SYLLABUS
CH 101-01 - INTRODUCTORY CHEMISTRY
Fall, 2005

COURSE: CH 101, Introductory Chemistry; 3 hrs credit; no prerequisite; FSB 102, 11:00-11:50 MWF
PURPOSE: Chemistry 101 is offered to teach students the rudiments of inorganic chemistry and to give students an appreciation for the role of chemistry in their professional and everyday lives. To do this, the fundamental properties of matter and the changes that matter undergoes are emphasized. The metric system, elements, compounds, gas laws, atomic theory and structure, nomenclature, molecular composition, chemical equations, chemical reactions, periodicity, and chemical bonding are taught.
DEPARTMENTAL GOAL: To offer a component of general studies course work designed to provide a diverse educational background and a suitable foundation for specialized study.
PROFESSOR: Dr. Robert Gaunder, FSB 305, (256)-765-4474
OFFICE HOURS: **M** 8-9, 10-11; **T** 8-9; **W** 8-9, 10-11, 2-3; **R** 8-9, 10-11; **F** 8-9, 10-11

TEXTBOOK: Introductory Chemistry, Cracolice and Peters, Second Edition

EXAMINATIONS AND GRADES:

Quiz Average	20%	
Hour Exam Average	60%	(three exams)
Final Exam	20%	(comprehensive in coverage) **Tuesday**, **December 13 (10:15-12:00)**

Grades: 90-100 = A, 80-89 = B, 70-79 = C, 60-69 = D, < 60 = F

WITHDRAWAL POLICY: See 2005-2006 Catalog, pp 51-53. Last day for class withdrawal **(W)** is **11/28/05**. Students wishing to withdraw from the course should fill out a DROP CARD and present it to Dr. Gaunder for his signature. The yellow copy that has been signed by both the student and Dr. Gaunder should be presented to the **Office of the Registrar**, Room 119 Bibb Graves Hall. **It is department policy that a student who withdraws from CH 101 must also withdraw from CH 101L.**
CLASS ATTENDANCE: Each student is expected to attend class. Each student will sign a roll sheet at the beginning of each class. Students arriving late are responsible for making sure that the roll sheet is signed at the end of class. Signing another's name on the roll sheet is considered academic dishonesty. A student whose total number of class absences exceeds **12** should withdraw from the class by **11/28/05**; otherwise, the student will receive a grade of **F.**
POLICY ON CALCULATORS: A calculator that has functions for multiplying, dividing, adding, subtracting, logarithms, and exponential notation can be used on quizzes and exams. Cell phone calculators and programmable large screen calculators **CANNOT** be used on quizzes and exams.
QUIZ ABSENCE POLICY: No excuse is needed for the first absence from a quiz because the first quiz absence counts as the dropped quiz grade. After the first quiz absence the student must provide written verification of illness (doctor's or infirmary excuse) or unusual circumstances (e.g. car breakdown, death in the family, etc.) in order to receive an excused absence. The instructor must receive a written excuse no later than the next hour exam after the date of absence. As a make-up quiz grade for an excused absence the student will receive the grade earned on the next hour exam. A grade of "0" will be recorded for unexcused absences.
EXAM ABSENCE POLICY: If you are absent from an hour exam due to illness or unusual circumstances beyond your control, it is your responsibility to call (765-4474) and let me know your reason for missing the exam as soon as possible, but no later than 24 hours after the exam. A grade of zero will be recorded for an unexcused absence from an hour exam or for failure to make up an hour exam.
POLICY ON STUDENT MISCONDUCT: A student directly involved in academic dishonesty such as cheating, theft of test or quiz material, or plagiarism (copying the work of someone else) will receive a course grade of **F**.
COURSE OBJECTIVES: The objectives of this course are to teach the rudimentary chemical knowledge and principles which relate to basic scientific endeavors and general knowledge for coping in a chemical world.
COURSE OUTLINE: See detailed Table of Contents in textbook for Chapters 1-11.

DISABILITY ACCOMMODATION: It is the policy of the University of North Alabama to afford equal opportunity in education to qualified students. Therefore, a student who has a disability that inhibits the student's ability to meet course requirements and who desires accommodations must contact the instructor and Developmental Services within the first three class meetings (within the first three days during the summer terms). The goal is to develop a timely accommodation plan and to file an Americans with Disabilities Act (ADA) Accommodation Form. Course requirements will not be waived, but accommodations will be made to allow the student to meet course requirements, provided the student acts within the first three class meetings in working with the instructor to develop an accommodation plan. If a disability is identified later in the semester, a non-retroactive accommodation plan will be developed at that time.

TENTATIVE CLASS LECTURE AND EXAM SCHEDULE:

Week of	**Monday**	**Wednesday**	**Friday**
8/22		Chapter 1	Chapters 1 & 2
8/29	Chapter 2	Chapter 2	Chapter 3, **Q-1**
9/5	No Class	Chapter 3	Chapter 3, **Q-2**
9/12	Chapter 3	Chapter 4	**E-1**
9/19	Chapter 4	**Convocation Attendance required**	Chapter 4, **Q-3**
9/26	Chapter 4	Chapter 4	Chapter 5, **Q-4**
10/3	Chapter 5	Chapter 5	Chapter 6, **Q-5**
10/10	Chapter 6	Chapter 6	Chapter 6, **Q-6**
10/17	Chapter 6	**E-2**	No Class, Fall break
10/24	Chapter 7	Chapter 7	Chapter 7, **Q-7**
10/31	Chapter 7	Chapter 8	Chapter 8, **Q-8**
11/7	Chapter 8	Chapter 9	Chapter 9, **Q-9**
11/14	Chapter 9	Chapter 9	Chapter 10, **Q-10**
11/21	**E-3**	No class	No class
11/28	Chapter 10	Chapter 10	Chapter 11, **Q-11**
12/5	Chapter 11	Chapter 11	

SYLLABUS
CH 101LA - INTRODUCTORY CHEMISTRY LABORATORY
Fall, 2005

COURSE: CH 101L, Intro. Chemistry Laboratory; 1 hr credit; no prerequisite; FSB 411, 2:00-4:45 M

PURPOSE: Chemistry 101L is offered to teach students the fundamental techniques to perform basic experiments in chemistry and to use these experiments to illustrate chemical principles.

DEPARTMENTAL GOAL: To offer a component of general studies course work designed to provide a diverse educational background and a suitable foundation for specialized study.

PROFESSOR: Dr. Robert Gaunder, FSB 305, (256)-765-4474

OFFICE HOURS: **M** 8-9, 10-11; **T** 8-9; **W** 8-9, 10-11, 2-3; **R** 8-9, 10-11; **F** 8-9, 10-11

TEXTBOOK: Laboratory Experiments for General, Organic and Biochemistry,
Bettelheim & Landesberg, 5th Edition

EXAMINATIONS & GRADES:

Exams 30% (three)
Expt Reports 70%
Grades: 90-100 = A, 80-89 = B, 70-79 = C, 60-69 = D, < 60 = F

WITHDRAWAL POLICY: See 2005-2006 Catalog, pp 51-53. Last day for class withdrawal **(W)** is **11/28//05**. Students wishing to withdraw from the course should fill out a DROP CARD and present it to Dr. Gaunder for his signature. The yellow copy that has been signed by both the student and Dr. Gaunder should be presented to the **Office of the Registrar**, Room 119 Bibb Graves Hall. **It is department policy that a student who withdraws from CH 101L must also withdraw from CH 101.**

ATTENDANCE: Lab is an organized activity without provision for make-up work; attendance is expected. A student whose total number of laboratory absences exceeds **4** should withdraw from the class by **11/28/05**; otherwise, the student will receive a grade of **F.**

COURSE OBJECTIVES: The objective of this course is to provide hands on opportunities to learn the fundamental techniques to perform basic experiments in the laboratory.

DISABILITY ACCOMMODATION: It is the policy of the University of North Alabama to afford equal opportunity in education to qualified students. Therefore, a student who has a disability that inhibits the student's ability to meet course requirements and who desires accommodations must contact the instructor and Developmental Services within the first three class meetings (within the first three days during the summer terms). The goal is to develop a timely accommodation plan and to file an Americans with Disabilities Act (ADA) Accommodation Form. Course requirements will not be waived, but accommodations will be made to allow the student to meet course requirements, provided the student acts within the first three class meetings in working with the instructor to develop an accommodation plan. If a disability is identified later in the semester, a non-retroactive accommodation plan will be developed at that time.

SAFETY IN THE LABORATORY:

1. Always wear eye protection when you are in the laboratory. Open toed sandals are **NOT** permitted in the laboratory
2. Locate and learn how to use of the shower and eye wash stations and first aid kit.
3. Locate and learn how to use the fire extinguisher.
4. Do NOT eat, drink or smoke in the laboratory.
5. Never place glassware or other laboratory equipment in your mouth. Never taste chemicals in the lab.
6. Dilute concentrated acid by pouring acid into water.
7. Read carefully the directions for each laboratory experiment.
8. Anticipate the results of a slip, overheating, etc.
9. If you turn it on, then turn it off.
10. If you take from the shelf, then put it back.
11. If you open it, then close it.
12. No extemporaneous experiments are to be done.
13. Work under the fume hood when gases or volatile liquids are involved.
14. Place solid wastes in the trash cans and flush liquid waste down the sink **unless instructed to do otherwise** .
15. Also pages xv-xvi in the manual.

LABORATORY SCHEDULE:

DATE	**ASSIGNMENT**
M 8/29	Check-in, Safety, Experiment 1 – Laboratory techniques
M 9/5	No Lab
M 9/12	Experiment 15 – Physical properties of chemicals
M 9/19	Experiment 2 – Laboratory measurements
M 9/26	Experiment 3 – Density determination
M 10/3	Experiment 13 – Charles' Law
M 10/10	Exam I, Experiment 4 – The separation of the components of a mixture
M 10/17	Experiment 5 – Resolution of a mixture by distillation
M 10/24	Experiment 16 – Solubility and solution
M 10/31	Experiment 6 – The empirical formula of a compound
M 11/7	Exam II, Experiment 7 – Determination of the formula of a metal oxide
M 11/14	Experiment 8 – Classes of chemical reactions
M 11/21	Experiment 9 – Chemical properties of consumer products
M 11/28	Experiment 17 – Water of hydration
M 12/5	Exam III, checkout

Laboratory assignments and notes.

Experiment 1

All procedure sections will be completed. Answer all pre-lab questions before you come to lab. Answer all post-lab questions before you turn in the lab report.

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Experiment 2

Answer all pre-lab question before coming to lab.
Answer all post-lab questions.

Adjustments to experimental procedure:

Length (p 14)

#1. **A meterstick that is calibrated to 0.1 cm can be read to the hundredth's place. For a measurement falling directly on a subdivision the final digit recorded should be a zero in the hundredth's place, e.g. 5.60 cm. If the measurement lies somewhere between two subdivisions you should make an estimate of the position on a scale of 1 thru 9 and place the estimated value in the hundredth's place, e.g. 5.66 cm, if the measurement lies slightly past halfway between two subdivisions.**

#2. Measurements will be made and recorded in centimeters (cm) only. Do NOT make measurements in inches.

#3. Convert measurements in cm to millimeters (mm) and to meters (m).

#4. Calculate the area in cm^2 and mm^2. Express your results to four significant figures.

Volume (pp 14-16)

#3. Take a 50 mL Erlenmeyer flask and fill with distilled water to the **40 mL** mark (i.e. fill so that the bottom of the meniscus matches the 40 mL mark). Transfer the water, completely and without spilling, to a **50 mL** graduated cylinder. Record the volume **(as measured by the graduated cylinder)** on the Report sheet (4) to the nearest 0.1 mL; convert to L.

#4. Again use a 50 mL dry graduated cylinder to measure the volume of the water transferred from the beaker. Record the volume **(as measured by the graduated cylinder)** on the Report sheet (5) to the nearest 0.1 mL; convert to L.

#5. Follow this statement in the lab manual carefully in calculating the values of the error in mL and the percent error for the Erlenmeyer flask and the beaker to be entered in the blanks associated with (6) on the Report sheet.

#6. Add (7) to the Report sheet to answer the question associated with this step in the procedure.

Mass (pp 16-19)

#1. We will only be using the top loading balance described beginning at the top of page 18 in this experiment.

#2. Use a top loading balance to determine the weigh in grams of each object in this step. For each object record on the Report sheet table all values displayed on the digital readout of the balance; these values make up the significant figures. Convert the mass of each object to mg. Note only that portion of the table under the top loading heading will be used.

#3. Omit this step.

Temperature (pp 19-20)

#1. To convert a temperature from the Celsius scale to the Kelvin scale use the formula $K = °C + 273.2$

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Experiment 3

Answer all the pre-lab questions.
Answer all post-lab questions.

Adjustments to the experimental procedures.

Density of a regular-shaped object (p28)

#2. Using your metric ruler, determine the dimensions of the block (length, width, height) and record the values to the **nearest 0.01 cm** (1). **For a measurement falling directly on a subdivision the final digit recorded should be a zero in the hundredth's place, e.g. 5.60 cm. If the measurement lies somewhere between two subdivisions you should make an estimate of the position on a scale of 1 thru 9 and place the estimated value in the hundredth's place, e.g. 5.66 cm, if the measurement lies slightly past halfway between two subdivisions.** Calculate the volume of the block (2), **recording your answer to the proper number of significant figures. Do ONLY one trial.**

Density of an Irregular-Shaped Object (completely revised procedure) (pp 28-29)

#1. Obtain a sample of unknown metal from your instructor. Record the code letter.
#2. Fill a 10-mL graduated cylinder approximately halfway with water. Record the exact volume to the nearest 0.01 mL (6).
#3. **Place the graduated cylinder on the pan of a top-loading balance and zero the balance**. Now add pieces of your unknown metal to the graduated cylinder **until the level of the water has increased by at least 2 mL.** Be sure all of the metal is below the water line. Gently tap the sides of the cylinder with your finger to ensure that no air bubbles are trapped in the metal. **After adding the metal, record the mass of metal added to the nearest 0.001 g (5). Also read the exact level of the water in the graduated cylinder to the nearest 0.01 mL (7).**
#4. Assuming that the metal does not dissolve or react with the water, the difference between the two levels of water represents the volume of the metal sample (8) (Figure 3.1).
#5. Carefully recover the metal sample and dry it with a paper towel. **Bring the dried sample of metal to your instructor.**
#6. Calculate the density of the metal sample from your data (9), reporting your answer to the correct number of significant figures.
#7. Determine the identity of your metal sample by comparing its density (from your experimental data) to the densities listed in Table 3.1 (10). **Add to Table 3.1 copper which has a density of 8.96 g/cm^3.**
#8. You need only do **one** trial.

Density of water – no changes (p 31)

Density of a small irregular-shaped object by flotation technique (pp 31-32)

#2. Place a **100 mL beaker** containing a small magnetic spin-bar on a magnetic stirrer. Add **40 mL** of acetone. **Add the plastic chips to the liquid.**
#3. Follow the procedure as written…..add a small amount of water; turn on stirrer; turn off stirrer; if chip sinks to the bottom, repeat the previous steps; if chip floats in the middle of the liquid, stop adding water and go onto step 4. It will take more than 4 mL of water to cause the chip to float in the middle of the liquid.
#6. You need only do **one** trial.

LABORATORY SCHEDULE: **Fall 2005**

DATE	ASSIGNMENT
W 8/24	Check-in, Safety Instruction
T,W 8/30, 8/31	(T) Check-in, Safety Instruction; (T,W)Experiment 1 – Laboratory techniques
T,W 9/6, 9/7	No Lab
T,W 9/13, 9/14	Experiment 15 - Physical properties of chemicals
T,W 9/20, 9/21	Experiment 2 - Laboratory measurements
T,W 9/27, 9/28	Experiment 3 – Density determination
T,W 10/4, 10/5	Experiment 13 – Charles' Law
T,W 10/11, 10/12	Experiment 4 – The separation of the components of a mixture
T, W 10/18, 10/19	Experiment 5 – Resolution of a mixture by distillation
T,W 10/25, 10/26	Experiment 16 - Solubility and solution
T,W 11/1, 11/2	Experiment 6 – The empirical formula of a compound
T,W 11/8, 11/9	Experiment 7 – Determination of the formula of a metal oxide
T,W 11/15, 11/16	Experiment 8 - Classes of chemical reactions
T 11/22	Experiment 9 - Chemical properties of consumer products
W 11/23	No Lab
T,W 11/29, 11/30	Experiment 17 – Water of hydration
T,W 12/6, 12/7	Exam, Checkout