SCIENCE DIVISION

SUMMER SESSION 2015 (JUNE 15 – JULY 25, 2015)

INTRODUCTORY CHEMISTRY

CHEM 51

Lecture:	**MTWTH**	**9:35 AM – 11:25 AM**	**MSA 003**
Conference:	**MTWTH**	**11:30 AM – 12:40 PM**	**MSA 003**
Laboratory	**MTW**	**12:45 PM – 2:55 PM**	**MSA 402**

Instructor (Lecture/Conference) ***Dr. Abraha Bahta***

Office: MSB 233/231
Phone: 310-287-4236/7222
Office Hours: 9:00 AM – 9:30 AM (M-TH)
3:00 PM – 3:30 PM (M – W) + By appointment
E-mail: *bahtaa@.wlac.edu*

Laboratory Instructor: ***Professor Chanda Shakladeo*** **MSA 402**

Office: MSB 211
Phone: X-8283 (On Campus only)
Office Hours: By Appointment
E-mail: shuklac@lacitycollege.edu

Welcome: During this 2015 Summer Session, you will work to develop your scientific writing, reading, chemical vocabulary and critical thinking skills. You will also learn to research, collect and evaluate information to solve problems encountered during this session. Specifically, you will apply appropriate and effective scientific methodology to investigate and draw conclusions when analyzing physical and chemical processes, both in the classroom and/or in a laboratory setting. The skills you learn will help you succeed both in and out of class. However, your education is ultimately YOUR responsibility. YOU determine your level of success. Successful college students are self-motivated and understand the importance of studying the material, coming to class prepared and practicing skills learned. YOU CAN DO IT and Science Division and its staff are here to support your efforts.

Course Description: This is an introductory one-semester course in college chemistry. Topics covered include general, organic, and biological chemistry. Physical and chemical discoveries that provide some insight into the chemical sciences are presented. Basic atomic theory, nomenclature, molecular structure, chemical reactions and the behavior of gases are also some of the topics covered. The laboratory exercises for this course emphasize basic laboratory skills,

fundamental chemical principles, and elementary qualitative and quantitative relationships in chemical analyses.

This course description can be found on the Electronic Curriculum Development (ECD) System found at https://ecd.laccd.edu/. Once you click on "find a course" you will be able to see the official Course Outline of Record.

REQUIRED TEXTS

LECTURE K. C. Timberlake, *An Introductory to General, Organic, and Biological Chemistry*, 11th Edition, Prentice Hall, 2012.

LAB MANUAL K.C. Timberlake, Essential Laboratory Manual for General, Organic, and Biological Chemistry, Second Edition.

OPTIONAL SUPPLEMENTARY MATERIALS

K. C. Timberlake, ***Study Guide*** for text. It provides you with a means of self-evaluation in determining how well you understand the materials of each chapter.
K. C. Timberlake, ***Solutions Guide*** for text. It provides you detailed solutions to all even-numbered exercises. It can be helpful IF you look at the solutions only AFTER you try the exercises by yourself.

COURSE STUDENT LEARNING OUTCOMES (SLOs):

Upon successful completion of this course you will be able to demonstrate a firm understanding of:

- measurements in both the English and metric systems
- general, inorganic and introductory organic chemistry, including nomenclature and writing formulas and chemical equations
- basic atomic theory and apply its principles to chemical reactions
- reactions of acids/bases, redox, as well as reactions of gases, liquids, and solids in conjunction with one another
- functional group categories that differentiate the various organic chemicals and the physical, chemical and physiological properties of each

Course SLOs are located on the West Los Angeles College SLO website. Please visit http://www.wlac.edu/slo/course_slos.html; be sure to bookmark it for future reference. Follow the link on the page to the course SLO listing. Locate Science Division on the tabs at the bottom of the window. Click on the tab and locate your course. Besides the CSLOs (Course Student Learning Outcomes), included, for your reference, are also the ISLOs (Institutional Student Learning Outcomes) and the PSLOs (Program Student Learning Outcomes.

Program SLOs

1. Utilize an appropriate and effective scientific methodology to analyze physical and chemical processes in the workplace and in everyday living. (Theme: Scientific process).

2. Explain and analyze the chemical world—as chemistry is a basic science with connections to many careers.

3. Research and interpret scientific literature.

Institutional SLOs (**A, B, C, D, F** and **H**)

A. Critical Thinking: Analyze problems by differentiating fact from opinions, using evidence, and using sound reasoning to specify multiple solutions and their consequences.

B. Communication: Effectively communicate thought in a clear, well-organized manner to persuade, inform, and convey ideas in academic, work, family and community settings.

C. Quantitative Reasoning: Identify, analyze, and solve problems that are quantitative in nature.

D. **Self-awareness/Interpersonal Skills:** Apply self-assessment and reflection strategies to interpersonal, work, community, career, and educational pathways.

F. Technical Competence: Utilize the appropriate technology effectively for informational, academic, personal, and professional needs.

H. Ethics: Practice and demonstrate standards of personal and professional integrity, honesty and fairness; apply ethical principles in submission of all college work.

EVALUATION AND GRADING GUIDELINES

To ensure that you are keeping up with the readings, and as a means of re-enforcing learning of the lecture and lab materials, various forms of evaluations are employed:

- In-class Drills
- Hour-Exams
- Comprehensive Final Exam

The exams will primarily consist of some combination of multiple choice, fill-in, drawing, computation, and short answer questions. All students are responsible for taking all exams. You will be expected to provide SCAN-TRON # 882-ES answer sheets and a No. 2 soft lead pencil. All exams must be taken on the scheduled day and time. No make-up exams will be given for any reason. If a student misses an exam, for an excused absence with **a proper documentation**, the **lowest percentage** exam score from **all the other exams** given during the intersession (including the final) will be used as the score for the missed exam. A **second missed exam** will be given a score of **zero** for that exam. If a student is absent (excused) for the final exam, he/she will be given an **incomplete**, as long as the student is passing the class. The incomplete can be made-up by taking the final within a year.

The course will be allotted **1000 POINTS.** The chart below will serve as a guideline on how all points awarded to you in the course are allocated and the **final letter grades** will be assigned according to the percentages shown in the chart.

Assignment Category	# of Assign.	Points Per Assignment	Total Points	% of Total Grade
Weekly In-Class Drills	**5**	**20**	**100**	**10.0%**

Hour-Exams	**4 out of 5**	**100**	**400**	**40.0%**
Laboratory Reports	**12-15**	**Variant**	**200**	**20.0%**
Final	**1**	**300**	**300**	**30.0%**
Grand Total	**-**	**-**	**1000**	**100%**
880 - 1000 = **A**	770 - 879 = **B**	650 - 769 = **C**	540 - 649 = **D**	539 and below = **F**

CLASS POLICIES

Attendance

Because class discussions and conference drills are an integral part of this course, attendance is mandatory. You are expected to attend every class meeting, to arrive on time and stay throughout the class period; **furthermore,** 3 tardies = 1 absence. Thus, students **may be dropped** from class for a variety of reasons: **3 absences, excessive tardiness**, (or a combination of absences and tardiness that add to 3 absences), and **a no show during the first day of class.**

Preparedness

You are expected to arrive on time. You will come to each class session prepared. You will have your books, notebooks, handouts, pens/pencils, any work that is due, and you will be prepared to participate in topical discusses.

Contacting Me

E-mail is the best and quickest way to contact me. Thanks to modern technology, my e-mail is linked to my phone. **If you have a problem, do not let it snowball. Contact me immediately.** You are expected to ask questions and obtain help from your instructor via email and/or during office hours.

Recording Devices

State law in California prohibits the use of any electronic listening or recording device in a classroom without prior consent of the instructor and college administration. Any student who needs to use electronic aids must secure my consent. If granted, a notice of consent shall be forwarded to the Vice President of Academic Affairs for approval (WLAC College Catalog). A link to the Catalog is provided:
http://www.wlac.edu/academics/pdf/WLAC_12-14Catalog_Policies.pdf

CAMPUS RESOURCES

If you are having problems, don't let them snowball. Come and talk with me and check out some of the campus resources available to you.

Office of Disabled Student Programs and Services (DSP&S)

Student Services Building (SSB) 320, tel (310) 287-4450.

West Los Angeles College recognizes and welcomes its responsibility to provide an equal educational opportunity to all disabled individuals. The Office of Disabled Students Programs and Services (DSP&S) has been established to provide support services for all verified disabled students pursuing a college education. DSP&S students may qualify for: priority registration, registration assistance, special parking permits, sign language interpreters and assistive technology (WLAC College Catalog).

Instructional Support (Tutoring) & Learning Skills Center
Heldman Learning Resources Center (HLRC) | (310) 287-4486
Improve your reading, language, vocabulary, spelling, math fundamentals and chemistry knowledge with convenient, self-paced computer-aided courses in the Learning Skills Center. Increase your knowledge and learning success: sign up for tutoring in various college subjects (WLAC College Catalog).

Library Services
Heldman Learning Resources Center (HLRC) | (310) 287-4269 & (310) 287-4486
The WLAC Library provides instruction on how to use the online catalog, periodical and research databases. In addition to a large collection of books, periodicals and videos, the WLAC Library has course textbooks which students may use while in the Library. Web access is available in LIRL as well as meeting rooms. The upper floors provide a beautiful view ideal for study (WLAC College Catalog).

COLLEGE POLICIES

Academic Integrity

Each student is expected to do his/her own work on all assignments, lab write-ups, examinations, etc. This is the narrative on **WLAC Policy on Student Academic Honesty** (Adopted by the WLAC Academic Senate June 2006): West Los Angeles College is committed to preparing students to compete confidently and effectively in a rapidly changing, information-driven, technological global community. Students are expected to be honest and ethical. No acceptable rationale for dishonesty can be based on physical, emotional or learning challenges.

The college expects that students to do their own academic work. Students are expected to mentally isolate themselves while taking quizzes and examinations. All responses ought to be based upon studied and memorized information, unless specifically instructed to use reference materials and/or specified notes.

Acceptable academic conduct does not include cheating, plagiarism or any other unethical academic behavior. It is the students' responsibility to know what conduct is academically honest. The following list includes some examples of academic dishonesty:

Plagiarism

- Submitting someone else's scholarly work, such as essays or term papers, as your own.
- Submitting someone else's artistic work as your own. (examples include musical compositions, computer programs, photographs, paintings, drawings)
- Copying, in part or in full, someone else's assignment.

- Including in your work without proper citation the ideas or language of another author.
- Including in your work without proper citation information downloaded from the Internet.

Cheating

- Consulting concealed notes during a quiz, test or exam.
- Using unauthorized prepared materials during a quiz, test or exam.
- Receiving information or answers from another individual during a quiz, test or exam.
- Copying information or answers from a classmate's paper.
- Using electronic devices that have not been authorized by the instructor during a quiz, test or exam.
- Inventing data for a laboratory experiment or case study.
- Submitting work prepared previously for another course.
- Talking during a quiz, test, or exam.

Other examples of academic dishonesty:

- Providing your work for someone else to copy.
- Allowing a fellow student to use answers on your paper during a quiz, test or exam.
- Passing information to a fellow student during a quiz, test or exam.
- Purposely allowing a classmate to copy your original work product, such as answers to assignments, lab reports, term papers, etc.
- Stealing tests or examinations.
- Removing tests or exams from a campus facility without the permission of the instructor.

Violators of the WLAC Policy on Student Academic Honesty are subject to disciplinary action. Depending upon the seriousness of the violation, the disciplinary action may be any or all of the following:

- The instructor may warn the student that the conduct is a violation of the WLAC Policy on Student Academic Honesty.
- The instructor may give a zero score or an "F" grade for the assignment or exam. In the case of assignments which are not averaged into the course grade (such as extra

credit assignments) the penalty may be the subtraction of the points the assignment is worth.

- The instructor may report in writing the academic dishonesty incident to the Office of Student Services to be placed in the student's disciplinary file.

- The instructor may send a written report to the Office of Student Services about the student's violation of the Standards of Student Conduct (LACCD Board Rule 9803.12), and request that the college initiate disciplinary action leading to the suspension of the student from the college or the expulsion of the student from the college and the entire district as authorized by LACCD Board Rule 91101.11b. In all instances, the student has the right of due process when charged with a violation of the Standards of Student Conduct. Details of the Student Grievance Procedure may be found in the West Los Angeles College catalog and in the Schedule of Classes in the section on student conduct.

CLASSROOM ETIQUETTE AND CONDUCT

It is very simple! Get to class on time, every time and stay the whole time. When you arrive to class, make sure you have used the restroom, had a chance to eat, check your messages, etc. Walking in and out is rude and disruptive. If you need to leave early, or have some other problem, you need to notify me in advance. In the event that you are more than **ten minutes late**, **stay out** the whole period. Disrupting the class while lecture is in progress is unacceptable. Furthermore, while lecture is in progress should you, for any reason leave the classroom; you are not to come back. It is absolutely unacceptable to disrupt the class by being in-and-out of the classroom during the lecture. Bathroom runs should be taken care of prior to coming to class. You might wish to control your liquid in-take in accordance to class duration. [If a **medical condition** exists that mandates the student to go to the bathroom frequently, the student needs to discuss the situation with me privately.]

Cell Phones, iPods, etc.

Turn them off and put them away when class begins! Although it may not seem possible, you can survive without talking and texting on your cell phone, or listening to your iPod for 75-90 minutes. Talking and texting on cell phones not only distract you, but they are a distraction for me and your peers. If you are expecting a 'very important, i. e. more important than being in class, phone call', then by all means stay away from class and wait for it! Surely, we all have loved ones we want to engage in a conversation over the phone. I am certain family members and friends can wait for the calls for 75-90 minutes, particularly you if have informed them that you will be in class during such and such time. Common courtesy dictates that a beeper or a ringing cell phone should not disrupt the classroom. According to District code 9803.15, disruption of classes or college activities is prohibited and will not be tolerated. Should that happen, you will be asked to leave the classroom; and there will be a-three-way conference that includes the Dean of academic affairs, and me (the instructor) before you are allowed to return to the classroom.

The WLAC Science Division has also adopted the following Policy on Student Conduct in Classroom:

1. Be honest and ethical; follow the rules described in the college's policy on academic honesty.
2. Arrive before the start of class; wait until the previous class has been dismissed before entering the classroom.
3. Whenever you arrive to class late, open the door *quietly*, enter *quietly*, and close the door *quietly* so as not to disturb the class in session. Then, take a seat near the door, on the side or at the back of the classroom. Never walk in front of the instructor.
4. Do not eat or drink beverages in the classroom.
5. No gum chewing.
6. Sharpen pencils before class starts. Do not sharpen pencils during lecture.
7. Listen carefully when directions and announcements are being given. You are responsible for all information announced whether or not you were absent, tardy, or not paying attention.
8. Turn off or mute cell phones before entering the classroom.
9. Do not answer cell phones during class.
10. Do not leave the classroom during the lecture. Wait until the class is dismissed.
11. No talking during lecture. Do not chat with your classmates at any time during lecture, including during the time your instructor is putting information on the chalkboard.
12. Raise your hand and wait for recognition by the instructor to ask a question during lecture.

During the class, do not interrupt the instructor with personal questions. Wait until the class has been dismissed.

SYLLABUS AND LECTURE SCHEDULE

WEEK	DATE	CHAPTER: (TOPICS& SECTIONS)		SUGGESTED EXERCISES:	
1.	JUN 15-18	1	**Measurements** **1.** Units of Measurement **2.** Scientific Notation **3.** Measured and Exact Numbers; significant figures **4.** Significant Figures in Calculations **5.** Prefixes and Equalities **5.** Writing Conversion Factors **6.** Problem Solving and Dimensional Analysis	**PP 11**	**9-95 (odd)**
		2	**Matter and Energy**	**PP 50**	(1-74) even
		3	**Atoms and Elements**	**PP 88**	**(**1 – 104) odd
	JUNE 18 (THURSDAY)		**LECTURE/REVIEW SESSION/IN-CLASS DRILL 1**		
2.	June 22-25,	4	**Compounds and Their Bonds**	**PP 131**	(2 - 106) even
		5	**Chemical Quantities & Reactions**	**PP 172**	2-60; 72-100 (even)
	JUNE 22 (MONDAY)		**EXAM 1 + LECTURE**		
	JUNE 25 (THURSDAY)		**LECTURE/REVIEW SESSION/IN-CLASS DRILL 2**		
3.	June 29 - July 2	7	**Solutions**	**PP 250**	(1-99) odd

		8	**Acids and Bases**	**PP 291**	(2 - 80) even
		6	**Gases**	**PP 220**	(5-79) odd
	JUNE 29 (MONDAY)		**EXAM 2 + LECTURE**		
	JULY 02 (THURSDAY)		**LECTURE/REVIEW SESSION/IN-CLASS DRILL 3**		
4.	July 6 – 9	**10**	**Introduction to Organic Chemistry**	**TBA**	
			1. Unique Characteristics of elemental Carbon		
			2. Saturated hydrocarbons: **Alkanes**		
			a. Open Chain Structures		
			b. Closed (Cyclic) Structures		
			c. Structural Isomerism		
		11	**Unsaturated Hydrocarbons**	**TBA**	
			a..Alkenes		
			(i). Open chain		
			(ii). Closed Chain		
			(iii). Structural Isomerism		
			(iv). Geometric (Cis-Trans) Isomerism		
			b. Alkynes		
			(i) Open Chain		
			(ii) Structural Isomerism		
			5. Aromatic Compounds		
		12	**Compounds with Oxygen and Sulfur**	**TBA**	
			1. Alcohols		
			2. Phenols		
			3. Thiols and Ethers		
			4. Aldehydes and Ketones		
	JULY 06 (MONDAY)		**EXAM 3 + LECTURE**		
	JULY 09 (THURSDAY)		**LECTURE/REVIEW SESSION/IN-CLASS DRILL 4**		
5.	July 14-17	**14**	**Carboxylic Acids, esters, Amines, and Amides**	**TBA**	
			1. Carboxylic acids		
			3. Esters		
			4. Amines		
			5. Amides		
			ORGANIC REACTIONS (FROM SELECTIVE CHAPTERS)		
		10.	**4.** Combustion		
		11.	**3.** Addition		
			(i). Hydrogenation		
			(ii). Halogenation		
			(iii). Hydration		
		12.	**3.** Reactions of Alcohols and Thiols		
			(i). Dehydration		
			(ii). Oxidation/Reduction		
			4. Reactions of Aldehydes		
			Tollens' and Benedict's Tests		
		14.	**2.** Carboxylic Acids		
			(i). Ionization		
			(ii). Neutralization		
			3. Esters		
			(i). Esterification		
			(ii). Acid/Base Hydrolysis		
			(iii). Saponification		
	JULY 13 (MONDAY)		**EXAM 4 + LECTURE**		
	JULY 16 (THURSDAY)		**LECTURE/REVIEW SESSION/IN-CLASS DRILL 5**		
6.	July 20 – 23	**13**	**Carbohydrates**	**TBA**	
		15	**Lipids**	**TBA**	
		16	**Amino Acids, Proteins and Enzymes**	**TBA**	
		17	**Nucleic Acids and Protein Synthesis**	**TBA**	
	JULY 20 (MONDAY)		**EXAM 4 + LECTURE**		
	JULY 22 (WEDNESDAY)		**FINAL EXAM PART I**		

JULY 23 (THURSDAY) FINAL EXAM PART II

LABORATORY SCHEDULE

Lab Manual: Essential Laboratory Manual for General, Organic, and Biological Chemistry, Second Edition by K.C. Timberlake

Lab Report: You are to carry out every assigned experiment at the scheduled time and complete your reports upon completion on the same day, but no later than the next lab period. You need to buy the Laboratory Manual and bring it to the laboratory every time. ***Reports on copied or Xeroxed report sheets will not be***

acceptable. Work done will be signed at the time of completion only. When you work with a partner (or partners), you are individually responsible for data collection ***contemporaneously***. No joint lab report will be accepted.

WEEK	DATE	ASSIGNED EXPERIMENTS
1.	June 15- 17	**Check in**, Laboratory Safety Video **Lab. D-1** Conversion Factors in Calculations **Lab. 1** Measurement & Significant Figures, P5-12 **Lab. 2** Density & Specific Gravity, P13-23
2.	June 22-24	**Lab. 3** Atomic Structure P 28-39, Omit E (Flame Test) **Lab. D-2** Compounds & Their Formulas Page D25-D34 **Lab. 6** Moles & Chemical Formulas, Omit A, Do **B** – Formula of Hydrate Page-72 Use Barium Chloride x water as your hydrate. Discuss calculations. Answer Q7, Q8 **Handout # 1** Nomenclature
3.	June 29- July 1	**Lab. 5** Chemical Reactions & Equations P55-66 **Handout #2** Balancing Chemical Reactions **Lab. 10** Solutions **A, B, C**
4.	July 6-8	**Lab. 13** Acid, Base, pH. Save Vinegar titration for next laboratory period. **Handout # 3** Preparation of NaOH Solution Standardization of NaOH using KHP Titration of Vinegar & Std HCl Discuss Calculations involved.
5.	July13-15	**Lab. 8** Gas Laws, Answer Q5, 6, 7, 9, 10, 11, 12 Watch **Gas Video**. (Submit a one page report at the end of the lab. period **Lab. 7** Food calories, **C, D** P 96-98 (Bring food wrapper with Caloric Values) Answer Q2, 3, 4, 5. **Lab. D3/D4** Properties & Structure of Alkane Page D35-42 **Lab. 14** Alcohol, Aldehydes, Ketones….**A**, Q1, **B**, Q3, **C, D** on page 198, **D, E, F** on page 199
6.	July 20-22	**Lab. 15** Carboxylic Acids & Esters P204-214 **A.1-A.6** Instruction on p-204-205, **B.1-B.3** See Instruction on P 206-207 Omit Aspirin **Lab. 16** Carbohydrates **A, B, C** (Use lecture book to answer questions) Perform **D, E, G, H Omit F** **Lab. 17** Preparation of Hand Lotion (divide the class into groups.)
	JULY 22	**CHECK OUT**