

**Ivy Tech State College
Lafayette/Regional Syllabus**

Course Information

Semester 051

Course and Section Number: CHM 106-01D

Credits: 5

Course Title: GENERAL CHEMISTRY II

Contact Hours: 5 Hours Lecture
7 Hours Lab

Prerequisites/Corequisites: CHM 105, General Chemistry I and MAT 132,
Algebra/Trigonometry II or MAT133,
College Algebra or MAT 136, College Algebra

Division: General Education

Program: Chemistry

Days: MTWR

Time: MW 8:00 – 10:10 AM IVY 1263

Building:

Room: TR 8:00 – 11:10 AM IVY 2235

Faculty Information

Name: Michael Shevlin

Office Location: N/A

E-mail address: mshevlin@ivytech.edu

Contact Phone Number: 765 – 429 – 8313

FAX number: 765 – 269 – 5148

Office Hours: By appointment only

Division Office: General Education, Ivy Hall 1166, 765 – 269 - 5710

Catalog Description:

The second in a series of two introductory courses designed to cover general chemistry including kinetics, equilibria, acid/ base chemistry, thermodynamics, electrochemistry, nuclear chemistry, organic chemistry and descriptive inorganic chemistry

General Course Objectives:

Upon successful completion of this course the student will be expected to:

1. Describe chemical kinetics, calculate a rate law for a given reaction and propose reaction mechanisms.
2. Explain chemical equilibrium including the equilibrium constant and its use in solving problems.
3. Apply equilibrium knowledge to acid – base equilibria, solubility equilibria and complex ion equilibria.
4. Calculate the pH for strong and weak acid and base solutions, expressing the nature of acids and bases.
5. Describe the basic concepts of thermodynamics including entropy, free energy, and spontaneous processes.
6. Identify the basics of electrochemistry and calculate galvanic cells, standard reduction potentials, cell potentials, batteries, corrosion and electrolysis.
7. Relate basic radiochemistry including nuclear stability, nuclear transformations, detection and uses of radioactivity, radioactive decay, fission and fusion.

- Describe the properties of various inorganic elements.
- Relate the chemistry of some basic organic molecules especially alkanes, alkenes, and aromatics.

Course Content:

Topical areas of study include –

Concentration and reaction rate	Controlling reaction rates	Reaction mechanisms
Chemical equilibrium	Equilibrium constants	Types of acids and bases
Weak acids and bases	pH	Salts in water
Titrations	Buffer solutions	Solubility equilibrium
Thermodynamics	Entropy	Gibbs free energy
Electrochemistry	Galvanic cells	Electrolysis
Descriptive inorganic chemistry	Alkali metals	Alkaline earth metals
Boron family	Carbon family	Nitrogen family
Oxygen family	Halogens	Noble gases
Transition metals	Nuclear chemistry	Organic chemistry

Required Texts:

Chemistry 6th Edition, Zumdahl and Zumdahl, ISBN # 0618221565

Experimental Chemistry 6th Edition, Hall, ISBN # 061822159X

References:

N/A

Supplies:

Bound laboratory notebook, laboratory safety goggles, calculator. It is extremely helpful to have a graphing calculator that has the ability to solve equations. It is possible to pass this course using only a scientific calculator, but it is unadvisable unless you are very proficient at performing algebra by hand.

Teaching Methods:

Teaching methods include lectures, group discussions, individual assignments, problem solving sessions, and laboratory work.

Grading and Evaluation:

Methods of Evaluation: Homework will be assigned after each lecture to reinforce the material covered in lecture. Quizzes will be administered every lecture period over the material covered in preceding lectures. Homework and lab reports will be due at the beginning of the following lecture or lab period, respectively. There will be three examinations during the course of the semester and a cumulative final examination at the end of the semester. Exams will be administered during the lab period as listed in the course schedule. If the class average is low at the end of the semester, scores may be adjusted upward to maintain a 70% average.

Students failing to turn in more than two lab reports during the course of the semester will automatically fail the course. This includes late lab reports and unexcused absences, and no exceptions will be made.

Graded Elements:	Homework	10%
	Quizzes	20%
	Labs	20%
	Exams	30%
	Final Exam	20%

Grading Scale:	90 – 100	A
	80 – 89	B
	70 – 79	C
	60 – 69	D
	0 – 59	F

Research Assignments:

N/A

Additional Assignment/Grading Information:

Laboratory Notebook and Prelab

You must use a bound laboratory notebook (not a spiral notebook). Each lab should begin on a new page and be labeled with the name of the lab and the date it was performed. The next section in the lab notebook should be the prelab, which should be completed before coming to the lab. The prelab will consist of an outline or flow chart of the procedure you will use in the lab. This section should not be a verbatim copy of the procedure from the lab manual, and it must be sufficiently detailed that you can work from it without referring to your lab manual. *Students will not be permitted to begin work in the laboratory until the prelab is complete.*

During the experiment, you will record all data and observations in your notebook. The information should be in chronological order and all entries should be clearly labeled. Do not leave large spaces between entries. When recording observations and data, it is better to err on the side of caution and write as much as possible rather than omit important details.

Lab Reports

Laboratory work will be performed individually unless otherwise instructed. Lab reports will be completed individually and must be typed and include the following information:

Introduction	A sentence or two summarizing the experiment
Experimental	A paragraph describing the method used in the laboratory
Reactions	Balanced chemical equations for all reactions conducted in the lab
Results	Observations, data tables, graphs, etc.
Calculations	Sample calculations for values computed for the lab
Discussion	A paragraph or two explaining the results
Questions	Answers to questions provided in the laboratory

Makeups/Late submittals:

Late homework and laboratory assignments will not be accepted. Homework and exams may be made up following a documented, excused absence. Due to time constraints, there will be no make-up sessions available for laboratory work. Quizzes and labs missed due to excused absences will not be averaged into the final grade.

Attendance:

Attendance is mandatory. If a student is unable to attend any of the sessions, it is the responsibility of the student to inform the instructor before the scheduled class. Absences will be excused only for illness or death in the immediate family and must be accompanied by appropriate documentation.

Last Date and Responsibility for Withdrawal:

Last date to withdraw is July 14, 2005. Students are to complete a Drop/Add form to withdraw a class.

Additional Class Information:

None

Academic Honesty Statement:

The College is committed to academic integrity in all its practices. The faculty value intellectual integrity and a high standard of academic conduct. Activities that violate academic integrity undermine the quality and diminish the value of educational achievement.

Cheating on papers, tests or other academic works is a violation of College rules. No student shall engage in behavior that, in the judgment of the instructor of the class, may be construed as cheating. This may include, but is not limited to, plagiarism or other forms of academic dishonesty such as the acquisition without permission of tests or other academic materials and/or distribution of these materials and other academic work. This includes students who aid and abet as well as those who attempt such behavior.

Conduct:

Cell Phones in Class: Cell phones and pagers should be turned off when you are in class. If your cell phone or pager rings during class, points may be deducted from your grade. If you have unusual circumstances, you should talk to the instructor.

Any use of cell phones and pagers during a quiz or test is strictly prohibited. Any student who violates this policy will earn a zero on the quiz or test.

Emergency calls may be addressed to the Registrar's Office at (765) 269-5119; the Registrar's staff will have you contacted in the classroom. After 5:00 p.m., calls may be directed to the main switchboard at (765) 269-5100. In the event of an emergency after 9:00 p.m., calls should be directed to the security officer on duty at (765) 269-5254, (765) 430-2882, or (765) 430-2883.

Lab Rules and Regulations:

1. Safety goggles must be worn in the laboratory at all times; there are NO exceptions. If you do not have your own goggles, you may purchase them through the bookstore.
2. Student must be appropriately dressed in the laboratory at all times. This means wearing clothing that protects the skin from the neck to below the knees. Sleeveless or tank top shirts, shorts or skirts that don't cover the knees, open-toed shoes and sandals (even with socks), are unacceptable in the laboratory. You may bring appropriate clothing to change into for the lab. *Students will not be permitted to work in the lab wearing inappropriate clothing.* Labs missed for this reason will be counted as unexcused.
3. If you require vision correction, you are advised to wear regular glasses rather than contact lenses in the laboratory. Chemicals and vapors can lodge behind contact lens and cause severe damage to the eyes. Also, contact lenses interfere with the use of an eyewash. If you insist on wearing contact lenses in the laboratory, you must inform your instructor of this at the beginning of the semester.
4. To avoid contact with flames and chemicals, hair longer than shoulder length must be appropriately contained.
5. Food and beverages are prohibited in the laboratory. Do not apply cosmetics in the laboratory.
6. No unauthorized experiments may be performed at any time

ADA Statement:

Ivy Tech State College seeks to provide reasonable accommodations for qualified individuals with documented disabilities. If you need an accommodation because of a documented disability, please contact the Office of Disability Support Services at the beginning of each semester. The Disabilities Services Coordinator is Tony Criswell; he is located in the Learning Resource Center, Ivy Hall Room 1157F. If you will require assistance during an emergency evacuation, notify your instructor immediately. Look for evacuation procedures posted in your classrooms.

Extra Assistance:

The Student Support and Development Advisor whose office is located in Ivy 1145, can provide academic counseling to assist with general academic and daily life management skills, such as time and stress management. She can also provide limited personal counseling and referral to outside assistance agencies. Tony Criswell, Disability Services Coordinator in Ivy 1157F, provides additional assistance for special needs students.

Virtual Library:

The Ivy Tech Virtual Library is available to students on- and off- campus, offering full-text journals and books and other resources essential for course assignments. Go to <http://www.ivytech.edu/library> and choose the Virtual Library link for your campus.

E-mail:

E-mail communication from the College is directed to the online student system. Students are responsible for checking their e-mail accounts, even if they also use other e-mail accounts. Please refer to the Ivy Vine Student Handbook for more information.

Assessment:

Ivy Tech State College is committed to graduating students who have the appropriate technical and general education skills. Each approved technical program in the College annually assesses its program graduates for technical competence. As all graduates are to be assessed for technical competence, students are expected to participate in assessment activities as required by their program. General Education skills are assessed through an authentic assessment project that uses work submitted by students as a part of their regular course requirements.

Course (SUMMA) Evaluations:

Course evaluations by students will be conducted during the fall and spring semesters using the College's "Student Evaluation of Instruction" form.

Emergency Procedures:

Please note emergency evacuation procedures posted in the classroom.

Certification and Licensing Statement:

Ivy Tech cannot guarantee that any student will pass a certification or licensing exam. Your success will be determined by several factors beyond the instruction you are given in the classroom including your test-taking skills, your willingness to study outside of class, and your satisfactory completion of appropriate practice exams. Certification and licensure exam questions are drawn from databases of hundreds of possible questions; therefore, a thorough understanding of the subject matter is required. The goal of Ivy Tech in providing a certification exam studies class is to assist you in understanding the material sufficiently to provide a firm foundation for your studies as you prepare for the exam.

Right of Revision:

NOTE: This syllabus and the information contained within it are subject to change without notice.

Assignments and Tentative Course Schedule:

Class Meeting	Date	Topic	Assigned Work	Work Due and Exams
Week 1	5/23	Chapter 12: Chemical Kinetics	HW 1	
	5/24	Lab 1: Rates of Chemical Reactions (<i>Experiment 25, page 303</i>)		
	5/25	Chapter 12	HW 2	HW 1
	5/26	Lab 2: Chemical Equilibrium (<i>Experiment 26 Part I, page 313</i>)		Lab 1
Week 2	5/30	NO CLASS		
	5/31	Lab 2 continued		HW 2
	6/1	Chapter 13: Equilibrium	HW 3	
	6/2	Lab 3: Chemical Equilibrium (<i>Experiment 26 Part II, page 318</i>)		Lab 2
Week 3	6/6	Chapter 13	HW 4	HW 3
	6/7	EXAM I		Lab 3
	6/8	Chapter 14: Acids and Bases	HW 5	HW 4
	6/9	Lab 4: Acid-Base Titrations (<i>Experiment 29, page 361</i>)		
Week 4	6/13	Chapter 14	HW 6	HW 5
	6/14	Lab 5: Acids, Bases, and Buffered Systems (<i>Experiment 28, page 345</i>)		Lab 4
	6/15	Chapter 15: Applications of Aqueous Equilibria	HW 7	HW 6
	6/16	Lab 6: Potentiometric Titrations (<i>Handout</i>)		Lab 5
Week 5	6/20	Chapter 15	HW 8	HW 7
	6/21	Problem solving session		Lab 6
	6/22	Chapter 15	HW 9	HW 8
	6/23	EXAM II		
Week 6	6/27	Chapter 16: Spontaneity, Entropy, and Free Energy	HW 10	HW 9
	6/28	Lab 7: Solubility of Calcium Nitrate (<i>Handout</i>)		
	6/29	Chapter 16	HW 11	HW 10
	6/20	Problem solving session		Lab 7
Week 7	7/4	NO CLASS		
	7/5	Lab 8: Chemical Cells (<i>Experiment 32, page 391</i>)		HW 11
	7/6	Chapter 17: Electrochemistry	HW 12	
	7/7	Lab 9: Electrolysis (<i>Experiment 33, page 401</i>)		Lab 8
Week 8	7/11	Chapter 17	HW 13	HW 12
	7/12	EXAM III		Lab 9
	7/13	Chapter 18: Nuclear Chemistry	HW 14	HW 13

		Chapter 19: Groups 1A – 4A		
	7/14	Lab 10: Qualitative Analysis of Group I Cations (<i>Experiment 43, page 527</i>)		
Week 9	7/18	Chapter 20: Groups 5A – 8A Chapter 21: Transition Metals	HW 15	HW 14
	7/19	Lab 11: Qualitative Analysis of Group II Cations (<i>Experiment 44, page 535</i>)		Lab 10
	7/20	Chapter 22: Organic Chemistry	HW 16	HW 15
	7/21	Lab 12: Qualitative Analysis of Group III Cations (<i>Experiment 45, page 543</i>)		Lab 11
Week 10	7/25	Chapter 22	HW 17	HW 16
	7/26	Lab 13: Preparation and Properties of Esters (<i>Experiment 39, page 483</i>)		Lab 12
	7/27	Chapter 22		HW 17
	7/28	FINAL EXAMINATION		Lab 13