LAGUARDIA COMMUNITY COLLEGE
CITY UNIVERSITY OF NEW YORK
NATURAL SCIENCES DEPARTMENT

SCC101 Topics in Chemistry

Your Instructor's name_____

Your Instructor's contact information _____

Course Description: *3 credits / 3 contact hours*
This course serves as an introduction to chemistry. The complex connections between chemistry and society are explored through applying chemical principles to real world issues such as air quality, energy and water use through interactive classroom lectures, discussions and laboratory exercises. Topics include measurements, atoms, the Periodic Table, ionic and molecular compounds, stoichiometry, energy, acids and bases in the context of social issues.
Pre-requisites: CSE099, ENA/ENG/ESA099/ECC101, MAT096

Course Materials:

Textbook and Laboratory Manual:	Chemistry in Context: Applying Chemistry to Society, Custom Edition for LAGCC, Created by Ian Alberts, McGraw-Hill, 2013. ISBN: 9781308308760 or 9781308044750. Go to http://create.mheducation.com/shop/ You are recommended to purchase a looseleaf copy of the textbook from the bookstore, or an ebook from the publisher McGraw-Hill. This includes the textbook, lab manual, and Connect online resources, and so represents **excellent value**.
Safety Goggles:	All students are required to bring safety goggles (available in the Bookstore) to **every** laboratory session. Y***ou will not be permitted to remain in the lab and perform experiments without them***.
Software for Homeworks	Subscription to Sapling Learning: www.saplinglearning.com This program will be used for homework assignments and tutoring. **Each student is required to purchase a subscription at a cost of $38.**
Scientific Calculator:	All students are required to have their own scientific calculator. *Borrowing calculators or using cellphones/IPODs, etc. as calculators will NOT be allowed during quizzes and exams.*
Disabilities	In coordination with the Office for Students with Disabilities (OSD), reasonable accommodations will be provided for qualified students with disabilities. Please meet with your instructor the first week of class to make arrangements. Jhony Nelson, Director of the Office for Students with Disabilities can be contacted at jhonyn@lagcc.cuny.edu, or in person at Room M-102.
College-Wide Assessment	All Pathways courses will be depositing work for College-Wide assessment this semester. For SCC101, the Project Paper will be deposited. For a tutorial on how to deposit your work, go to: http://eportfolio.lagcc.cuny.edu/support/tutorials.htm and find the section called, "Assessment for Students." Click on the adobe flash button for "Depositing Assessment Artifact in Digication Instructions for Students." You will see a brief video on how to deposit.

LEARNING OUTCOMES:

At the end of this course, students will be able to:

1. Identify and apply the fundamental concepts and methods of a life or physical science.
   - **Be introduced to the principles of atomic structure, physical and chemical properties of matter, isotopes, and the Periodic Table of elements.**
   - **Be introduced to types of chemical reactions, writing and balancing chemical equations.**
   - **Be introduced to chemical quantities: Avogadro's number, formula mass, mole, molar mass and illustrate how to do the calculations involving these quantities.**
   - **Be introduced to the concepts of acids, bases and pH.**
   - **Apply these fundamental principles to understanding important social, environmental, economic and ethical issues facing modern societies such as climate change, water pollution, energy use, nutrition and sustainability.**

2. Apply the scientific method to explore natural phenomena, including hypothesis development, observation, experimentation, measurement, data analysis, and data presentation.
   - **Carry out laboratory experiments to gather data and apply mathematical analysis to the data including presentation of the data in graphs and tables. Students will use the results of their data collection to develop a hypothesis about the chemical concept studied.**

3. Use the tools of a scientific discipline to carry out collaborative laboratory investigations.
   - **In laboratory experiments, students will learn the basic laboratory techniques of chemistry. Students will learn to use equipment such as balances, burettes, pipettes, chemical glassware, and students will learn how to use chemicals safely. Students will work in collaborative groups in the laboratory to design and carry out experiments.**

4. Gather, analyze, and interpret data and present it in an effective written laboratory or fieldwork report.
   - **Write lab reports to communicate the significance of the data collected during laboratory experiments.**

5. Identify and apply research ethics and unbiased assessment in gathering and reporting scientific data.
   - **Carry out a research project and present the results to an audience composed of peers and the instructor.**

Academic Integrity Policy: Instructors of this course are required to implement the College Policy regarding cheating on examinations and quizzes. A complete statement of the policy is available at the student counseling services or online at http://library.laguardia.edu/files/pdf/academicintegritypolicy.pdf.

Attendance Policy: Attendance at all class sessions, lecture and laboratory, is essential for proper understanding and mastery of the course material. Attendance in class is a requirement and will be considered in the evaluation of student performance. Instructors are required to keep an official record of student attendance. The *maximum number of unexcused absences is limited to **15%** of the number of class hours*. **Note**: Absences are counted from the first day of class even if they are a result of late registration or change of program.

GRADING SCHEME - Student performance will be evaluated in the following ways:

2 Exams (120 points each)	240 points
5 Laboratory Reports (30 points each)	150 points
8 Homeworks (20 points each)	160 points
Research Project/Oral Presentation	75 points
Departmental Final Exam (cumulative)	**175 points**
TOTAL	**800 POINTS**

Letter Grades – these will be awarded based on the following:

A =	93-100 %	C+ =	77-79.9 %
A- =	90-92.9 %	C =	73-76.9 %
		C- =	70-72.9 %
			F = less than 60%
B+ =	87-89.9 %	D+ =	67-69.9 %
B =	84-86.9 %	D =	63-66.9 %
B- =	80-83.9 %	D- =	60-62.9 %

Grading and Standards: A minimum of 60% of the possible points (that is, at least 4800 points) must be earned in order to receive a passing grade for the course.

Make-up Policy: There will be **no scheduled make-up exams**. A student who has missed an exam should consult the instructor on the matter. Arrangements to take a missed exam must be made **before** the exam papers have been returned to the class.

Exams: Two (2) hour-long in-class exams will be administered during the semester.

Final Exam: There will be a comprehensive Departmental Final Exam that will cover the material from **ALL** the assigned chapters and labs.

Homework: There will be eight homework assignments assigned by the instructor throughout the semester. **They will be conducted online using Sapling. See the following page for details**.

Research Project: The purpose of the research paper assignment is to allow you to explore some area of interest within chemistry, particularly related to environmental issues. The research project will allow you to expand your understanding of the topic, and improve your research, writing, and presentation skills. The research paper is in the form of a report and should consist of the following sections: Title, Background Information, Discussion, Conclusions and References.

See the Research Paper Guidelines on BlackBoard for further details.

Homework Assignments

ALL homework assignments will be done online through **www.saplinglearning.com**.

NO WRITTEN HOMEWORK ASSIGNMENTS WILL BE ACCEPTED.
Each student is therefore required to purchase a subscription at a cost of $38.

To register for the site follow the instructions below:

1. Go to http://saplinglearning.com and click on your country at the top right.

2a. If you already have a Sapling Learning account, log in then skip to step 3.

2b. If you have Facebook account, you can use it to quickly create a Sapling Learning account. Click "Create an Account", then "Create my account through Facebook" or the blue button with the Facebook "f" symbol on it. You will be prompted to log into Facebook in the popup window that appears, if you aren't already logged in. The form will auto-fill with information from your Facebook account. If not, please complete the Account and Personal Information sections. Choose a password and timezone, accept the site policy agreement then click "Create My Account". You can then skip to step 3.

2c. Otherwise, click the link "Create an Account". Supply the requested information and click "Create my Account". Check your email (and spam filter) for a message from Sapling Learning and click on the link provided in that email.

3. When you have logged into Sapling, Select "**Courses at LaGuardia Community College**", then

Click on "**Introductory Chemistry**", then

Click on "**Semester I**", then

Click on the link that reads your course title **with** your instructors name, ie,

"**LaGuardia Community College - SCC 101 - Semester Year – INSTRUCTOR NAME**"

You may need to enter your key code. Your key code is your 3-digit course section number.

4. Select a payment option and follow the remaining instructions.

Once you have registered and enrolled, you can log in at any time to complete or review your homework assignments. During sign up – and throughout the semester - **if you have any technical problems or grading issues, send an email to support@saplinglearning.com explaining the issue**. The Sapling Learning support team is almost always faster and more able to resolve issues than your instructor.

The date when each homework assignment is due is listed on the assignment.

SCC 101 **Laboratory Requirements**

1. Please be aware where safety equipment is located (Safety Shower, Eye Wash Station, Fire Extinguishers, Fire Blankets, First Aid Kits and Emergency Exits). In case of emergency, instructors should direct students to the proper safety equipment and then call the laboratory technician.

2. **Students are required to wear safety glasses at all times for laboratory work and to observe all safety rules**.

3. **NO FOOD OR DRINK** (including bottled water) is allowed in the lab at any time.

4. **Students are required to wear closed, non-fabric shoes to adequately protect their feet – NO SANDALS, SLIPPERS, OPEN-TOED OR OPEN-HEELED SHOES ARE ALLOWED.**

5. **Always maintain a clean work area in the lab. It is difficult to do organized work in a disorderly setting. At the end of each lab work, put away all equipment and clean your work area.** ***4-5 points*** may be taken from your experiment grade for failing to observe this policy.

6. Students are permitted to make up missed labs with another class at the instructor's discretion. A student wishing to make up a missed lab must obtain a signed permission form from his or her original instructor to take to the class where the lab will be made up. The form is available from the lab technician. At the end of the makeup lab, this form must be signed by the instructor and returned by the student to the original instructor as proof that the lab was completed. **It is the student's responsibility to organize this.** ***Please note that the lab can only be made up if there is another class doing the same lab and there is space available for the student in that class.***

7. Lab reports are worth 30 points each. **All entries into Data Sheets and responses to the Post-lab Questions must be in INK with no white-outs.**

In the laboratory during the first week of classes, each student **must:**

(i) View the Safety Film;
(ii) Complete and hand in the Safety Commitment;
(iii) Bring a pair of Safety Goggles.
(iv) Conduct the Lab Orientation: Basic Laboratory Techniques

If a student is not present for the initial laboratory session, it is the student's responsibility to obtain an authorization form from the Laboratory Instructor or from the Laboratory Technician for viewing of the Safety Film in the Library. The student must then present the form with the proper verification that he or she has seen the film at the next laboratory session.

SCC101 Topics in Chemistry **Lecture/Lab Topic Outline**

WEEK 1 Chapter 1: The Air We Breathe
What's in a Breath; Air Quality and You; Classifying Matter: Pure Substances, Elements and Compounds (1 hr.)

Lab: Orientation; Safety; Basic Lab Techniques (2 hrs.)

WEEK 2 Chapter 1: The Air We Breathe
Atoms and molecules; Names and formulas; Chemical Change; Fire and Fuel: Air Quality and Burning Hydrocarbons; Back to Breath – At the Molecular Level (1 hr.)

Chapter 2: Protecting the Ozone Layer
Ozone – What and Where It Is; Atomic Structure and Periodicity; Molecules and Models; Waves of Light; Radiation and Matter; Oxygen – Ozone screen; Biological Effects of Ultraviolet Radiation (2 hrs.)

Homework #1

WEEK 3 Chapter 3: The Chemistry of Global Climate Change
In the Greenhouse: Earth's Energy Balance; Molecules: How they Shape Up; Vibrating Molecules and the Greenhouse Effect; The Carbon Cycle – Contributions from Nature and Humans (1 hr.)

Homework #2

Lab 1: What Am I Breathing? Preparation and Properties of Oxygen and Carbon Dioxide (2 hrs.)

WEEK 4 **EXAM #1 (Chapters 1, 2)** (1 hr.)

Chapter 3: The Chemistry of Global Climate Change
Quantitative Concepts: Mass, Molecules and Moles; Methane and Other Greenhouse Gases; Consequences of Climate Change; What Can (or Should) We Do About Climate Change? (2 hrs.)

WEEK 5 Chapter 4: Energy from Combustion 4.1 – 4.7
Fossil Fuels and Electricity; Efficiency of Energy Transformation; The Chemistry of Coal; Petroleum (1 hr.)

Lab 2: Chemical Moles: Baking Soda to Table Salt (2 hrs.)

Homework #3

WEEK 6 Chapter 4: Energy from Combustion (con)
Measuring Energy Changes; Energy Changes at the Molecular Level; The Chemistry of Gasoline (1 hr.)

Chapter 5: Chapter 5: Water for Life 5.1 – 5.9
The Unique Properties of Water; The Role of Hydrogen Bonding; Water Use; Water Issues; Aqueous Solutions; A Close Look at Solutes (2 hrs.)

Homework #4

WEEK 7 Chapter 5: Water for Life (con)
Names and Formulas of Ionic Compounds; The Ocean: An Aqueous Solution with Many Ions; Covalent Compounds and Their Solutions (1 hr.)

Lab 3: What's In My Bottled Water? (2 hrs.)

WEEK 8 Chapter 6: Neutralizing the Threat of Acid Rain ***6.1 – 6.4, App 3, 6.11 - 6.12***
What is an Acid?; What is a Base?; Neutralization: Bases are Antacids; Appendix 3: Logs; Introducing pH; Acid Deposition and its Effects on Materials; Acid Deposition, Haze and Human Health (3 hrs.)

Homework #5

WEEK 9 **EXAM #2 (Chapters 3, 4, 5)** (1 hr.)

Lab 4: Which Common Materials are Acids or Bases? (2 hrs.)

WEEK 10 Chapter 11: Nutrition: Food for Thought *11.1 – 11.9*
Food and the Planet; You Are What You Eat; Fats and Oils; Fats, Oils and Your Diet; Carbohydrates: Sweet and Starchy; How Sweet it Is: Sugars and Sugar Substitutes; Proteins: First Among Equals; Vitamins and Minerals: The Other Essentials; Energy from Food (3 hrs.)

Homework #6

WEEK 11 Chapter 11: Nutrition: Food for Thought (continued); Brief review (1 hr.)

Homework #7

Lab 5: How Much Fat is in Potato Chips and Hot Dogs? (2 hrs.)

WEEK 12 Oral Project Presentations

Homework #8

WEEK 13 **FINAL EXAM (LAB AND LECTURE CUMULATIVE)**

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