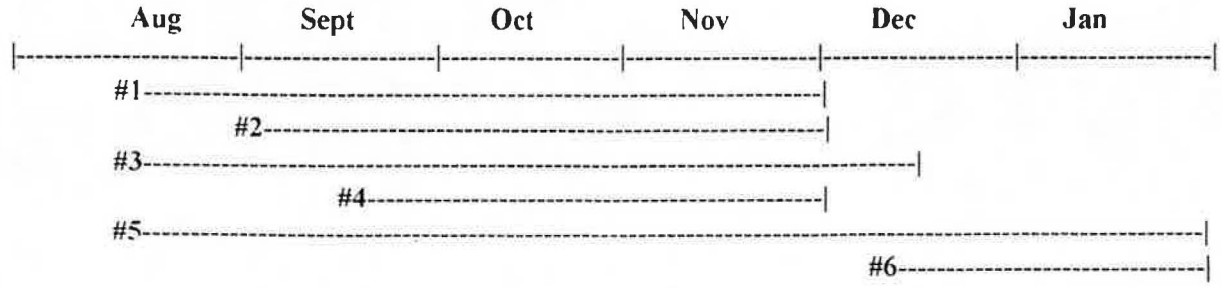
Activity #3: Record evaluations by Mt. SAC faculty and staff in an On-line Resource Guide and/or in the database.

Activity #4: Explore the possibilities of including audio and video components in an on-line chemistry course.

Activity #5: Begin development of an on-line CHEM 2A course using effective on-line components.

Activity #6: Write and submit a comprehensive sabbatical report, detailing the progress and results of the project. Two complete copies will be submitted to the Salary and Leaves Committee by the first working day of February 1999.

Project Timeline, Academic Year 1998-1999



Revisions/Additions to Original Proposal

Recommendations #1, 2, 4, and 5 are a part of **Activity #1** as originally proposed. In order to create a wealth of information on online courses and components, (to put into an electronic database), extensive searching (both online and telephone) of the schools, institutions, and organizations which offer these courses will need to be done. On campus, there currently exists a limited amount of information on online components. Mt. SAC faculty and staff who have been interested or involved in learning processes and/or information technology in most recent years already have been exposed to various educators or administrators around the country who are planning to or have implemented online courses at their respective institutions. They, as well as I, have attended conferences and have spoken with knowledgable persons about the issues surrounding online courses/components. These contacts that I and other Mt. SAC faculty/staff have made, will be the first contacts that I will make in developing the database of information. These contacts are people who have already demonstrated their knowledge, commitment, and dedication to using technology in education over the years.

The following list will give an idea of who I plan to contact first: Florida Community College at Jacksonville (annually hosts the International Conference on College Teaching and Learning and is the Center for the Advancement of Teaching and Learning), University of South Carolina (location of 1998 Teaching and Learning through the Internet Conference), Technology in Education of the California Community College Foundation (Sacramento), Center for Instructional & Research Computing at the University of Florida (Mark Hale, Director), Institute for Academic Technology at the University of North Carolina - Chapel Hill (Kathryn Conway), Instructional Technology Department at the University of Georgia (Thomas Reeves), Regis University (Tom Kennedy), The College Board, Spring Arbor College (Michigan), CSU - Bakersfield, Learning Solutions Research Lab at Arizona State University (Paul Privateer), League for Innovation in the Community College, the Society for College and University Planning (authors of Transforming Higher Education: A Vision for Learning in the 21st Century, Ann Arbor, Michigan), Penn State University (Eleanor Bicanich - author of "Internet-Based Testing: A Vision or a Reality?", the Chemical Education Committee of the American Chemical Society, the National Science Foundation (Susan Hixson), the Committee on Chemistry in the Two Year College (2YC3, Richard Jones at Sinclair Community College), and Mt. SAC faculty and staff. This research will be conducted throughout the entire sabbatical leave (Fall 1998) with the majority of it done in August, September, and October.

Questions to be asked of these contacts will be similar to the following:
Do you have any information on any current online courses at your institution? How were these courses developed? What stumbling blocks did you encounter during the development or implementation of these courses? How did you overcome these obstacles? Will you continue to place more courses online? What has been the response to these courses from your students professors administrators? Do you plan to make changes? ? Do your offer weekend college, or other alternatives to traditional learning with your online courses? Do you currently have audio or video segments in your online courses? Do any of your online courses include online laboratory components? How do you manage the lab component? Do you know of other institutions offering online courses? Is there someone else you are acqainted with that I could talk to who could give me more information on developing and implementing online courses, especially in Chemistry and/or the sciences?

The database will compiled at the same time as the search for information. The database will contain 2 types of information: 1)current online courses (URLs), and 2) online course components

(syllabi, course outlines, quizzes, exams, discussion groups, reference materials, homework or other assignments, and labs). The first type of information may be out-of-date as soon as the school term is over, as certain courses are not always offered each term. But the second type of information will not be out-of-date until all of the courses at Mt. SAC (!) have been converted to online courses, or the 2nd generation Internet takes over with even more and exciting ways to communicate. In other words, putting together in an electronic database the information on the online components alone will be very valuable as we set out to convert some of our traditional courses to online courses. Let me explain this a little more. If an instructor, in any discipline, wishes to convert a traditional course to an online course, and also wishes to keep intact as many of the same course components which have worked well in the classroom, there should be a process by which the instructor may preview a selection of electronically-stored course components. (Web pages and/or HTML source codes are easily downloaded, stored, and displayed). Components may vary significantly in design, security, and ease of use. The instructor could then choose which components will work the best in order to achieve effective online learning in his/her discipline. Right now, there is very little information available for an instructor to use in developing an online course. The limited information that we do have on online courses is not available in one convenient and accessible location for anyone to view or use. The two current online courses at Mt. SAC have been designed primarily by a trained Web consultant, who works for the Distance Education contingent on campus, in coordination with the involved faculty member. As more and more courses are being placed online, this time-intensive process of developing and implementing online courses will not be very productive. The electronic database of online course components (which can be modified per the instructor's desires), will work in a majority of Mt. SAC's courses and will make the design of new online courses much easier and simpler.

Recommendation #8 reflects on Activities #4 and #5 of the original proposal. The completion of the development of an online Chemistry 2A course would depend on some of the information gathered in Activity #1. If I find a number of schools that are currently offering Chemistry courses online, with an online lab component, it may not be too difficult to adapt their methodolgy for Mt. SAC. We are limited in some ways, by our campus infrastructure, from having all technological options open to us for online classes. During the implementation of one of our current online courses, we encountered difficulties in managing the discussion group component of the course. This course component will need to be managed in a different fashion, with less faculty control than was expected. Those types of issues should be ironed out before a course goes online, or it will not be very effective. I could reasonably expect to have the non-laboratory portion of an online Chem 2A course completed at the end of the sabbatical leave, but the laboratory portion could turn out to be non-effective as an online component. I would not like to lower the standards that we have set in the Chemistry Department with our current Program by offering a substandard online laboratory component. The online lab component may just take additional development time in order to meet our current departmental standards.

Recommendation #8 also depends on the results of Activity #4. I have already proposed to begin exploration into incorporating audio and video segments into an online Chem 2A course in order for it to be effective and to continue to meet our existing departmental standards. Including significant audio/video segments into Web pages has not met with much enthusiasm from Web developers, because of the great amount of time spent in development, and the large file sizes to be transmitted over the Internet. Instructional Technology Center staff member Dwight Ayle has optimism about this aspect of this project, and I am thankful that he has encouraged me to seek this route. I teach Chemistry now with many visuals, and I would really like to see an online course contain many of the already successful components of the traditional course. This is relatively new

work for Mt.SAC, and I am not sure what we will encounter. Given his trusted optimism, I am confident of at least partial success in this area.

"Completion" of an online Chemistry 2A course is dependent on several factors (beyond my control), so I am hesitant to include the "completion" in this proposal. Development of this new online course would also depend on the type of support I would receive from the Instuctional Technology Center and Distance Education staff here at Mt. SAC. In the past, certain ITC and Distance Education staff members have spent significant time assisting faculty to develop online courses. If I knew that this type of support were to continue, I would feel more confident in including the "completion" of an online course in this proposal. But their involvement and staff assignments are not determined by me. Given the time, I could develop much of this course on my own, because of my recent education in technology. But when difficulties arise, my limited knowledge may not be able to overcome them. Trained expertise will be needed.

More specifics for the timeline:
Activity #1 will continue throughout the entire semester, with the majority of the work being performed in August, September, and October. I will keep a log of all contacts, and all information gathered.

Activity #2 and **Activity #3** will coincide with Activity #1 results. The implementation of the Online Learning Discussion group here at Mt. SAC will provide an excellent opportunity to share my new information, and collect input from other Mt. SAC faculty and staff.

Activity #4 will begin as soon I have completed the development of the textual portion of the online course. The textual portion will be the easiest for me to complete, as I have experience in this area. When the textual development is done, it will be more recognizable where the audio and video components should be included in the course. The audio and video components will be designed to augment the corresponding textual portion, in order to bring more clarity and understanding of certain concepts, procedures, or visual processes to the students.

Activity #5 is the development and implementation of the textual as well as audio/video components of the online course. This will continue throughout the semester, making a cohesive package that will be effective for the students, and that meets the Chemistry Department standards.

Activity #6 will commence near the end of the project, to be submitted by the deadline.