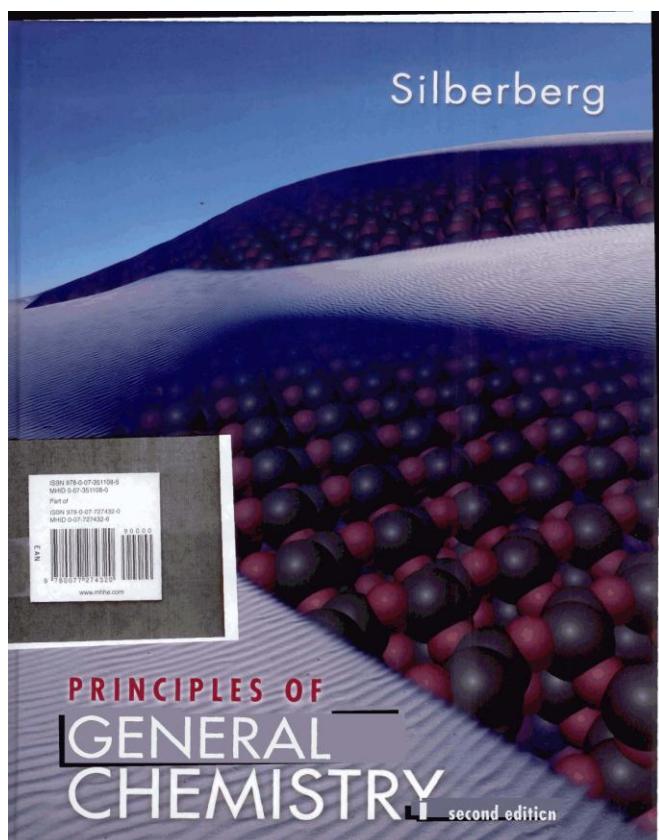


Sections	Class Period	Instructor	Office	Office Hours
	6 <sup>th</sup> CLB130	Mitchell	CLB 214	Office phone 392-0517
				MWF 7 <sup>th</sup> period TR 6 <sup>th</sup> and 7 <sup>th</sup> periods
				Subject to change but it will be announced

**TEXTBOOK:** "Principles of General Chemistry", 2nd Edition, Silberberg, McGraw Hill Publishers, 2010 ISBN : 978-0-07-351108-5 (New ISBN: cheaper: 9780077999759 this ISBN may only be at the bookstore.) Suggested supplementary texts "Chemical Problem-Solving by Dimensional Analysis", 3rd Edition, by Loebel, McGraw Hill Publishers, 1987. Come to my office hours and you can take a look at this text and see if it is something you really want and or need.

An electronic copy of the text is available at: <http://www.mcgraw-hill.com.sg/>.



**INFORMATION:** CHM 2045 and CHM 2045L constitute the first semester of the two term sequence of General Chemistry, CHM 2045-2045L-2046-2046L. This sequence is suitable for all science and engineering majors. To continue into CHM 2046, you must earn a grade of C or higher in CHM 2045 and have MAC 1140, or MAC 1147 or calculus I or the equivalent of these or higher completed. (Statistics does not count.)

Warning!! If you drop your math class and do not have MAC 1147 or the equivalent or higher you will not be able to go on to CHM 2046 even if you pass CHM 2045! Read the Guide to Majors catalog. This means that you must be taking the math this term or have it show on your transcript. You will be ejected from CHM 2046 at the start of the next term even if the system allows you to register.

**Schedule: I will follow this schedule very closely and Exam dates will not change!!**

## **You cannot take the Final early!**

### **Class Schedule (Spring 2012)**

My lecture times are MWF periods 5 and 6. My office hours are MWF 7<sup>th</sup> period TR 6<sup>th</sup> and 7<sup>th</sup> periods

Dates	Topics (# of lectures)	Chapters
Jan. 9–12	Introduction and Review: Atoms, Molecules, and Ions (3)	Chap. 1–2
<b>Wednesday, Jan. 18</b>	<b>Online Assessment Quiz #1</b>	<b>Syllabus</b>
Jan. 18–23	Mass Relations and Stoichiometry (3)	Chap. 3
<b>Wednesday, Jan. 25</b>	<b>Online Assessment Quiz #2</b>	<b>Chaps. 1–3</b>
Jan. 25–30	Aqueous Reactions (3)	Chap. 4
Feb. 1–5	Enthalpy & Calorimetry (3)	Chap. 6
<b>Monday, Feb. 6 (8:20-10:20 pm)</b>	<b>Progress Exam 1</b>	<b>Chaps. 1–4, 6</b>
Feb. 9–13	Atomic Structure (2)	Chap. 7
Feb. 15–22	Electron Configuration and Periodic Trends (4)	Chap. 8
<b>Wednesday, Feb. 22</b>	<b>Online Assessment Quiz #3</b>	<b>Chaps. 7–8</b>
Feb. 23–29	Chemical Bonding Models (3)	Chap. 9
<b>Thursday, Mar. 1 (8:20-10:20 pm)</b>	<b>Progress Exam 2</b>	<b>Chaps. 7–9 (Cumulative option)</b>
Mar. 12–14	Molecular Geometry (2)	Chap. 10
Mar. 15–21	Covalent Bonding Theories (3)	Chap. 11
<b>Wednesday, Mar. 21</b>	<b>Online Assessment Quiz #4</b>	<b>Chaps. 10–11</b>
Mar. 22–28	Gases (3)	Chap. 5
Mar. 29 – Apr. 4	Intermolecular Forces and Liquids and Solids (3)	Chap. 12
<b>Monday, Apr. 9 (8:20-10:20 pm)</b>	<b>Progress Exam 3</b>	<b>Chaps. 5, 10–12 (Cumulative option)</b>
Apr. 11–18	Solutions (4)	Chap. 13
<b>Wednesday, Apr. 18</b>	<b>Online Assessment Quiz #5</b>	<b>Chap. 13</b>
Apr. 19–25	Chemical Kinetics (3)	Chap. 16
<b>Saturday, Apr. 28 (5:30–7:30pm)</b>	<b>Final Exam</b>	<b>Cumulative</b>

**HOLIDAYS (no classes):** January 16 (MLK,Jr. Day); March 5–9 (Spring Break)

**TIPS:** Chemistry is very much a "learn by understanding" subject. Because of this you must work in this course to do well. That means you should read the textbook, work on the website, and do the electronic homework until you understand! Then you should work extra problems (from the book) to test your understanding.

**QUIZZES:** The Quizzes will be taken on-line a schedule will be posted. Five (5) Discussion Quizzes will be given. No makeup quizzes will be given for any reason. As with the progress exams, to accommodate unavoidable conflicts, we offer a dropped-quiz policy (the best 4 of 5 quizzes counting toward your grade – see under “GRADES” below). The lowest grade will be dropped, for a maximum total of 120 course points. We will not have any make up quizzes!!

**DISCUSSION:** **First discussion will be Thursday, January, 19**  
**This first week go find your discussion room and the CLC rooms.**  
**The first thing you MUST do is find out how to contact your TA so you can get questions answered etc.**

**EXAMS:** Three progress exams and a **cumulative** final exam will be given in the course. All exams will be **given in the evening (8:20 pm start time)** and rooms will be assigned by section number and posted on the Home Page so **learn your section number!** Be on time and bring a calculator (non-graphing) and pencil to the exam room nothing else. NO NOTES OR INFORMATION SHEETS, NO COMPUTERS, CELL PHONES or any information storage device electronic or paper.

**No makeup progress exams will be given for any reason.** The purpose of the dropped exam is not to improve your final grade (this is the way you will see it and use it) but to allow you to have an injury or illness or some issue that prohibits you from taking the scheduled progress exam without penalty to you and without me trying to give you a makeup exam to literally hundreds of students. We have no mechanism with such a large number of students for makeup exams. I know you don't understand this but the logistics of giving makeup exams is horrendous and grossly unfair to those who are not trying to gain an advantage over others.

**Exam dates are clearly indicated on the syllabus and no excuse (**none of any kind**) will be accepted for not taking the exams on the scheduled date and time.**

Final Exam may not be taken early **so don't ask!**

Grades will be posted within 24 hours most of the time. Should you not see your grade on e-Learning it is **YOUR responsibility to inform me. If you do not inform me prior to the next exam I will not be sympathetic.** Students may NOT use graphing calculators on exams, you must use a scientific calculator with exponents and log and ln functions. No other device may be used as a calculator i.e. cell phone, iPods etc. **Calculator dies during the exam, no do-over. I suggest you bring a spare calculator to every exam.** No cell phones are allowed in the exam rooms. **We do not curve exams so don't ask.**

## **Student Responsibilities:**

1. You are required to attend all classes and discussions. (No you don't get points for doing what you are supposed to like coming to class.) You don't show to class it is up to you to find out what you missed. You are responsible for everything I say in lecture even if you don't come. Read the syllabus and check the online notes do not expect me to repeat a lecture. I have my class video recorded, how to access the videos will be posted. DO NOT depend on reviewing these the day before exam or use this as an excuse for not attending class. Note: The quality of the recording is not very good.
2. You are required to read and follow the syllabus it is a grading contract. You fail to comply and you will lose the points!
3. You must make check Sakai on a weekly basis to make sure all your grades are posted or if an announcement is made, or if something is wrong you must get with the instructor. Come see me for missing electronic homework and exam grades and do so promptly. If you wait till after the course ends I will not help you! The last day of the course is the last time I will put in a missing grade!
4. Exam grades are posted promptly, usually within 24 hours. So, if yours does not show see your instructor. Scantron errors are not negotiable. This includes Form Code errors, registry errors, name and UFID numbers to name a few. If you wait until the last few days of the semester to discover an incorrect grade you may lose points. DO NOT WAIT TO POINT OUT A MISSED GRADE! If you come to me after the last day of class you will lose the points no discussion.
5. You must work "lots of problems", lots is different for everyone. These include end of chapter problems, problems on the notes / power point slides I have posted. Do not come to me with I did all the problems you said but still failed the exam. You take 20 minutes to do a problem at home but on the exam you have only 5 minutes to do the same problem. If you can't work a problem in 5 minutes you did not do enough problems and you do not really know the material!
6. You must keep up with the lecture material, the on line homework and quiz material. All due dates are on the syllabus or the course home page so you have no excuse what so ever for missing or not knowing a due date. At first you may know the material and think you can slack off, don't do this it will harm your grade. Keep working, things happen fast here and once you get behind you may not be able to catch up.
7. You are responsible for your personal problems. Your problem(s) no matter how valid they are do not constitute an excuse or exemption from meeting the course requirements. Have a problem that stops you from performing then YOU must go see the Dean of Students. That is what they do.
8. Do not e-mail me, do not voice mail me, and do not leave notes for me. (Why? Because I have over 1800 students and cannot handle e-mail from that many students!) All e-mails will be deleted unread. If you want me to do something for you then you come find me. Office hours will be posted on the course home page and on my office door.
9. If you need help get it early, help is available. The Chemistry Learning Center in Flint 257-278t will have graduate students to assist you. A schedule with TA names and their times in the CLC will be posted.
10. Learn how to fill out a scantron. Scantron errors are not negotiable. This includes Form Code errors, registry errors, and name and UFID numbers. Make it hard for me to post your grade and you will lose points. You WILL BE penalized for scantron errors that require me to do extra work to get your grade into the e-learning grade book. First offense 9 points, second offense 18 points, third offense 27 points and fourth offense 36 points. It pays to learn how to fill out a scantron properly. A copy of a scantron is below.
11. If you want to see your scantron you MUST come see me within 3 school days of the exam. They will not be e-mailed or given to a second party. Do not come after that time. The Final scantron may be seen the following term.
12. Need an interview for First year Florida I will announce them in class and do them only on those days.

## **SCORING:** Your grade for the term will be determined as follows:

Progress Exams (best 2 of 3 @ 250 pts each)	500
Learn Smart e-homework ( <b>Free</b> )	80
Discussion Quizzes (best 4 of 5 @ 30 points each)	120
Final Exam	300
<b>TOTAL</b>	1000 pts

**Grades will not be curved.** The following grade cutoffs will be used: This is fixed; points **will not** go up. We are now using minus grades so your grade will be based on the scale below. Off by one point you get the grade you earned.

A = 900 to 1000	B - = 760 to 799	D + = 630 to 659
A - = 860 to 899	C + = 730 to 759	D = 600 to 629
B+ = 830 to 859	C = 700 to 729	E = 599 or less
B = 800 to 829	C - = 660 to 699	Failing grade

**On-line Homework - LearnSmart:** LearnSmart is an adaptive learning system designed to help students learn faster, study more efficiently, and retain more knowledge for greater success. We will see if this is true.

Sections of LearnSmart e-homework (**Free**) will be assigned regularly. The points you see on Sakai will be your course LearnSmart e-homework, max 80 points. Learn Smart e-homework points will be updated on Sakai several times during the semester, usually when exam grades are posted.

**Each posting is the new total of the points you have. Keep up with your LearnSmart grade and know your due dates. If you wait till after the classes end to discover a grade is incorrect you will lose points. We will not reopen up or extend the dates just because you missed the due date. You have several days to complete each assignment. Do not wait till the last minute to do your assignments! Computer and server problems are yours and will not be considered.**

**LearnSmart (ON-LINE) HOMEWORK:** LearnSmart assignments for each textbook chapter will be due on the dates listed. Do NOT wait until the last minute to access and attempt to complete assignments, because computer issues can arise at any time, and you don't want to be left at the last minute not being able to complete your assignments on time due to some technical error.

To access Learn smart:

<http://www.mhlearnsmart.com/einsteinmt/einstein.html?product=86437&pilot=1>

Your LearnSmart code is on Sakai in the LearnSmart code link on the left. If you do not have a code listed come see me and I will get you one.

**Sakai:** To access Sakai you should go to the website: <http://lss.at.ufl.edu> . Choose "Sakai", then "University of Florida". To log in, you must use your GatorLink username and password. If you do not yet have one, you must obtain one. If you have any problems with your GatorLink name or password you should contact the Help Desk at 392-HELP, or go to 520 CSE. They will only help you with GatorLink items, not WebCT problems. For the latter, see your instructor.

**HONOR SYSTEM:** All exams are given under the Honor System. Any student caught cheating will receive the maximum punishment I can bring to bear. (Cheating of any kind will result in a grade of E.) Check the website for the UF policy on honesty and cheating: [http://www.dso.ufl.edu/stg/Code\\_of\\_Conduct.html](http://www.dso.ufl.edu/stg/Code_of_Conduct.html)

**CHEMISTRY LEARNING CENTER (CLC):** There is free help to be had from graduate student teaching assistants in the CLC Monday through Friday in Flint Hall 257 and 258. Your discussion TA will have office hours in the CLC, but you may go there anytime and see any TA to get help on questions pertaining to chemistry. A schedule of the TA schedules will be posted in the corridor outside the CLC and on e-Learning.

**The CLC ends their office hours the last day of class and I end my office hours then as well.**

**Other Information:**

Honor Code: <http://www.chem.ufl.edu/~itl/honor.html>

Disabilities: <http://www.chem.ufl.edu/~itl/disabilities.html>

Counseling: <http://www.chem.ufl.edu/~itl/counseling.html>

**STUDENT ATHLETES and SCHOOL EVENTS: You must see me in person each and every time about taking a graded event outside posted times that means early never late.**

**DISABILITY RESOURCES:** Disability resources students must see me the first week of class. If you are applying for disability resource status come see me the first week of class. Students requesting classroom and exam accommodations must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation. Students will then go to the disability resource center.

The Dean of Students Office provides individualized assistance for students with documented disabilities. Services are based upon student need and impact of their specific disability. There is no requirement for any student to self-identify as having a disability. However, students requesting classroom accommodations must register with the Dean of Students Office and provide the appropriate documentation verifying their disability. The Dean of Students Office determines what is and is not appropriate documentation. Examples of accommodations that are available to students include, but are not limited to, registration assistance, approval of reduced course load, course substitutions, classroom and examination accommodations, auxiliary learning aids, additional course drops when disability related, and assistance in other university activities. The designated coordinator for compliance with Section 504 of the Rehabilitation Act of 1973, as amended, and the Americans with Disabilities Act (ADA) is the Assistant Dean of Students responsible for Students with Disabilities Programs, P202 Peabody Hall, 392-1261 (Voice), or 392-3008 (TDD).

The Disability Resource Center strives to provide quality services to students with physical, learning, sensory or psychological disabilities, to educate them about their legal rights and responsibilities so that they can make informed decisions, and to foster a sense of empowerment so that they can engage in critical thinking and self-determination.

**Course Objectives: CHM 2045 (General Chemistry I)**

To build a basic fund of knowledge of the science of chemistry covering the topics below:

To analyze scientific concepts and think critically.

To review the importance of chemistry in our everyday lives.

To be able to utilize the methods of science as a logical means of problem solving.

## **The Foundation of Chemistry**

Matter and Energy-Basic Concepts of Chemistry  
Measurements  
Significant Figures  
Metric System  
Scientific Notation  
Dimensional Analysis

## **Chemical Formulas and Stoichiometry**

Atoms, Ions, Molecules and Compounds  
Nomenclature of Inorganic Compounds  
The Mole Concept  
Percent Composition  
Empirical Formula  
Molecular Formula

## **Chemical Equations and Reaction Stoichiometry**

Balancing of Chemical Equations  
Calculations Based on Chemical Equations-moles/masses of reactants/products  
Limiting Reagent Calculations  
Percent Yield and Theoretical Yield Calculations  
Sequential Reactions  
Concentration of Solutions-Calculations Involving Mass % and Molarity  
Dilution of Solutions: Calculations Involving  $V_1M_1 = V_2M_2$   
Calculations Involving Solution Stoichiometry

## **Chemical Reactions**

Organization of the Periodic Table  
Aqueous Solutions-Strong and Weak Electrolytes  
Reactions in Aqueous Solutions  
Oxidation Numbers

## **Thermodynamics**

The First Law of Thermodynamics  
Enthalpy,  $\Delta H$   
Calorimetry (constant-pressure and constant volume)  
Thermochemical equations  
Internal energy,  $\Delta E$   
Relationship between  $\Delta E$  and  $\Delta H$   
Hess' Law  
Standard enthalpies of formation and reaction  
Bond energy and  $\Delta H$   
The Second Law of Thermodynamics & Spontaneity

## **The Structure of the Atom**

Experiments that led to the discovery of the fundamental particles of the atom  
Subatomic Particles, Isotopes, Atomic Weight  
Development of Quantum Mechanics  
Quantum Mechanical Model of the Atom  
Electronic Configuration and the Relationship to the Periodic Table

Orbital Diagrams  
Quantum Numbers  
Chemical Periodicity

## Theory of Ionic and Covalent Bonding

Lewis Dot Formulas of Atoms  
Formation of Binary Ionic Compounds-Coulomb's Law, Lattice Energy  
Formation of Covalent Compounds  
Lewis Structures for Molecules and Polyatomic Ions and the Octet Rule  
Resonance and Formal Charges  
Exceptions to the Octet Rule for Lewis Structures  
Polar and Nonpolar Covalent Bonds

## Molecular Structure

Valence Shell Electron Pair Repulsion Theory (VSEPR)  
Electronic and Molecular Geometry and Molecular Dipole Moments  
Valence Bond Theory and Hybridization of Orbitals  
Molecular Orbital Theory

## Gases

Gas Laws and Ideal Gas Law  
Density and Molar Mass  
Stoichiometry of Reactions Involving Gases  
Kinetic Molecular Theory-Molecular Speeds  
Real Gases

## Liquids and Solids

Intermolecular Attractions and Phase Changes  
Physical Processes and Properties of Liquids  
Melting Point/Boiling Point  
Phase Changes of Matter and Phase Diagrams  
Molar Heat of Vaporization and Molar Heat of Fusion

## Solutions

Dissolution Process for Solids, Liquids and Gases  
Factors Affecting Solubility  
Saturated, Unsaturated and Supersaturated Solutions  
Other Units of Concentration  
Colligative Properties

1. Vapor Pressure Lowering
2. Boiling Point Elevation
3. Freezing Point Depression
4. Osmotic Pressure

## Chemical Kinetics:

Rate of a reaction  
Factors that affect reaction rates

- a. Nature of reactants
- b. Concentration of reactants: Rate-law expressions & Reaction order
- c. Concentration vs. time: Integrated rate equations and half-life

Collision theory, activation energy  
Transition state theory  
Mechanisms and Rate-law expressions  
Arrhenius equation: temperature and rate  
Catalysts

**HOW TO SUCCEED IN COLLEGE CHEMISTRY:** Success in college-level chemistry requires both a strong conceptual understanding of the material and a competent proficiency with the quantitative problem-solving strategies that are required to successfully answer word problems that are typical on quizzes and exams. You will not excel in this course without both the conceptual and the competence aspects of the material. This means that you **MUST PRACTICE** most (if not all) of the End-Of-Chapter problems in your textbook (see Problem-Solving Strategy below) so that you can diagnose your own strengths and weaknesses with the material. (Do not make the common mistake of thinking that the online homework problems alone constitute enough practice). Then, you can study with focus and efficiency to tackle and overcome the weaknesses in your competence with the material. The more practice with problems that you do, the more likely you will recognize and know how to approach and work through the same kinds of problems (with the fewest errors and avoidable missteps) that you will see on quizzes and exams. **FOCUSED AND EFFICIENT PRACTICE IS ESSENTIAL – FOLLOW CAREFULLY THE STRATEGY BELOW!!!**

**Problem-Solving Practice Strategy (VERY important!!):**

1) attempt each of the end-of-chapter problems one at a time; 2) consult the worked-out solutions (in Sakai) after attempting each problem to see if you got the correct answer (anything less than the absolute correct answer is an incorrect answer!) – if you didn't get the absolute correct answer the first time without looking at the solution, read over the solution carefully and try to understand where you made the error; 3) if you succeeded in getting the correct answer the first time without looking at the solution, check off that problem in the book, and if you did not succeed in getting the correct answer the first time without looking at the solution, circle the problem number; 4) revisit the circled problems the next day or a few days later to see if you get the correct answer without looking at the solution; 5) repeat step 3); and 6) repeat step 4) if necessary. Never assume that you have understood or succeeded at a problem until you have obtained the **CORRECT** answer (the answer in **BOLD** in the solutions) all on your own without looking at the solution first to do so, and do not merely look at the solutions and say "oh yeah, I see what I did wrong", and move on. **ALWAYS** go back and be sure that you can do each problem on your own successfully. Otherwise, you will most likely make the same errors on exams. Be sure to take **NOTES** as you do problems, indicating your weaknesses and strengths and where you made specific mistakes, so that you will be able to be on the lookout for when these types of situations arise in the future! And this is the most important thing of all: ALWAYS be assessing yourself – at the end of every problem-practice session, count the number of problems you did correctly the FIRST time without looking at the solution, and the number you did not do correctly the first time – the percentage of problems you did correctly will be your “grade” for that session, which is a very good approximation of your performance level – ALWAYS BE ASSESSING YOURSELF, AND DO NOT WAIT UNTIL YOUR INSTRUCTORS ASSESS YOU ON EXAMS, AFTER WHICH IT IS TOO LATE TO DO ANYTHING ABOUT IT. Merely "doing all the problems at the end of the chapters" does not equal "doing all the problems at the end of the chapters correctly". **HARD WORK DOES NOT NECESSARILY EQUAL PRODUCTIVE WORK!!** Do not make this very very common mistake. Giving yourself a “grade” after each session will keep you mentally on track regarding how you are performing at that time – without this information, you **WILL NOT** have any real idea of how well you are doing and how well you are prepared for exams.

**Note about using “old exams”:** The old exams that are posted are for you to use in a self-imposed exam-like setting (quiet room, with clock set to 2 hours, with no interruptions, with only a calculator and pencil and paper in hand). Do NOT look at the solutions at any time during the exams. Then grade your exam at the end, using the solutions then and only then. Merely using the exams as practice problems (using the solutions as you go along, similar to the way you’d do end-of-chapter problems) is defeating their purpose and WILL result in a FALSE sense of your exam-taking ability with the material. **EACH SEMESTER** we instructors hear the same thing from students: “The exams we had to take were much harder than the “old exams” you posted.” This is proven to be not true each semester. The average exam scores on the old exams are, within only a few percentage points, the EXACT same as the average exam scores on each semester’s exams. The difference is that when you use an old exam, you are not in the same real-life exam setting as when you take your actual exams. This is a very significant difference. So, if you choose to use the old exams as practice problems, that is fine, but understand that your performance on them is not necessarily reflective of how prepared you are for the real-exam setting you’ll find yourself in during the semester.

**Final Note:** One of the most important things that you should learn while in college is that you must learn to teach yourself and not rely on others to teach you. You can gain help from others in the form of guidance and clarification, but you must learn to identify your own weaknesses and strengths with the material in your courses, and learn to efficiently work on those weaknesses with focus and honest self-assessment so that you will be able to prove yourself when the instructor assesses you on exams. It is your goal as a college student to learn to take responsibility for your own success or lack thereof, to utilize the experience and knowledge of instructors and fellow students without overly relying on such assistance, to avoid the temptation to blame others for your failures, and to develop the strength of character and self-reliance that will be required of you as a productive adult.

UNIVERSITY OF FLORIDA

Form LR1

TEST FORM CODE:					
	A	B	C	D	E
1	1	2	3	4	5
2	1	2	3	4	5
3	1	2	3	4	5
4	1	2	3	4	5
5	1	2	3	4	5
6	1	2	3	4	5
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47	1	2	3	4	5
48	1	2	3	4	5
49	1	2	3	4	5
50	1	2	3	4	5

**CHM  
2045**

## SPECIAL CODES