CHEMISTRY 511 -- Contemporary Issues in Chemistry II

Effective Date: *Summer 2010*

I.	**Course Number:** *CHEM 511*
II.	**Course Title:** *Contemporary Issues in Chemistry II – Solutions and Reactions*
III.	**Semester Credit Hours:** *3SCH*
IV.	**Course Description:** *This course will focus on important contemporary topics in chemistry, specifically focusing on the concepts of the behavior of solutions and stoichiometric chemical reactions.*
V.	**Required Textbooks/Resources:** *textbook provided*
VI.	**Student Learner Outcomes:** *After completion of this course the student will:* • *be able to combine collection and analysis of data with heightened levels of conceptual chemistry* • *have a more in-depth understanding of the dynamics of chemical reactions and solution properties.*
VII.	**Course Outline:** *Mixtures and solutions* • *Homogeneous mixtures on the nanoscopic level* • *Rules of solubility* • *Comparing unsaturated, saturated, and supersaturated solutions* • *Colligative properties of water* • *Exploring devices/methods for measuring concentrations* *Chemical Reactions* • *Chemical changes: Law of Conservation of Matter, property changes in chemical reactions* • *Mechanisms of chemical reactions: thermodynamics, making and breaking bonds* • *Reactions of ions in an aqueous solution: dissociation, ionization constant, precipitation reactions* *Specific chemical reaction processes* • *Behavior of acids and bases*

	• *Oxidation-reduction processes* • *Behavior of gases*
VIII.	**Course Requirements:** *Attendance and participation in the East Texas Regional Collaborative for Excellence in Science Teaching is required. Students will be expected to contribute to online class discussions, complete exams given, teach a lesson on a given chemistry topic, and research a contemporary issue on the topic of chemical interactions. Graduate level rigor is obtained by the in-depth investigation research project.*
IX.	**Means of Evaluation:** *The course grade will be based on three exams valued at 100 points each, participation in daily online discussions (reflective journaling) valued at 100 points, conducting a team-taught lesson valued at 100 points, and a 5 minute research presentation on the topic of "Applying Chemistry to a Contemporary Issue" valued at 100 points.*
X.	**Grading Scale:** *The grades on the evaluated items will be averaged will be graded as below:* *=> 90% = A* *=>80% - <90% = B* *=>70% - <80% = C* *=>60% - <70% = D* *<60% = F*
XI.	**Disability Accommodations:** *Students with disabilities may request reasonable accommodations through the A&M Texarkana Director of Student Services by calling 903-223-3062.*
XII.	**Academic Integrity:** *Academic honesty is expected of students enrolled in this course. Cheating on examinations, unauthorized collaboration, falsification of research data, plagiarism, and undocumented use of materials from any source constitute academic dishonesty and may be grounds for a grade of 'F' in the course and/or disciplinary actions. For additional information, see the university catalog.*
XIII.	**Faculty Office Location and Contact Policy:** *Ms. Staci Thomas may be contacted by email at staci.thomas@tamut.edu or through the Blackboard course page.*
XIV.	**Student Technical Assistance:** • *Solutions to common problems and FAQ's for your online course are found at this link: http://www.tamut.edu/webcourses/index.php?pageid=37* • *If you cannot find your resolution there you can send in a support request detailing your specific problem here: http://www.tamut.edu/webcourses/gethelp2.php* • *Blackboard Helpdesk contacts:* *Office hours are M-F, 8:00a to 5:00p* *Kevin Williams (main contact) 903-223-1356*

	kevin.williams@tamut.edu *Frank Miller (back-up) 903-223-3156* *frank.miller@tamut.edu* *Nikki Thomson (back-up) 903-223-3083* *nikki.thomson@tamut.edu*
XV.	**Technical Requirements** *Minimum System Requirements* *The following computer system requirements are recommended for an online course:* ***OS:*** *Windows 2000/XP/Vista, Mac OSX 10.2 and above* ***RAM:*** *256 MB, Processor: 2.0 GHz, Free Space on HDD: 500 MB* ***Internet Connection:*** *(Broadband/DSL preferred), Dial Up 56k minimum* ***Browser:*** *Internet Explorer 6 or 7, Mozilla Firefox 2.0, Safari 1.0* ***Java:*** *Version 6 Update 11 or later* *Sound card and speakers* *Software Requirements* ***Pop-Up Blockers*** *All pop-up blockers installed on your computer must be set to allow pop-ups from Blackboard/WebCT* ***Java Runtime Environment*** *You must have the Java Runtime Environment installed. This is a free plugin for your browser that can be obtained by going to http://www.java.com.* ***Additional Plugins*** *You may need additional software based on the content that your instructor posts in their course. Commonly needed applications are:* ***Microsoft Office 2007 / 2003 / XP Suite*** */ Works (Not free software)* ***Adobe Acrobat Reader (****Free Download****)*** ***Windows Media Player (****Free Download****)*** ***Real Time Media Player (****Free Download****)*** ***Quick Time Media Player (****Free Download****)*** ***Macromedia/Adobe Flash (****Free Download****)*** ***Macromedia/Adobe Shockwave (****Free Download****)***
XVI.	**Course Schedule:** *(Tentative)* • ***Week 1***

	Day1 – introduction, forms, pre-assessment *Homogeneous mixtures at the nanoscopic levevl* *Lab: "Saturated Solutions"* *Day 2 – Dissociation of ionic compounds* *Rules of solubility* *Day 3 – Colligative Properties of Water* *Lab: "Colligative Properties"* *Day 4 - Exploring devices/methods for measuring Concentrations* *Exam Review* *Day 5 – Exam – Solutions* *Disproving the Law of Conservation of Mass* • ***Week 2*** *Day 1 – Chemical Changes* *Lab: "Investigating Chemical Changes"* *Diagramming chemical reactions* *Day 2 - Making and breaking bonds: what drives chemical reactions, thermodynamics* *Modeling chemical reactions* *Exo- and endothermic reactions* *Day 3 – Balancing equations* *Net ionic equations* *Lab: "Predicting Precipitation"* *Stoichiometry* *Day 4 – Stoichiometry, Mole Ratios* *Exam Review* *Day 5 – Exam II* *More stoichiometry practice* *Limiting Reagent* • ***Week 3*** *Day 1 - Behavior of acids and bases* *Stoichiometric reactions of acids and bases* *Lab: acids and bases* *Day 2 - Oxidation-reduction processes* *Stoichiometric redox reactions* *Lab: "Copper and Iron"* *Day 3 - Behavior of gases, Gas Laws* *Stoichiometic reactions of gases* *Lab: "Hydrogen Bubbles"* *Day 4 – Exam Review* *Research presentations* *Day 5 – Exam* *Research presentations* *Wrap-up, post-assessment*
XVII.	**Participation Policy:** • *Participation in the course will include attendance at*

	monthly meetings, online discussions including a reflective journaling and collaborating with other students, research for action research and implementation of action research into teaching practice. • **Course Etiquette:** *Informal (professional) class participation is welcome. Please do not make comments that are off the subject or that impede the progress of the class. Please refrain from talking, whispering, or other negative behaviors that might distract the instructor or colleagues. No cell-phone in class.* • **Discussion Board Standards:** *Reflective journaling will be assigned after each class meeting. The following should be discussed: What was the most useful thing you learned today? How can you use what you learned today to improve your teaching? What would you like to learn more about? Is there anything that requires additional explanation? What concepts were difficult for you to understand? Any additional comments on today's meeting?*