A. COURSE INFORMATION
Course number/section: CHEM 1412/886, 887, 891, 892, 893
Class meeting time: TR 09:30 am-10:45 am
Class location: EN 106
Course Website: https://bb9.tamucc.edu

B. INSTRUCTOR INFORMATION
Instructor: Dr. Jim Owens
Office location: CS130A
Office hours: MWF 11:00 am-12:00 pm, MW 2:00 pm-4:00 pm, TR 11:00 am-12:00 pm and 1:00 pm-3:00 pm or by appointment
Telephone: 361-825-4185
e-mail: james.owens@tamucc.edu
Appointments: by request

C. COURSE DESCRIPTION
The continuation of CHEM 1411 - General Chemistry I, the foundation course in chemistry with emphasis on quantitative aspects, prepare the student for organic chemistry and upper level chemistry courses, and involve the student in critical thinking. Laboratory involves development of basic skills.

D. PREREQUISITIES FOR THE COURSE
Chemistry 1411
Corequisite SMTE 0093

E. REQUIRED TEXTBOOK(S) AND SUPPLIES

Online Homework: You must have the code that accompanies the text to enroll in the online homework Connect and LearnSmart, (provided on Blackboard and in class). You can also buy the e-version of the text and the code online. All students are required to start Connect the first week of classes. Regular assignments will be posted and students are required to complete the assignments on-time.

Supplies: Calculator and Periodic Table.
F. STUDENT LEARNING OUTCOMES AND ASSESSMENT

Assessment is a process used by instructors to help improve learning. Assessment is essential for effective learning because it provides feedback to both students and instructors. A critical step in this process is making clear the course’s student learning outcomes that describe what students are expected to learn to be successful in the course. The student learning outcomes for this course are listed below. By collecting data and sharing it with students on how well they are accomplishing these learning outcomes students can more efficiently and effectively focus their learning efforts. This information can also help instructors identify challenging areas for students and adjust their teaching approach to facilitate learning.

By the end of this course, students should be able to understand:

- Intermolecular forces
- States and properties of matter
- Chemical kinetics and equilibrium
- Electrochemistry
- REDOX reactions
- Acids, bases, and water solutions
- Thermodynamics and entropy

G. INSTRUCTIONAL METHODS AND ACTIVITIES

The course is given by face-to-face lectures augmented with PowerPoint slides. Sample problems are presented frequently. Students will be called upon to answer questions. Attendance will be taken. There will be three in-class exams and a final exam. Online homework is required. There is also a laboratory associated with the course.

H. MAJOR COURSE REQUIREMENTS AND GRADING

**Lecture Evaluation:**

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exam I</td>
<td>100</td>
</tr>
<tr>
<td>Exam II</td>
<td>100</td>
</tr>
<tr>
<td>Exam III</td>
<td>100</td>
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<tr>
<td>Final Exam</td>
<td>100</td>
</tr>
<tr>
<td>Connect Homework</td>
<td>50</td>
</tr>
<tr>
<td>LearnSmart</td>
<td>50</td>
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<tr>
<td>ALEKS</td>
<td>150</td>
</tr>
<tr>
<td>Attendance</td>
<td>50</td>
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<tr>
<td>Laboratory</td>
<td>250</td>
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<tr>
<td>Learning Community</td>
<td>50</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>1000</strong></td>
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</tbody>
</table>
Final letter grading for the course will be as follows: A: 90% +, B: 80%+, C: 70% +, D: 60%+, F < 60%.

I. COURSE CONTENT/SCHEDULE
The schedule below is a preliminary outline of the semester. It is your responsibility to keep up with changes to this schedule. The reading and problems assignments should be completed before the due dates. Failure to stay current on reading and problem assignments will greatly affect your ability to keep up during lecture and will affect your grade in this course.

<table>
<thead>
<tr>
<th>Date</th>
<th>Chapter and Sections</th>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/19</td>
<td>12.1, 12.2</td>
<td>Overview of states and phase changes, Heat involved and equilibrium nature in phase changes</td>
</tr>
<tr>
<td>1/24, 26</td>
<td>12.2, 12.3, 12.4, 12.5</td>
<td>Phase diagrams, Liquid state, Uniqueness of Water</td>
</tr>
<tr>
<td>1/31, 2/2</td>
<td>13.1, 13.3, 13.4, 13.5, 13.6</td>
<td>Types of solutions, Why substances dissolve, Solubility as an equilibrium process, concentration terms, colligative properties</td>
</tr>
<tr>
<td>2/7, 9</td>
<td>13.6, 16.1, 16.2, 16.3</td>
<td>Colligative properties, Reaction Rate, Rate Law &amp; reaction orders</td>
</tr>
<tr>
<td>2/14, 16</td>
<td>16.4, 16.5, 16.6, 17.1, 17.2, 17.3, 17.4</td>
<td>Integrated rate laws, collision theory, effect of temperature, activation energy, transition state theory, molecularity, Equilibrium state and constant, reaction quotient &amp; equilibrium constant, relating Kc and Kp, reaction direction</td>
</tr>
<tr>
<td>2/21, 23</td>
<td>17.5</td>
<td>How to solve equilibrium</td>
</tr>
<tr>
<td>Date(s)</td>
<td>Problems</td>
<td>Details</td>
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<tr>
<td>2/28, 3/2</td>
<td>17.5, 17.6, 18.1, 18.2</td>
<td>Equilibrium problems, reaction conditions, Le Chatelier’s Principle (not catalyst, not ammonia synthesis), Acids &amp; Bases in water, autoionization of water, pH scale</td>
</tr>
<tr>
<td>3/7, 9</td>
<td>18.2 -18.6, 18.9, 19.1</td>
<td>Bronsted-Lowry, weak acids, weak bases, molecular properties, Lewis acids-bases, buffers, common ion effect</td>
</tr>
<tr>
<td>3/14, 16</td>
<td>SPRING BREAK</td>
<td>SPRING BREAK</td>
</tr>
<tr>
<td>3/21, 23</td>
<td>19.1-19.3</td>
<td>Acid base buffers, titration curves, solubility of ionic compounds</td>
</tr>
<tr>
<td>4/4, 6</td>
<td>20.1, 20.2, 20.3</td>
<td>Second Law, Calculating Changes in Entropy, Free Energy (Gibbs)</td>
</tr>
<tr>
<td>4/18, 20</td>
<td>21.2-21.5</td>
<td>Voltaic cells, Cell potential, Free energy and electrical work, batteries</td>
</tr>
<tr>
<td>4/25, 27</td>
<td>21.5, 21.7</td>
<td>Batteries, electrolytic cells, Exam 3</td>
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<tr>
<td>5/2</td>
<td></td>
<td>Last Day</td>
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</tbody>
</table>

**Exam Schedule**
- Exam 1 February 23
- Exam 2 March 30
- Exam 3 April 27
- Final Exam: Thursday, May 4, 2017, 8:00 am – 10:30 am
J. COURSE POLICIES

Attendance/Tardiness
The student is expected to be on time and attend every class. It is the responsibility of the student to obtain missed information from a classmate. Missed information includes not only lecture notes, but also any possible information regarding syllabus changes. The student is expected to arrive on time prepared to take notes or take exam with appropriate supplies.

Late Work and Make-Up Exams
There will be no make-up exams for this class. If you miss one lecture exam, your final exam grade will be counted twice to replace the missed exam. If you miss more than one exam, you will receive a zero for the second missed exam. Certain university-related circumstances may warrant a makeup exam with prior notification, documentation, and arrangements. Do not show up late to an exam; no student will be admitted to the exam after the first exam-taker has left.

Extra Credit
There is no extra credit in this course. The grade is determined per paragraph H above.

Cell Phone Use
Before you enter the lecture hall turn OFF your cell phone. Cell phones are not permitted in class, not even as a calculator. Electronic interruptions will NOT be tolerated!

Laptop Use
Laptops are to be used only for lecture material. Use of laptops for non class items will not be permitted.

Electronic Devices During Exams
Any use of an electronic device (Cell Phone, MP3 player, CD player, computer, etc.) during an exam is strictly prohibited. Any use of such a device will be considered an attempt to cheat on the exam and will result in a 0 on the exam although more severe actions may be considered. Calculators may be allowed on exams when needed, but only for mathematical operations. The use of programmable calculators to store or retrieve information during an exam will be considered an attempt to cheat on the exam. Also, if a calculator is discovered to have saved programs or information that could be used as an unfair advantage on the exam, this will be considered an attempt to cheat on the exam. Programs or operators that aid in mathematical operations such as a quadratic equation calculator may be used.

Food in Class
Generally, food in class is not permitted during class. It is permissible to bring appropriate snacks during the 2 1/2 hour final exam. Coffee, sodas, energy drinks are permissible.
Missed Exam
See Late Work and Make-Up Exams above.

Participation
Students are expected to attend all classes and be prepared to ask and/or answer questions. Pop quizzes may be given to assess mastery of material and as an indication of attending class.

Student Responsibility: It is the student’s responsibility to read and be aware of the contents of this syllabus and the course website on Blackboard. Announcements and changes are communicated in the classroom, Blackboard, and/or emails.

Tutoring and Test-Taking Strategies
To be successful in this course, and most others, you must develop good note-taking skills, organization skills, study habits, and test-taking strategies from the very beginning. Your instructor, seminar leaders and TA’s are always available for help, but don’t wait until it’s too late! It is important that you are aware that the Center for Academic Student Achievement provides free tutoring, test-taking strategies, and extra help. Take advantage of this service! Should you have test anxiety, stress problems, or need help with study skills, the University Counseling Center (Driftwood Building: 825-2703) provides a free service.

In choosing to take this course, you are agreeing to abide by the course rules, regulations, and standards. This includes agreeing to be respectful to your instructors and fellow students. Conduct that is disruptive or disrespectful will not be tolerated and is grounds for dismissal from the class. 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.

K. COLLEGE AND UNIVERSITY POLICIES

- Academic Integrity (University)
  It is expected that university students will demonstrate a high level of maturity, self-direction, and ability to manage their own affairs. Students are viewed as individuals who possess the qualities of worth, dignity, and the capacity for self-direction in personal behavior. See Full University Policy at http://catalog.tamucc.edu/content.php?catoid=10&navoid=313#Academic_Integrity
• **Classroom/Professional Behavior**
Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor’s ability to conduct the class or (b) the ability of other students to profit from the instructional program may be considered a breach of the peace and is subject to disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. This prohibition applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.

• **Statement of Civility**
Texas A&M University-Corpus Christi has a diverse student population that represents the population of the state. Our goal is to provide you with a high quality educational experience that is free from repression. You are responsible for following the rules of the University, city, state, and federal government. We expect that you will behave in a manner that is dignified, respectful and courteous to all people, regardless of sex, ethnic/racial origin, religious background, sexual orientation or disability. Behaviors that infringe on the rights of another individual will not be tolerated.

• **Deadline for Dropping a Course with a Grade of W (University)**
The grade of W will be assigned to any student officially dropping a course. Please consult with the instructor before you decide to drop to be sure it is the best thing to do. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. Should dropping the course be the best course of action, visit the Office of the University Registrar for the Course Drop Form that must be submitted. No student is eligible to receive a W without completing the official drop process by the deadline. Please consult the Academic Calendar ([http://www.tamucc.edu/academics/calendar/](http://www.tamucc.edu/academics/calendar/)) for the last day to drop a course.

• **Grade Appeals (College of Science and Engineering)**
As stated in University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures, 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 Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules website at [http://www.tamucc.edu/provost/university_rules/index.html](http://www.tamucc.edu/provost/university_rules/index.html), and the College of Science and Engineering Grade Appeals webpage at [http://sci.tamucc.edu/students/GradeAppeal.html](http://sci.tamucc.edu/students/GradeAppeal.html). For assistance and/or guidance in the grade appeal process, students may contact the chair or director of the appropriate department or school, the Office of the College of Science and Engineering Dean, or the Office of the Provost.

- **Disability Services**

  The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call (361) 825-5816 or visit Disability Services in Corpus Christi Hall 116.

  If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services Office for assistance at (361) 825-5816. My office is a Veterans Green Zone office. If you need to talk, come and see me.

  [http://disabilityservices.tamucc.edu/](http://disabilityservices.tamucc.edu/)

- **Statement of Academic Continuity**

  In the event of an unforeseen adverse event, such as a major hurricane and classes could not be held on the campus of Texas A&M University-Corpus Christi; this course would continue through the use of Blackboard and/or email. In addition, the syllabus and class activities may be modified to allow continuation of the course. Ideally, University facilities (i.e., emails, web sites, and Blackboard) will be operational within two days of the closing of the physical campus. However, students need to make certain that the course instructor has a primary and a secondary means of contacting each student.