



A division of St. Francis Methodist School

## Curriculum Description for St. Francis Bacculaureate

### **Chemistry 112 General Chemistry 2**

**4 Credits**

#### **Course Description:**

This course is a continuation of Chemistry 111 and covers such topics as acid-base chemistry, solutions, chemical equilibrium, kinetics, and aqueous equilibria. The prerequisites for this course are Chemistry 111 and College Algebra.

#### **Course Objectives:**

The major objective of this course is to give students an understanding of the fundamental chemical principles listed in the course description. An emphasis will be placed on problem solving, practical applications, and giving students a strong foundation for further study. Upon completion of this course the student should;

- 1) be comfortable working with the with various concentration units for substances in solution
- 2) understand the principles of acid-base theory and applications.
- 3) know the fundamentals of first and second order reaction rates.
- 4) be able to complete aqueous equilibrium problems.
- 5) be able to apply Le Chatelier's principle to real world situations.
- 6) know the fundamentals of electrochemical properties.
- 7) understand the fundamental aspects of thermodynamics and spontaneity.
- 8) be able to design an experiment after thinking critically about lab data.

## Required Materials:

- Textbook:** "Essentials of General Chemistry" (2<sup>nd</sup> Ed., 2006) by Ebbing, Gammon, and Ragsdale
- Lab:** *Laboratory Manual for Chemistry 111-112* by Michael Tessmer

## Grading Policies and Assignments:

There will be approximately 550 points for the semester with grades based on the following scale. This scale may be curved downward (but not upward) at the end of the semester.

93-100 %	A	73-76 %	C
90-92%	A-	70-72%	C-
87-89%	B+	67-69%	D+
83-86 %	B	63-66 %	D
80-82%	B-	60-62 %	D-
77-79%	C+	< 60 %	F

- A) 50 points for twelve 'pop' quizzes given throughout the semester. They will include one of the putzies from the previous class and one simple question based on the upcoming class. If you keep up they should be easy. Your lowest 2 quizzes or 2 misses will be dropped.
- B) Seven TV Mobile quizzes worth 10 points with the lowest quiz or a missed quiz dropped. Each TV Mobile quiz will be posted two days before the in-class quiz and students will have from 8 am to 8 pm to take the quiz. The quizzes are open book but individual.
- C) Seven in-class quizzes worth 40 points with the lowest quiz or a missed quiz dropped. These will be a mixture of multiple choice, short answer, and math based problems. Your lowest quiz score will be dropped.  
**\*\*\* See the next page for the quiz schedule. \*\*\***
- D) 100 points for the laboratory portion of the course.

## Disability Clause

If you have any condition or situation that you feel prevents you from doing your best work in this course, it is your responsibility to notify the instructor or the Division Head. It is important that we are informed early in the term to make appropriate arrangements for that assistance.

## Chemistry 112 Lecture and Exam Schedule

Any schedule changes will be announced in class.

<b>Topic and Reading</b>
Review and Chapter 12
Chapter 13: Kinetics
<b>In-Class Quiz #1</b>
Chapter 13: Kinetics
Chapter 14: Equilibrium
<b>In-Class Quiz #2</b>
Chapter 14: Equilibrium
Chapters 15 and 16: Acids and Bases
<b>In-Class Quiz #3</b>
Chapters 15 and 16: Acids and Bases
Chapter 17: $K_{sp}$
<b>In-Class Quiz #4</b>
Chapter 18: Thermodynamics
Chapter 18: Thermodynamics
Chapter 19: Electrochemistry
<b>In-Class Quiz #5</b>
Chapter 19: Electrochemistry
Tour of the Atom: Jumping Electrons (Chapter 7)
<b>In-Class Quiz #6</b>
Tour of the Atom: Jumping Electrons (Chapter 7)
Tour of the Atom: The Nucleus (Chapter 21)
<b>In-Class Quiz #7</b>
Review for Final

### Missed Quizzes and Late Work:

If you must miss a quiz for an excused absence or emergency please make **every effort** (i.e. phone, voice mail or e-mail) to contact the instructor in advance. You must contact the instructor within 24 hours of a missed quiz. Make-up quizzes will be given at the instructor's discretion.

## Lab Schedule

WEEK	EXPERIMENT
1	Lab 19: Solution Freezing Points
2	Lab 20: Which Alcohol is in the Barrel?
3	Lab 21: Kinetics of the Iodination of Acetone or Case Study
4	Lab 22: Open Inquiry on Kinetics
5	Lab 24: Determination of an Equilibrium Constant
6	Lab 16: How Much Acetic Acid is in Vinegar?
7	Lab 25: Leaf Decay Lab Part 1
8	Lab 25: Leaf Decay Lab Part 2
9	Lab 27: Buffers and Lab 28
10	Lab 30: Spontaneity
11	Lab 31: Galvanic Cell (Battery) Activity and Quiz 5 Review
12	<i>To be determined</i>
13	<b>In-Class Quiz #7</b>
14	Lab 33: Atomic Spectra
15	<i>To be announced</i>

Notes on the labs:

- 1) **EXCESSIVE TARDINESS:** After being late to lab two times all future tardiness to lab will result in an automatic 50% deduction in the points possible for that lab.
- 2) **LAB REPORT DUE DATE:** On one or two occasions this term you will write a lab report on a lab project. The reports will follow the format outlined on pp. 2-3 of the lab manual.

Keep **safety** in mind during lab.

**WEAR YOUR GOGGLES!**

## Recommended Textbook Problems for Chemistry 112

Try all of these. That is all I will say to emphasize their importance.

**\*\*\* Circle These Numbers In Your Book \*\*\***

**Chapter 11:** Some useful review would be: 34, 37, 43, and 65.

**Chapter 12:** 1, 3-4, 6-15, 19, 21, 23, 25, 26, 27, 29, 31, 33, 35, 39, 41, 43, 45, 49, 51a-b, 53, 54, 55, 57, 65

**Chapter 13:** 1-5, 7-9, 12, 14, 17, 19-23, 25, 27, 29, 31, 33, 35, 36, 37, 39, 40, 41, 45, 47, 49, 51, 53, 54, 57, 61, 63, 67, 73, 75

**Chapter 14:** 1-2, 4-6, 8-9, 11, 13-15, 17, 19, 21, 23, 25, 27, 33-53 odd, 54, 57, 61, 65

**Chapter 15:** 1-4, 7-11, 15, 17, 19, 21, 23, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 57, 61, 63, 67, 69

**Chapter 16:** 1-2, 4-6, 8, 10-11, 13, 17-19, 21, 23, 25, 27, 31, 47, 49, 51, 54, 55, 62, 65, 67, 69, 75, 79, 85

**Chapter 17:** 1-5, 7-11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 43, 45, 47, 49, 51, 53, 61

**Chapter 18:** 1-2, 5-8, 11-4, 16a-b, 19, 21, 23, 25, 29-49 odd, 53, 55, 56, 65

**Chapter 19:** 1-2, 4-5, 13-15, 17-19, 23a-b, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 65, 67, 69, 71, 83, 87

**Chapter 7:** 2, 3, 5-6, 8-10, 13-15, 17-19, 21, 23, 27, 29, 31, 33, 35, 37, 38, 41, 43, 45, 47, 53, 57, 59, 61

**Chapter 20:** 7, 11-13, 15-19, 21, 31, 33, 49, 50, 55, 57, 61