SYLLABUS

Name of instructor: Dr. Yves Coeckelenbergh
Course title: General Chemistry II
Course number: 1312.002
Office phone number: 825-2987
E-mail address: WebCT or yves.coeckelenbergh@tamucc.edu
Office: 211 Center for Science
Office hours: TR 08H30 to 09H30 and 17H00 to 18H00

Course Description:

General Chemistry is the foundation course in chemistry for all science majors. Chemistry deals with the properties of matter, the transformations of matter and the interactions of matter with other matter and with energy. The course will study atoms and collections of atoms that make up matter. Chemistry is one of the fundamental natural sciences.

As the follow-up to General Chemistry I this course assumes a good knowledge of the basic tools of chemistry such as measurement, unit management, elementary mathematics and stoichiometry. Students must be familiar with the properties and structures of atoms and molecules including electron configuration, periodicity and bonding. The concept of energy applied to reactivity must be understood qualitatively and quantitatively.

The course applies a rigorous, quantitative approach to chemistry and emphasizes rational thinking and analysis rather than memory and number crunching. The lectures, assignments and examinations will stress both concepts and context.

The core of the course will be the study of chemical thermodynamics leading to the understanding of free energy and chemical equilibrium. Two major types of reactions, acid-base and oxido-reduction, will be extensively studied in that context. The time dependence of chemical reactions will be studied through chemical kinetics.

At the end of the course the student should know the “fundamentals” and be prepared to follow more advanced courses such as analytical chemistry, inorganic and organic chemistry, biochemistry or physical chemistry.
Student Learning Outcomes (SLO’s):

- Apply a problem solving methodology to chemistry
- Study chemical reactions with the reaction table
- Determine concentrations through several methods (volumetric, gravimetric, colligative properties) and convert various units of concentrations
- Apply the gas law
- Understand the fundamental concepts of chemical thermodynamics
- Understand the meaning of free energy and its relation with equilibrium
- Solve equilibrium problems and understand the difference between K and Q
- Apply equilibrium acid base chemistry including buffers
- Apply equilibrium to electrochemistry
- Understand the fundamentals of kinetics and reaction rates.

Graded activities:

Final grade will be calculated as follows:

First exam: 100 points
Second exam: 100 points
Third exam: 100 points
Quizzes, homework and class participation: 150 points

Final letter grading for the course will be as follows:
A> 90%, B>80%, C>70%, D>60 %, F < 50%.

A comprehensive final exam is optional. If students choose to take the final exam it will be graded on 150 points and the grade will be included in the final grade calculation even if it reduces the average. Missed exams without a valid excuse will be graded zero. Most of the questions of the exams will consist in problems similar to those seen in class or homework assignments.

Students must be seated no later than 5 min before the start of the exam. There should be as much distance between each student as the classroom configuration allows and the desk must be empty with the exception of a pencil and an optional calculator.

Students are not allowed in the classroom after the start of the exam without the permission of the instructor. In any case no student will be admitted after the first exam-taker has left. Student leaving the room will not be allowed to return unless authorized by the instructor. All material including intermediate calculations will be given to the instructor at the end of the exam. A picture ID is required.
There are no make-up exams. All excuses must be requested in advance with the obvious exception of emergencies. Students with a university approved scheduled absence (athletics, military duty, etc.) should contact the instructor well in advance of the scheduled absence to request an exception. Exams may be taken early in those specific cases. Students who do not arrange to take exams ahead of time will not be eligible for this special consideration. A written excuse from the university department involved or the Office of the Dean of Students may be requested.

Homework and quizzes:

Homework assignments will be posted on Blackboard. There might be additional reading assignments such as handouts.

Students will bring their homework to class on the due date. At the beginning of the class there will be a quiz on one of the questions. The quiz will be turned in for grading. After the quiz the entire homework will be corrected by the instructor. Students will keep their corrected homework as a valuable resource to prepare their exams. Absent students without a valid excuse will be graded zero for the missing quiz.

There are at least three reasons to do the homework assignments.

First to understand the course, the course cannot be understood without such a minimal amount of individual work.

Second to prepare for the exams, most of the exam questions will be similar to the homework problems.

Third to receive credit to be included in the point average.

Students must fully understand the logic behind each assignment or repeat them until all uncertainties are waived. *We learn more by trying to find an answer, even unsuccessfully, than by studying the answer.*

Policies and guidelines:

This is a classroom course. Technology, web assisted learning, textbooks are useful complement but cannot replace attendance to the lecture. **Attendance is therefore mandatory.**

The course is built in a coherent manner and missing lectures will create knowledge gaps making further learning extremely difficult. If a class is missed, it is the responsibility of the student to obtain all needed information from a classmate. Missed information includes not only lecture notes and handouts, but also any possible information regarding homework, syllabus changes, exam dates, etc. . . .
Students must be seated in the classroom before the start of the lecture and sit in the front rows. Students entering the classroom after the start of the lecture or leaving before the end will be required to enter their name on the class logbook. There will be neither eating nor chatting. Use of communication devices such as cell-phones and computers is not allowed.

Students must attend the lecture and take notes. PowerPoint presentations will be posted on BlackBoard and do not need to be copied in class. After each lecture the notes should be reviewed and the assignments completed. The reading of the posted handouts is mandatory. Reading the relevant chapter in a textbook optional.

**The following guidelines are recommended:**

1- **Attend the lectures**

2- **Review all the slides and if you have difficulties with anyone of them be tenacious until you get the picture**

3- **Repeat the exercises done in class**

4- **Do the homework. Be tenacious. Don’t worry so much about the answer than the problem solving strategy. All problems are corrected anyway. After correction do them again.**

5- **Reading the handouts posted on BlackBoard is mandatory. Reading the textbook is optional and can offer an interesting perspective. Textbook explanations are a complement, not a substitute to the lecture**

6- **When available use the Special Instruction sessions if needed as an important resource, also a complement, not a substitute**

7- **If you use other resources such as CASA, friends, online chat, etc…. be careful and wise. Do not accept alternate explanations unless checked with your instructor. There is a lot of material to be learned in a very short semester and third person might not have learned all the concepts taught in the course.**

8- **If you don’t do well in the first exam catch up the missing lectures, slides and homework and keep working hard.**

8- **If you have difficulties with the course speak to the professor.**

*Students not planning regular class attendance, daily review of the lectures, reading, completion of the assignments and study should consider another learning option.*

Student should not try to “outsmart the system”. Your instructor organizes the course for maximum learning. Short cuts, better ways to explain things, tricks to answer questions
are only deceptive. If you know a faster way to find the answer to a problem (like short cutting the reaction table) think that your instructor might have taken the long way to illustrate an important concept or a method to be used later in the course.

**Notice to Students with Disabilities:**

Texas A&M University-Corpus Christi complies with the Americans with Disabilities Act in making reasonable accommodations for qualified students with disabilities. If you suspect that you may have a disability (physical impairment, learning disability, psychiatric disability, etc.), please contact the Services for Students with Disabilities Office, located in Driftwood 101, at 825-5816. If you need disability accommodations in this class, please see me as soon as possible.

If you are a returning veteran and experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services for assistance.

**Academic Advising:**

The College of Science and Technology requires that students meet with an Academic Advisor as soon as they are ready to declare a major. The Academic Advisor will set up a degree plan, which must be signed by the student, a faculty mentor, and the department chair. The College's Academic Advising Center is located in Faculty Center 178, and can be reached at 825-6094.

**Grade Appeal Process:**

As stated in University Rule 13.02.99.C2, Student Grade Appeals, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Rule 13.02.99.C2, Student Grade Appeals, and University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules Web site at [http://www.tamucc.edu/provost/university_rules/index.html](http://www.tamucc.edu/provost/university_rules/index.html). For assistance and/or guidance in the grade appeal process, students may contact the Office of Student Affairs.
BlackBoard, Textbook, and supplies:

The BlackBoard course shell contains the course syllabus, handouts to read, PowerPoint slides presented in the lecture, useful links, homework exercises, homework corrections, grades and other useful information. Its consultation is mandatory.

The course material is entirely contained in the lecture and the textbook should be seen as a comprehensive reference and not as a substitute. There is no specifically required textbook but students should have access to a good General Chemistry reference. Students intending to follow a serious scientific curriculum are recommended to use *University Chemistry, Laird, McGraw-Hill*. The use of any other textbook should be submitted to approval of the instructor.

A calculator is optional. Students are encouraged to minimize the use of their calculator as these devices are not allowed in national examinations such as the MCAT.

Non-classroom communication:

Students can stop by the instructor’s office during scheduled hours or request an appointment. E-mails must be addressed to yves.coeckelenbergh@tamucc.edu.

Special Instruction (SI) and Review sessions:

SI Review Sessions are given by an undergraduate student who achieved good results in a previously taken class. Attendance is optional but recommended. It is an opportunity to discuss in depth some of problems and topics seen in class. Current students excelling in the class can apply to give review sessions on specific topics for extra credit.

Tutoring:

The Tutoring and Learning Center (TLC/CASA) in Room 216 of the library (825-5933) provides tutoring, test-taking strategies, and extra help. Make sure that the tutor follows the same approach as presented in the course and in case of doubt discuss the matter with your instructor. A student having problems with the lecture or the homework should consult with the instructor before seeking outside help. **TLC is not a substitute for the lecture.**
**SmartThinking:**

Students can come to the TLC/CASA computer lab Library 216C with their islander e-mail address and their sanddollar id to get their password for this chat based web chemistry tutorial.

**Anxiety and Stress:**

The University Counseling Center (Driftwood: 825-2703) provides help for test anxiety, stress and study skills.

**Conflicting schedules:**

All students with conflicting schedules, including athletes, should ask an appointment with the instructor in order to evaluate the possibility to complete the course.

**Class Conduct:** All students are expected to follow proper classroom behavior and treat the other students and the instructor with respect. If a student’s actions or behavior is deemed disruptive to the class by the instructor, the students will be asked to leave the class until proper sanction is applied.

**Academic Integrity and Honesty:**

All students are expected to conform to college-level standards of ethics, academic integrity, and academic honesty. By enrolling in this course, you agree to be bound by the Regulations and Procedures published in the TAMU-CC STUDENT HANDBOOK. Group interactions, investigations, and studying are encouraged; however, duplicative work will be treated as cheating and will receive a grade of zero. Anything that is viewed as cheating on an exam will be given the most severe penalty possible, most likely an "F" for the course, but may include more severe punishments.
Provisional course outline:

The weekly schedule below is a preliminary outline of the lectures susceptible to be modified. It is the student’s responsibility to keep up with changes to this schedule. The reading and problem assignments should be completed in due time. Failure to stay current will greatly affect your ability to keep up during the lecture and, therefore, will impact your grade in this course.

<table>
<thead>
<tr>
<th>Week</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>01/21</td>
<td>Introduction, syllabus, baseline quiz, mathematics for chemistry</td>
</tr>
<tr>
<td>01/28</td>
<td>Fundamentals, the language of chemistry</td>
</tr>
<tr>
<td>02/04</td>
<td>State of matter, intermolecular interactions, gases</td>
</tr>
<tr>
<td>02/11</td>
<td>Aqueous solutions, colligative properties</td>
</tr>
<tr>
<td>02/18</td>
<td>Review and exam</td>
</tr>
<tr>
<td></td>
<td>02/19 Review</td>
</tr>
<tr>
<td>02/21</td>
<td><strong>Exam 1</strong></td>
</tr>
<tr>
<td>02/25</td>
<td>First law of Thermodynamics</td>
</tr>
<tr>
<td>03/04</td>
<td>Second law of Thermodynamics</td>
</tr>
<tr>
<td>03/18</td>
<td>Chemical equilibrium</td>
</tr>
<tr>
<td>03/25</td>
<td>Chemical equilibrium</td>
</tr>
<tr>
<td>04/01</td>
<td>Review and exam</td>
</tr>
<tr>
<td></td>
<td>04/02 Review</td>
</tr>
<tr>
<td>04/04</td>
<td><strong>Exam 2</strong></td>
</tr>
<tr>
<td>04/08</td>
<td>Acid-base chemistry</td>
</tr>
<tr>
<td>04/15</td>
<td>Buffers and titration</td>
</tr>
<tr>
<td>04/22</td>
<td>Electrochemistry</td>
</tr>
<tr>
<td>04/29</td>
<td>Kinetics and Review</td>
</tr>
<tr>
<td></td>
<td>04/30 Kinetics</td>
</tr>
<tr>
<td>05/07</td>
<td><strong>Exam 3</strong></td>
</tr>
<tr>
<td>05/14</td>
<td>Final Examination (optional) 11H00 – 13H30</td>
</tr>
</tbody>
</table>

In choosing to take this course, you are agreeing to abide by the course rules. Should you have concerns or questions, you are to discuss them with the instructor as soon as possible. However, you are bound by these rules, regulations, and standards from the first day of the class throughout the duration of the course.

This is a course about learning chemistry with a strong emphasis on concepts. Problems are given to illustrate concepts. Solving a problem without the concept is meaningless. There is no excuse to not learning.