SYLLABUS---CHEMISTRY SEMINAR

Website Version (Highly Abbreviated)

CHEM 495

THIS IS THE WEBSITE VERSION OF THIS SYLLABUS, AND IS HIGHLY ABBREVIATED. STUDENTS TAKING THIS COURSE SHOULD REFER TO THE FULL VERSION.

Course Description from Catalog

Students give presentations in class and at student symposia, and are encouraged to publish in journals such as the *American Journal of Undergraduate Research*. Guest speakers give presentations on their industrial, academic, or governmental research. This course may be repeated for additional credit.

Meeting Times

One hour per week.

Credit

0.5 hour.

Prerequisite

CHEM 312 (or concurrent).

Requirement

All chemistry majors are required to take this course twice.

Instructor

Dr. Douglas Armstrong

Scope

This course is designed with broadness and diversity in mind, but, of course, within the context of chemistry. This is done with the students' best interests in mind, because most (or all) students taking this course are expected to be in the process of making major career decisions. The broadness and diversity will be achieved via the selection of the guest speakers and via the choice of topics for students' scholarly activities.

The selection of guest speakers was done with the objective of trying to achieve as much variation as possible, by fulfilling as many of the following considerations as possible:

a. Representing expertise in a wide variety of areas of chemistry.

b. Representing different affiliations--i.e., industrial, governmental, and academic.

c. At least one academic speaker will be from a large university, and at least one will be from a small university (roughly the same size as ONU), so that students taking this course may easily "identify" with him/her (plus speakers from "medium-sized" universities).

d. At least one industrial speaker will be from a nearby company (Bourbonnais, Bradley, Kankakee, etc.) which might be familiar to some (or all) of the students taking this course, and at least one will be from a more distant company.

e. Representing different educational levels (i.e., some with a bachelors degree only, others with a masters degree but no Ph.D., and still others with the Ph.D. degree). This should help each student decide whether or not to pursue an advanced degree.

f. Representing different age levels, so that students taking this course can hear from chemists ranging from those who have already developed a mature career, to those just beginning their careers, and several people in between.

g. At least one guest speaker will be an ONU alumnus (so that students taking this course may easily identify with him/her), whereas other guest speakers will add broadness and diversity by not being ONU alumni.

h. At least one guest speaker will be currently in a program leading to an advanced degree, so that students can hear directly from a "graduate student".

i. Not all of the guest speakers will be of the same gender, so that students will have the opportunity to hear from both male and female chemists.

Adding further to the broadness and diversity is the instructor's policy that each student will be given the opportunity to choose the topic for his/her oral report or poster or publication. This is the instructor's way to allow the students to have some control over part of the broadness and diversity of this course. However, the topic in all cases MUST BE primarily chemistry.

Course Goals and Objectives

As indicated above concerning the scope of this course, the same idea will be applied to the goals and objectives. That is, the instructor has chosen the goals and objectives of this course with the students' best interests in mind. This course will allow the students to be enhanced by:

1. Seeing what chemistry is like "in the workplace" (including industrial, academic, and governmental settings) by hearing guest speakers from each of these settings talk about their research, their work environment, etc. This should be an excellent and vital supplement to the classroom/lab approach which students have experienced and are experiencing in their other courses.

2. Learning how to make career choices and other major decisions. In the ways described in the full Syllabus, the searching for information and the receiving of information and advice from others should help students decide (if not already decided) whether or not to go to graduate school, and the area of chemistry in which they may want to do laboratory research for postgraduate studies, or the area in which they may want to be employed after graduation.Guest speakers might comment on the role their undergraduate studies has played so far in their careers, and on how they made major career decisions, including such things as what area of chemistry they picked, and how they picked it, whether or not they earned advanced degree(s) (masters and/or Ph.D.) and why (or why not), how they decided which university to attend for graduate school (if they hold, or are working on, an advanced degree), or, for those who do not hold an advanced degree, whether or not they plan to earn such a degree and why (or why not). If guest speakers do not comment on these issues, and if any student wants to know about any of them, the student should feel free to ask the speaker any of them. Also, Dr. Armstrong may comment about all of these aspects in his career, so far, including many issues which he does not mention in his other courses.

3. Being able to ask the guest speakers (and Dr. Armstrong) questions (during or after their presentations), and/or just "chatting informally" with them after the presentations. We can expect that

most (if not all) of the guest speakers will welcome all of the above.

4. Being able to talk with industrial and governmental speakers after their presentations about possibly becoming employed, in a summer program and/or on a permanent basis after graduation, and being able to talk with academic speakers about the possibility of doing summer research, and/or possibly becoming a graduate student in their departments. Quite frankly, most (if not all) guest speakers come to ONU with recruitment as their main (if not only) reason* for coming, and most or all of them will have printed information to give to the students. Don't hesitate to ask for any printed information they may have.

* One possible exception is that guest speakers who are ONU alumni may have loyalty to ONU as being a more important reason than recruitment.

5. Learning about some areas of chemistry which may be unfamiliar to most or all of the students, which may not be covered by any of the other chemistry courses offered here at ONU, and possibly not covered by any of the courses a given student may take in the future, at universities other than ONU.

6. Becoming aware of chemical information sources available in general, but emphasizing those available in the ONU Library or accessed from the Library's web pages. This includes many aspects, such as how to do on-line searches of the chemical literature, how to plan ahead and use the inter-library loan system effectively, etc. These and other services offered by Benner Library will be included in a presentation by a staff member of Benner Library.

7. Learning how to become quite knowledgeable about the topic on which each student will present an oral report or a poster, or will write a manuscript to be submitted for publication considerations. This will be done via the above methods, as in #6, which should help students know how to become knowledgeable about other topics in chemistry when in graduate school and/or during employment as a chemist in subsequent years.

8. Becoming aware of resources and services offered by the ONU Career Center, including learning how to search effectively for a job, how to write a good and appropriate resume, and how to conduct oneself on a job interview, etc. These and other resources and services offered by the Career Center will be included in a presentation by an ONU Career Specialist.

9. Provided there is enough time in the schedule, being able to view and discuss a video of a GEM National Satellite Broadcast entitled "Graduate School: The Payoff," which provides excellent information and "food for thought" to help students decide whether or not to seek an advanced degree. (If not enough time in the schedule, students may view this video in the Curriculum Center. Ask for call number VC-378, G755n.)

10. Gaining the experience (for students who choose this option) of speaking before an audience, when giving an oral presentation, either the in-class type or the off-campus symposium type, and of answering any questions asked by anyone in the audience.

11. Gaining the experience (for those students who choose this option) of preparing a poster and presenting it at an off-campus symposium.

12. Gaining the experience (for those students who choose this option) of writing a manuscript and submitting it for publication in a suitable journal.

13. Attending (as a class) an off-campus event, such as a chemistry lecture or seminar at a nearby major university, or visiting an industrial or governmental laboratory such as ANL or Fermi, or some other event, provided suitable arrangements can be made.

Scholarly Activities (Oral Presentations, Posters, and Publications)

All chemistry majors must take this course twice. By the time each student (whether a chemistry major or not) finishes this course the first time, it is expected that he/she will have done ONE of the following scholarly activities. (See below.) By the time each student finishes this course the second time, it is expected that he/she will have done TWO of the following scholarly activities. It is up to each student to decide which type of scholarly activity he/she wants to do each year.

The types of scholarly activities which may be picked each year by each student taking this course, are as follows:

1. An Oral Presentation in Class.

   This will be during our regular class time, in the presence of all of the other seminar students and Dr. Armstrong.

2. An OFF-CAMPUS Oral Presentation or Poster.

   This may be selected (by the student) from the following list (although other symposia or contests may also be acceptable to the instructor):

   a. ACCA

      Each year, usually in April, the Associated Colleges of the Chicago Area (ACCA) sponsors an undergraduate student symposium.

   b. ANL

      Each year, usually in November, Argonne National Laboratory (ANL) sponsors an undergraduate student symposium.

   c. ACS - Great Lakes Regional Meeting

      In certain years, the Great Lakes Region of the American Chemical Society (ACS) sponsors an undergraduate student symposium.

      NOTE: For the above three (a, b, c), students probably will be able to present a poster, instead of giving an oral presentation, if they wish. Ask Dr. Armstrong about this.

   d. UIUC Undergraduate Research Poster Contest

      The last time Dr. Armstrong checked, the University of Illinois at Urbana/Champaign (UIUC) had an "Undergraduate Research Poster Contest" in the "creation stage," and he was told that if this materializes, ONU students would be invited to participate.

   e. ACS - Chicago Section
      The Chicago Section of the ACS sometimes sponsors a student poster session.

3. A Publication.

   In this case, the student prepares a manuscript and submits it for publication in the American Journal of Undergraduate Research (AJUR), or some other appropriate journal. Dr. Armstrong asked the editor of AJUR if manuscripts which include a literature search on a given topic, BUT NO ACTUAL LABORATORY EXPERIMENTATION, will be considered for publication, and his answer was "Yes." Dr. Armstrong will be very willing to help any student publish, such as by directing the student to any "instructions to authors,"

which may be supplied by the journal, plus giving the student certain pointers and "tips."

Library Use

This course will involve considerable library/literature searching, including much on-line searching.

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