A. COURSE INFORMATION
Course number/section: CHEM 1412/002
Class meeting time: MWF 9:00 am-9:50 am
Class location: EN 101
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 1:00 pm-3:00 pm, TR 11:00 am-12:00 pm and 2:00 pm-4:00 pm.
Appointments: by request
Telephone: 361-825-4185
e-mail: james.owens@tamucc.edu

C. COURSE DESCRIPTION
Catalog Course Description
4 sem. hrs. (3:3) The continuation of CHEM 1411 - General Chemistry I, the foundation course in chemistry with emphasis on quantitative aspects. Laboratory involves development of basic skills. This course counts toward the natural science component of the University Core Curriculum.
Prerequisite: CHEM 1411 - General Chemistry I and MATH 1314 - College Algebra or equivalent math competency. This course is offered in Fall, Spring and typically both Summer sessions. NOTE: All students registering for this course must also register for SMTE 0093. This is an online Chemistry Lab Safety course that must be completed before the end of the second week of the semester in order to be able to continue attending the lab section of the course. Also note that since lecture and lab are linked you cannot drop the lab without dropping the lecture as well. TCCNS Equivalent: CHEM 1412

D. PREREQUISITES & COREQUISITES FOR THE COURSE
1. Corequisite SMTE 0093

E. REQUIRED TEXTBOOK(S) AND SUPPLIES

Online Homework: You must have the code that accompanies the text to enroll in the ALEKS online assessment and tutoring service. All students are required to start ALEKS the first week of school. Regular assignments will be posted and students are required to complete the assignments on-time. You will be assigned to read ALEKS 101 in
Blackboard. Failure to do so by due date will be penalized 20 course points. Connect LearnSmart is accessed via the Connect code, also accompanying the text. LearnSmart is extra credit on exams. Connect Homework is highly recommended to assist in mastering the material.

**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:

- Recognize and describe intermolecular forces and how they affect solubility
- Know the Periodic Table, properties, trends
- Comprehend liquid and gaseous states of matter
- Calculate heating and cooling curves and demonstrate Classius-Cleperon equation
- Understand chemical kinetics and equilibrium and show how to use Reaction Tables.
- Know how to use Rate Laws
- Describe and understand the various acids and bases and demonstrate calculations of reactions, buffers
- Recognize REDOX reactions, show how to balance REDOX equations
- Describe and calculate electrochemical half-cell reactions and determine voltaic cell voltage
- Demonstrate knowledge of Energy, Enthalpy, Entropy, and Gibbs Free Energy, determine if a reaction is exothermic or endothermic. Calculate equilibrium constants from thermochemical parameters
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:

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<table>
<thead>
<tr>
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</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>
</tr>
<tr>
<td>Final Exam</td>
<td>100</td>
</tr>
<tr>
<td>ALEKS</td>
<td>110</td>
</tr>
<tr>
<td>LearnSmart (extra credit each exam)</td>
<td>5</td>
</tr>
<tr>
<td>Attendance</td>
<td>35</td>
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<tr>
<td>Laboratory</td>
<td>185</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>730 points</strong></td>
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Final letter grading for the course will be as follows: A: 90% +, B: 80%+, C: 70% +, D: 60%+, F < 60%.

LearnSmart: LearnSmart is an interactive tool available in Connect. These study modules are for each chapter. They will help you master the fundamentals for terminology, concepts, and principles. The modules can help better prepare you for the chapter material and improve your overall grade. There are due dates for each chapter. An average grade of 80% or better on modules for an exam will result in 5 extra points on the exam grade. For example, Exam 1 is over Chapters 1 & 2. An average of 80% for the Learning Modules for these 2 chapters will earn you 5 points on Exam 1. No points will be awarded for averages less than 80%.

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>1/17, 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>1/22, 24, 26</td>
<td>12.3, 12.4, 12.5</td>
<td>Phase diagrams, Liquid state, Uniqueness of Water</td>
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<tr>
<td>1/29, 31, 2/2</td>
<td>13.1, 13.3, 13.4, 16.3</td>
<td>Types of solutions, Why substances dissolve, Solubility as an equilibrium process, concentration terms,</td>
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<tr>
<td>2/5, 27, 9</td>
<td>13.5, 13.6, 16.1, 16.2, 16.3</td>
<td>Colligative properties, Reaction Rate, Rate Law &amp; reaction orders, Integrated rate laws,</td>
</tr>
<tr>
<td>2/12, 14, 16</td>
<td>16.4, 16.5, 16.6, 17.1, 17.2</td>
<td>collision theory, effect of temperature, activation energy, transition state theory, molecularity, Equilibrium state and constant, reaction quotient &amp; equilibrium constant</td>
</tr>
<tr>
<td>2/19, 21, 23</td>
<td>17.3, 17.4, 17.5</td>
<td>Equilibrium state and constant, reaction quotient &amp; equilibrium constant, How to solve equilibrium problems, Exam 1</td>
</tr>
<tr>
<td>2/26, 28, 3/2</td>
<td>17.5, 17.6, 18.1, 18.2, 18.3, 18.4</td>
<td>How to solve equilibrium problems, Equilibrium problems, reaction conditions, Le Chatelier’s Principle</td>
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<tr>
<td>3/5, 7, 9</td>
<td>18.4, 18.5, 18.9, 19.1</td>
<td>Acids &amp; Bases in water, autoionization of water, pH scale, Bronsted-Lowry, weak acids, weak bases, molecular properties, Lewis acids-bases, buffers, common ion effect</td>
</tr>
<tr>
<td>3/12, 14, 16</td>
<td>SPRING BREAK</td>
<td></td>
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<tr>
<td>3/19, 21, 23</td>
<td>19.2, 19.3</td>
<td>Acid base buffers, titration curves, solubility of ionic compounds</td>
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<tr>
<td>3/26, 28, 30</td>
<td>19.3, 20.1</td>
<td>Solubility, entropy, Exam 2</td>
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<tr>
<td>4/2, 4, 6</td>
<td>20.2, 20.3</td>
<td>Second Law of Thermodynamics, Calculating Changes in Entropy, Free Energy (Gibbs)</td>
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<tr>
<td>4/9, 11, 13</td>
<td>20.3, 20.4, 21.1</td>
<td>Free Energy (Gibbs), Equilibrium and Reaction Direction, Equilibrium and Reaction Direction, REDOX reactions</td>
</tr>
<tr>
<td>4/16, 18, 20</td>
<td>21.1, 21.2, 21.3, 21.4, 21.5</td>
<td>Voltaic cells, Cell potential, Free energy and electrical work, batteries,</td>
</tr>
<tr>
<td>4/30, 5/2,</td>
<td>Review</td>
<td></td>
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</tbody>
</table>

**Last Day to Drop a Class**   **Friday, April 6, 2018**
Exam Schedule
Exam 1 February 23
Exam 2 March 30
Exam 3 April 27
Final Exam: Wednesday, May 9, 2018, 8:00 am - 10:30 am

Note: Changes in this course schedule may be necessary and will be announced to the class by the Instructor. The assignments and exams shown are directly related to the Student Learning Outcomes described in Section F.

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 other extra credit in this course except that described in 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.

**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 UNIVERSITIY POLICIES**

- Academic Integrity (University)
University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, falsification, forgery, complicity or plagiarism. (Plagiarism is the presentation of the work of another as one’s own work.) In this class, academic misconduct or complicity in an act of academic misconduct on an assignment or test will result in a failing grade.

- **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)**
  I hope that you never find it necessary to drop this or any other class. However, events can sometimes occur that make dropping a course necessary or wise. *Please consult with your academic advisor, the Financial Aid Office, and me, before you decide to drop this course.* Should dropping the course be the best course of action, you must initiate the process to drop the course by going to the Student Services Center and filling out a course drop form. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. 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.
I. OTHER INFORMATION

- **Academic Advising**
  The College of Science and Engineering 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. Meetings are by appointment only; advisors do take walk-ins. Please call or stop by the Advising Center to check availability and schedule an appointment. The College’s Academic Advising Center is located in Center for Instruction 350 or can be reached at (361) 825-3928.

**GENERAL DISCLAIMER**

I reserve the right to modify the information schedule, assignments, deadlines, and course policies in this syllabus if and when necessary. I will announce such changes in a timely manner during regularly scheduled lecture periods.