

**Texas State Technical College Waco  
Course Syllabus**

*Course Rubric & Number:* CHEM 1405

*Lecture/Lab Hours:* 3- 3

*CIP Code:* 400505138

*Course Title:* **Introductory Chemistry I**

**Course Description:** A survey course introducing chemistry. Topics may include inorganic, organic, biochemistry, food / physiological chemistry and environmental / consumer chemistry. Designed for non-science majors.

*Prerequisites:*

*Instructor:*

*Office Phone Number:* 254-867-4859

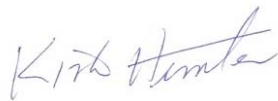
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*Office Fax Number:* 254-867-2973

*Building & Office Room Number:* TSC - Office

*Department Chair:*

Kirk Hunter



*Date:* 29 June 2010

*Approved by CIP Committee:*



*Date:* April 30, 2010

***End-of-Course Learning Outcomes:***

CO1: Understand the scientific method, and the measurement of matter

CO2: State the Laws of Conservation of Energy and Mass and interpret chemical formulas

CO3: State the three principle subatomic particles and their properties, write isotopic notation, determine metals, nonmetals and metalloids and state the family names of elements.

CO4: State the types of ionizing radiation, explain radioisotopic dating, list some uses of radioisotopes, state what isotopes are used for explosives and nuclear power.

CO5: Write chemical formulas and names

CO6: Balance equations, calculate percent composition, determine the characteristics of gases, calculate percent solution and the dilution formula

CO7: State principle differences between acids and bases, reactions of acids and bases, interpret a pH scale and explain the causes of acid rain.

CO8: Draw the components of a dry cell and a lead acid battery, explain electroplating, give examples of corrosion, and state the types of oxidizing agents

CO9: State reactions of organic chemicals, name organic chemicals, identify functional groups

CO10: State two types of polymerization, identify terms used for polymers, identify various types of polymers and their uses, state what composites are

CO11: State the segments of the lithosphere, state the four types of ores and examples of each, state how bronze, iron and aluminum are produced

CO12: State the components of the atmosphere, draw the nitrogen and oxygen cycle, explain what a temperature inversion is, explain acid rain

CO13: State the two causes of waterborne disease, explain the effects of anaerobic and aerobic bacteria on water, define hard water, draw the processes by which drinking and wastewater are processed

CO14: State the three fossil fuels, show how oil is separated into components, explain the technique to produce gasoline, explain how a generating plant produces electricity

CO15: Draw the structures of proteins, lipids, carbohydrates, and nucleic acids. State the secret of life.

CO16: List the various simple sugars and disaccharides, functions of fats, vitamins, minerals, and additives in food

CO17: Explain how soap and detergents clean, state the three basic cleaning products, state the active components in specialized cleaning products, state the components of paint, cosmetics, toothpaste, perfumes and hair products

CO18: State how aspirin and aspirin substitutes function, state what various medications do, state the function and effects of various narcotics, stimulants, psychotropic and anti-anxiety drugs.

CO19: State the types and effects of corrosive, blood agent and heavy metals poisons, explain how nerve agents function on the nervous system, state the effects of various agents that affect DNA, and state the various classifications of hazardous wastes.

**Resources:**

Tools & Materials Students Purchase

Quantity	Item Description
1	Chemistry for Changing Times – Hill and Kolb – Prentice Hall – latest edition

**TSTC Grading Policy:**

(Grades for all Major courses must be C or better)

Grade	Percent	Description	Grade Points
A	90-100	Excellent/Superior Performance Level	4
B	80-89	Above Required Performance Level	3
C	70-79	Minimum Required Performance Level	2
D	60-69	Below Required Performance Level	1
F	Below 60	Failure to meet Performance Requirements	0
IP	--	In Progress	
W	--	Withdrawal	0
CR	--	Credit	0
AUD	--	Audit of Course	0
See College Catalog for complete descriptions.			

**Instructor's Participation Policy:**

The student must be present for all tests, quizzes, and assignments. Failure to attend will result in a grade of zero for that particular test, quiz, laboratory or assignment.

**Students with Disabilities:**

If you have a documented disability that will impact your work in this class, please contact the Office of Deaf and Disabled Student Services (D/DSS) so that appropriate arrangements for your accommodations can be made. In accordance with the federal law, a student requesting accommodations must provide documentation of his/her disability to D/DSS. For information, visit D/DSS in the Fentress Center or call (254) 867-3600.

Once you and a D/DSS representative have signed a Letter of Special Accommodations, take the accommodations letter to each class for which an accommodation has been determined. Meet individually with each class instructor to discuss accommodations letter. Have the instructor sign and keep a copy of the letter. Take the original letter, signed by the instructor, back to D/DSS so they are aware that the instructor has been officially informed of the need for accommodations.

**Course Assessments & Grading Scheme:**

<i>Assessments</i>		<i>% of Final Grade</i>
Quiz 1: physical and chemical properties/changes	10 points	0.189 %
Quiz 2: physical states, compounds/elements, homo/hetro	10 points	0.189 %
Quiz 3: elements (symbol and name)	10 points	0.189 %
Quiz 4: metric system and density	10 points	0.189 %
Quiz 5: temperature conversions	10 points	0.189 %
Quiz 6: temperature conversions	10 points	0.189 %
Quiz 7: types of radioactivity, isotopic notation	10 points	0.189 %
Quiz 8: family name, metals/nonmetals/metalloids	10 points	0.189 %
Quiz 9: half-life, radioisotopic dating	10 points	0.189 %
Quiz 10: uses of radioisotopes, protection against radiation	10 points	0.189 %
Quiz 11: valence, oxidation numbers and ions	10 points	0.189 %
Quiz 12: writing simple formulas	10 points	0.189 %
Quiz 13: writing formulas with polyatomics	10 points	0.189 %
Quiz 14: naming formulas and balancing	10 points	0.189 %
Quiz 15: Percent Composition	10 points	0.189 %
Quiz 16: Gas Laws	10 points	0.189 %
Quiz 17: Solutions	10 points	0.189 %
Quiz 18: reaction of acids and bases	10 points	0.189 %
Quiz 19: pH	10 points	0.189 %
Quiz 20: dry cells, plating and lead acid battery	10 points	0.189 %
Quiz 21: corrosion and oxidation and bleach	10 points	0.189 %
Quiz 22: alkane series, covalence, and isomers	10 points	0.189 %
Quiz 23: alkenes, alkynes, cyclic, aromatic, chloro, fluoro, CFC, alcohol, burning alkanes,, antifreeze, alcohol, ethers, ketones, aldehydes and aromatics	10 points	0.189 %
Quiz 24: Identify functional groups	10 points	0.189 %
Quiz 25: Polymers I	10 points	0.189 %
Quiz 26: Polymers 2	10 points	0.189 %
Quiz 27: Water - 1	10 points	0.189 %
Quiz 28: Water - 2	10 points	0.189 %

Quiz 29: Chemistry of Earth - 1	10 points	0.189 %
Quiz 30: Chemistry of Earth - 2	10 points	0.189 %
Quiz 31: Energy - 2	10 points	0.189 %
Quiz 32: Energy - 2	10 points	0.189 %
Quiz 33: Lipids	10 points	0.189 %
Quiz 34: Carbohydrates	10 points	0.189 %
Quiz 35: Nucleic Acids - 1	10 points	0.189 %
Quiz 36: Nucleic Acids - 2	10 points	0.189 %
Quiz 37: Food - 1	10 points	0.189 %
Quiz 38: Food - 2	10 points	0.189 %
Quiz 39: Household Chemicals - 1	10 points	0.189 %
Quiz 40: Household Chemicals - 2	10 points	0.189 %
Quiz 39: Household Chemicals - 3	10 points	0.189 %
Quiz 40: Household Chemicals - 4	10 points	0.189 %
Quiz 41: Poison - 1	10 points	0.189 %
Quiz 41: Poison - 2	10 points	0.189 %
Quiz 43: Drugs - 1	10 points	0.189 %
Quiz 44: Drugs - 2	10 points	0.189 %
Lab 1: density	10 points	2.27 %
Lab 2: nuclear technology video	10 points	2.272 %
Lab 3: radiation protection	10 points	2.272 %
Lab 4: Chemical Bonds (video)	10 points	2.272 %
Lab 5: Practice problems	10 points	2.272 %
Lab 6: Acids and Bases (video)	10 points	2.272 %
Lab 7: polyethylene (video)	10 points	2.272 %
Lab 8: Fit to Drink (videos)	10 points	2.272 %
Lab 9: The Secret of Life	10 points	2.272 %

Lab 10: Cracking the Code of Life	10 points	2.272 %
Lab 11: Poison video	10 points	2.272 %
Test 1: Atoms, Measurements, Nuclear	100 points	8.333 %
Test 2: Chemical Bonds and Chemical Accounting	100 points	8.333 %
Test 3: Acid-Bases and Oxidation-Reductions	100 points	8.333 %
Test 4: Organic and Polymers	100 points	8.333 %
Test 5: Earth, Air, Water and Energy	100 points	8.333 %
Test 6: Biochemistry and Food	100 points	8.333 %
Test 7: Household Chemicals	100 points	8.333 %
Test 8: Drugs and Poison	100 points	8.333 %
Final Course Grade		100%

A = 90-100%

B=80-89%

C=70-79%

D=60-69%

**Description of Graded Elements of the Course:**

<i>End-of-Course Learning Outcomes</i>	<i>Assessment Measure(s)</i>	<i>Submittal of Assessment</i>	<i>Grading Criteria</i>	<i>% of Final Grade</i>
CO1: Understand the scientific method, and the measurement of matter	Quiz 1 - physical and chemical properties and changes	Written using a writing instrument	Correct answers based on scientific fact	0.189 %
CO1: Understand the scientific method, and the measurement of matter	Quiz 2 - physical states, compounds/elements, and homo/hetero matter	Written using a writing instrument	Correct answers based on scientific fact	0.189 %
CO1: Understand the scientific method, and the measurement of matter	Quiz 3 - Names and symbols of the elements	Written using a writing instrument	Correct answers based on scientific fact	0.189 %
CO1: Understand the scientific method, and the measurement of matter	Quiz 4 - Metric system and density	Written using a writing instrument	Correct answers based on scientific fact	0.189 %

<i>End-of-Course Learning Outcomes</i>	<i>Assessment Measure(s)</i>	<i>Submittal of Assessment</i>	<i>Grading Criteria</i>	<i>% of Final Grade</i>
CO1: Understand the scientific method, and the measurement of matter	Quiz 5 - temperature conversions	Written using a writing instrument	Correct answers based on scientific fact	0.189 %
CO3: State the three principle subatomic particles and there properties, write isotopic notation, determine metals, nonmetals and metalloids and state the family names of elements.	Quiz 6- types of radiation and isotopic notation	Written using a writing instrument	Correct answers based on scientific fact	0.189 %
CO3: State the three principle subatomic particles and there properties, write isotopic notation, determine metals, nonmetals and metalloids and state the family names of elements.	Quiz 7 - family names and metals/nonmetals/metalloids	Written using a writing instrument	Correct answers based on scientific fact	0.189 %
CO4: State the types of ionizing radiation, explain radioisotopic dating, list some uses of radioistopes, state what isotopes are used for explosives and nuclear power.	Quiz 8 - half live and radioisotope dating	Written using a writing instrument	Correct answers based on scientific fact	0.189 %
CO4: State the types of ionizing radiation, explain radioisotopic dating, list some uses of radioistopes, state what isotopes are used for explosives and nuclear power.	Quiz 9a - uses of radioisotopes and portecton against radiation	Written using a writing instrument	Correct answers based on scientific fact	0.189 %
CO1: Understand the scientific method, and the measurement of matter. CO2: State the Laws of Conservation of Energy and Mass and interpret chemical formulas. CO3: State the three principle subatomic particles and there properties, write isotopic notation, determine metals, nonmetals and metalloids and state the family names of elements. CO4: State the types of ionizing radiation, explain radioisotopic dating, list some uses of radioistopes, state what isotopes are used	Major Test 1 - Atoms. Measurements, Nuclear	Written using a writing instrument	Correct answers based on scientific fact	8.333 %

<b><i>End-of-Course Learning Outcomes</i></b> for explosives and nuclear power.	<b><i>Assessment Measure(s)</i></b>	<b><i>Submittal of Assessment</i></b>	<b><i>Grading Criteria</i></b>	<b><i>% of Final Grade</i></b>
CO5: Write chemical formulas and names	Quiz 9 b - valence, oxidation numbers and ions	Written using a writing instrument	Correct answers based on scientific fact	0.189 %
CO5: Write chemical formulas and names	Quiz 10 - writing simple formulas	Written using a writing instrument	Correct answers based on scientific fact	0.189 %
CO5: Write chemical formulas and names	Quiz 11 - writing formulas with polyatomics	Written using a writing instrument	Correct answers based on scientific fact	0.189 %
CO6: Balance equations, calculate percent composition, determine the characteristics of gases, calculate percent solution and the dilution formula	Quiz 12 - naming formulas, formula mass and balancing	Written using a writing instrument	Correct answers based on scientific fact	0.189 %
CO6: Balance equations, calculate percent composition, determine the characteristics of gases, calculate percent solution and the dilution formula	Quiz 13 - Percent Composition	Written using a writing instrument	Correct answers based on scientific fact	0.189 %
CO6: Balance equations, calculate percent composition, determine the characteristics of gases, calculate percent solution and the dilution formula	Quiz 14 - Gas Laws	Written using a writing instrument	Correct answers based on scientific fact	0.189 %
CO6: Balance equations, calculate percent composition, determine the characteristics of gases, calculate percent solution and the dilution formula	Quiz 15 - Solutions	Written using a writing instrument	Correct answers based on scientific fact	0.189 %
CO5: Write chemical formulas and names. CO6: Balance equations, calculate percent composition, determine the characteristics of gases, calculate percent solution and the dilution formula	Major Test 2 - Chemical Bonds and Chemical Accounting	Written using a writing instrument	Correct answers based on scientific fact	8.333 %

<i>End-of-Course Learning Outcomes</i>	<i>Assessment Measure(s)</i>	<i>Submittal of Assessment</i>	<i>Grading Criteria</i>	<i>% of Final Grade</i>
CO7: State principle differences between acids and bases, reactions of acids and bases, interpret a pH scale and explain the causes of acid rain.	Quiz 16 - Acids and bases - 1	Written using a writing instrument	Correct answers based on scientific fact	0.189 %
CO7: State principle differences between acids and bases, reactions of acids and bases, interpret a pH scale and explain the causes of acid rain.	Quiz 17 - Acids and bases - 2	Written using a writing instrument	Correct answers based on scientific fact	0.189 %
CO8: Draw the components of a dry cell and a lead acid battery, explain electroplating, give examples of corrosion, and state the types of oxidizing agents	Quiz 18 - dry cells, plating and lead acid battery	Written using a writing instrument	Correct answers based on scientific fact	0.189 %
CO8: Draw the components of a dry cell and a lead acid battery, explain electroplating, give examples of corrosion, and state the types of oxidizing agents	Quiz 19 - corrosion and oxidation	Written using a writing instrument	Correct answers based on scientific fact	0.189 %
CO7: State principle differences between acids and bases, reactions of acids and bases, interpret a pH scale and explain the causes of acid rain. CO8: Draw the components of a dry cell and a lead acid battery, explain electroplating, give examples of corrosion, and state the types of oxidizing agents	Major Test 3 - Acid-Bases and Oxidation-Reductions	Written using a writing instrument	Correct answers based on scientific fact	8.333 %
CO9: State reactions of organic chemicals, name organic chemicals, identify functional groups	Quiz 20 - alkane series, covalence, and isomers	Written using a writing instrument	Correct answers based on scientific fact	0.189 %
CO9: State reactions of organic chemicals, name organic chemicals, identify functional groups	Quiz 21 - alkenes, alkynes, cyclic, aromatic, chloro, fluoro, CFC, alcohol, burning alkanes, and antifreeze	Written using a writing instrument	Correct answers based on scientific fact	0.189 %
CO9: State reactions of organic chemicals, name organic chemicals, identify functional groups	Quiz 22 - Functional Groups - alcohols, aldehydes, ketones, carboxylic acids	Written using a writing instrument	Correct answers based on scientific fact	0.189 %

<i>End-of-Course Learning Outcomes</i>	<i>Assessment Measure(s)</i>	<i>Submittal of Assessment</i>	<i>Grading Criteria</i>	<i>% of Final Grade</i>
CO9: State reactions of organic chemicals, name organic chemicals, identify functional groups	Quiz 23 - Identify functional groups and carboxylic acids	Written using a writing instrument	Correct answers based on scientific fact	0.189 %
CO9: State reactions of organic chemicals, name organic chemicals, identify functional groups	Quiz 24 - Polymers up to rubber	Written using a writing instrument	Correct answers based on scientific fact	0.189 %
CO9: State reactions of organic chemicals, name organic chemicals, identify functional groups	Quiz 25 - Polymers rest of unit	Written using a writing instrument	Correct answers based on scientific fact	0.189 %
CO9: State reactions of organic chemicals, name organic chemicals, identify functional groups. CO10: State two types of polymerization, identify terms used for polymers, identify various types of polymers and their uses, state what composites are	Major Test 4 - Organic and Polymers	Written using a writing instrument	Correct answers based on scientific fact	8.333 %
CO11: State the segments of the lithosphere, state the four types of ores and examples of each, state how bronze, iron and aluminum are produced	Quiz 26 - Chemistry of Earth - 1	Written using a writing instrument	Correct answers based on scientific fact	0.189 %
CO11: State the segments of the lithosphere, state the four types of ores and examples of each, state how bronze, iron and aluminum are produced	Quiz 27 - Chemistry of Earth - 2	Written using a writing instrument	Correct answers based on scientific fact	0.189 %
CO12: State the components of the atmosphere, draw the nitrogen and oxygen cycle, explain what a temperature inversion is, explain acid rain	Quiz 28 - Air	Written using a writing instrument	Correct answers based on scientific fact	0.189 %
CO13: State the two causes of waterborne disease, explain the effects of anaerobic and aerobic bacteria on water, define hard water, draw the processes by which drinking and wastewater are processed	Quiz 29 - Water - 1	Written using a writing instrument	Correct answers based on scientific fact	0.189 %
CO13: State the two causes of waterborne	Quiz 30 - Water - 2	Written using a	Correct answers	0.189 %

<b><i>End-of-Course Learning Outcomes</i></b>	<b><i>Assessment Measure(s)</i></b>	<b><i>Submittal of Assessment</i></b>	<b><i>Grading Criteria</i></b>	<b><i>% of Final Grade</i></b>
disease, explain the effects of anaerobic and aerobic bacteria on water, define hard water, draw the processes by which drinking and wastewater are processed		writing instrument	based on scientific fact	
CO14: State the three fossil fuels, show how oil is separated into components, explain the technique to produce gasoline, explain how a generating plant produces electricity	Quiz 31 - Energy - 1	Written using a writing instrument	Correct answers based on scientific fact	0.189 %
CO14: State the three fossil fuels, show how oil is separated into components, explain the technique to produce gasoline, explain how a generating plant produces electricity	Quiz 32 - Energy - 2	Written using a writing instrument	Correct answers based on scientific fact	0.189 %
CO11: State the segments of the lithosphere, state the four types of ores and examples of each, state how bronze, iron and aluminum are produced. CO12: State the components of the atmosphere, draw the nitrogen and oxygen cycle, explain what a temperature inversion is, explain acid rain. CO13: State the two causes of waterborne disease, explain the effects of anaerobic and aerobic bacteria on water, define hard water, draw the processes by which drinking and wastewater are processed. CO14: State the three fossil fuels, show how oil is separated into components, explain the technique to produce gasoline, explain how a generating plant produces electricity	Major Test 5 - Earth, Air, Water and Energy	Written using a writing instrument	Correct answers based on scientific fact	8.333 %
CO15: Draw the structures of proteins, lipids, carbohydrates, and nucleic acids. State the secret of life.	Quiz 33 - proteins	Written using a writing instrument	Correct answers based on scientific fact	0.189 %
CO15: Draw the structures of proteins, lipids, carbohydrates, and nucleic acids.	Quiz 34 - Nucleic Acids - 1	Written using a writing instrument	Correct answers based on scientific	0.189 %

<i>End-of-Course Learning Outcomes</i>	<i>Assessment Measure(s)</i>	<i>Submittal of Assessment</i>	<i>Grading Criteria</i>	<i>% of Final Grade</i>
State the secret of life.			fact	
CO15: Draw the structures of proteins, lipids, carbohydrates, and nucleic acids. State the secret of life.	Quiz 35 - Nucleic Acids - 2	Written using a writing instrument	Correct answers based on scientific fact	0.189 %
CO15: Draw the structures of proteins, lipids, carbohydrates, and nucleic acids. State the secret of life.	Quiz 36 - Carbohydrates	Written using a writing instrument	Correct answers based on scientific fact	0.189 %
CO15: Draw the structures of proteins, lipids, carbohydrates, and nucleic acids. State the secret of life.	Quiz 37 - Lipids	Written using a writing instrument	Correct answers based on scientific fact	0.189 %
CO16: List the various simple sugars and disaccharides, functions of fats, vitamins, minerals, and additives in food	Quiz 38 - Food -1	Written using a writing instrument	Correct answers based on scientific fact	0.189 %
CO16: List the various simple sugars and disaccharides, functions of fats, vitamins, minerals, and additives in food	Quiz 39 - Food -2	Written using a writing instrument	Correct answers based on scientific fact	0.189 %
CO15: Draw the structures of proteins, lipids, carbohydrates, and nucleic acids. State the secret of life CO16: List the various simple sugars and disaccharides, functions of fats, vitamins, minerals, and additives in food	Major Test 6 - Biochemistry and Food	Written using a writing instrument	Correct answers based on scientific fact	8.333 %
CO17: Explain how soap and detergents clean, state the three basic cleaning products, state the active components in specialized cleaning products, state the components of paint, cosmetics, toothpaste, perfumes and hair products	Quiz 40 - House Hold Chemical - 1	Written using a writing instrument	Correct answers based on scientific fact	0.189 %
CO17: Explain how soap and detergents clean, state the three basic cleaning products, state the active components in specialized cleaning products, state the components of paint, cosmetics, toothpaste,	Quiz 41 - House Hold Chemical - 2	Written using a writing instrument	Correct answers based on scientific fact	0.189 %

<i>End-of-Course Learning Outcomes</i>	<i>Assessment Measure(s)</i>	<i>Submittal of Assessment</i>	<i>Grading Criteria</i>	<i>% of Final Grade</i>
perfumes and hair products				
CO17: Explain how soap and detergents clean, state the three basic cleaning products, state the active components in specialized cleaning products, state the components of paint, cosmetics, toothpaste, perfumes and hair products	Quiz 42 - House Hold Chemical - 3	Written using a writing instrument	Correct answers based on scientific fact	0.189 %
CO17: Explain how soap and detergents clean, state the three basic cleaning products, state the active components in specialized cleaning products, state the components of paint, cosmetics, toothpaste, perfumes and hair products	Major Test 7 - Household Chemicals	Written using a writing instrument	Correct answers based on scientific fact	8.333 %
CO18: State how aspirin and aspirin substitutes function, state what various medications do, state the function and effects of various narcotics, stimulants, psychotropic and anti-anxiety drugs.	Quiz 43 - Drugs - 1	Written using a writing instrument	Correct answers based on scientific fact	0.189 %
CO18: State how aspirin and aspirin substitutes function, state what various medications do, state the function and effects of various narcotics, stimulants, psychotropic and anti-anxiety drugs.	Quiz 44 - Drugs - 2	Written using a writing instrument	Correct answers based on scientific fact	0.189 %
CO19: State the types and effects of corrosive, blood agent and heavy metals poisons, explain how nerve agents function on the nervous system, state the effects of various agents that affect DNA, and state the various classifications of hazardous wastes.	Quiz 45 - Poison - 1	Written using a writing instrument	Correct answers based on scientific fact	0.189 %
CO19: State the types and effects of corrosive, blood agent and heavy metals poisons, explain how nerve agents function	Quiz 46 - Poison - 2	Written using a writing instrument	Correct answers based on scientific fact	0.189 %

<b><i>End-of-Course Learning Outcomes</i></b>	<b><i>Assessment Measure(s)</i></b>	<b><i>Submittal of Assessment</i></b>	<b><i>Grading Criteria</i></b>	<b><i>% of Final Grade</i></b>
on the nervous system, state the effects of various agents that affect DNA, and state the various classifications of hazardous wastes.				
CO18: State how aspirin and aspirin substitutes function, state what various medications do, state the function and effects of various narcotics, stimulants, psychotropic and anti-anxiety drugs. CO19: State the types and effects of corrosive, blood agent and heavy metals poisons, explain how nerve agents function on the nervous system, state the effects of various agents that affect DNA, and state the various classifications of hazardous wastes.	Major Test 8 - Drugs and Poison	Written using a writing instrument	Correct answers based on scientific fact	8.333 %
CO1: Understand the scientific method, and the measurement of matter	Lab 1: density	Remain awake during the lab and remain in your seat.	Watch the demonstration	2.272 %
CO4: State the types of ionizing radiation, explain radioisotopic dating, list some uses of radioisotopes, state what isotopes are used for explosives and nuclear power.	Lab 2: nuclear technology video	Remain awake during the lab and remain in your seat.	Watch the video	2.272 %
CO4: State the types of ionizing radiation, explain radioisotopic dating, list some uses of radioisotopes, state what isotopes are used for explosives and nuclear power.	Lab 3: radiation protection	Remain awake during the lab and remain in your seat.	Watch the video	2.272 %
CO5: Write chemical formulas and names	Lab 4: Chemical Bonds (video)	Remain awake during the lab and remain in your seat.	Watch the video	2.272 %
CO6: Balance equations, calculate percent composition, determine the characteristics of gases, calculate percent solution and the dilution formula	Lab 5: Practice problems	Remain awake during the lab and remain in your seat.	Complete the questions	2.272 %

<i>End-of-Course Learning Outcomes</i>	<i>Assessment Measure(s)</i>	<i>Submittal of Assessment</i>	<i>Grading Criteria</i>	<i>% of Final Grade</i>
CO7: State principle differences between acids and bases, reactions of acids and bases, interpret a pH scale and explain the causes of acid rain.	Lab 6: Acids and Bases (video)	Remain awake during the lab and remain in your seat.	Watch the video	2.272 %
CO10: State two types of polymerization, identify terms used for polymers, identify various types of polymers and their uses, state what composites are	Lab 7: polyethylene (video)	Remain awake during the lab and remain in your seat.	Watch the video	2.272 %
CO13: State the two causes of waterborne disease, explain the effects of anaerobic and aerobic bacteria on water, define hard water, draw the processes by which drinking and wastewater are processed	Lab 8: Fit to Drink (videos)	Remain awake during the lab and remain in your seat.	Watch the video	2.272 %
CO15: Draw the structures of proteins, lipids, carbohydrates, and nucleic acids. State the secret of life.	Lab 9: The Secret of Life	Remain awake during the lab and remain in your seat.	Watch the video	2.272 %
CO15: Draw the structures of proteins, lipids, carbohydrates, and nucleic acids. State the secret of life.	Lab 10: Cracking the Code of Life	Remain awake during the lab and remain in your seat.	Watch the video	2.272 %
CO19: State the types and effects of corrosive, blood agent and heavy metals poisons, explain how nerve agents function on the nervous system, state the effects of various agents that affect DNA, and state the various classifications of hazardous wastes.	Lab 11: Poison video	Remain awake during the lab and remain in your seat.	Watch the video	2.272 %

***Course Policies:***

*Late Work:*

Late work receives a zero.

*Electronic Devices:*

All cell phones, pagers, computers and other electrical communication devices will be turned off completely during class (this includes no vibrate mode). Failure to comply with this requirement will result in the student being required to leave the class for the rest of the class period during which the violation occurs. Any work missed may not be made up.

*Make-up work:*

Make-up work receives a zero

***Course Schedule:***

Week # 1: Review course syllabus, physical and chemical properties/changes, physical states, compounds/elements, homo/hetro, Metric system and English conversion system		
Understand the scientific method, and the measurement of matter	Quiz 1:	physical and chemical properties/changes
	Quiz 2:	physical states, compounds/elements, homo/hetro
Week # 2: and Temperature conversions, The Structure of the Atom and ground states, Valence electrons, family names, metals/nonmetals/metalloids and isotopes, Nuclear Chemistry - natural radioactivity, and half-life		
Understand the scientific method, and the measurement of matter	Quiz 3:	Names and symbols of the elements
	Quiz 4:	Metric system and density
	Quiz 5:	temperature conversions
	Lab :	Density
Week # 3: Radioisotopic dating, uses and protection, atomic power / fusion valence electrons, ions, oxidation numbers, writing and naming formulas, radiation protection, review for test		
State the three principle subatomic particles and their properties, write isotopic notation, determine metals, nonmetals and metalloids and state the family names of elements. State the types of ionizing radiation, explain radioisotopic dating, list some uses of radioistopes, state what isotopes are used for explosives and nuclear power.	Quiz 6:	types of radioactivity, isotopic notation
	Quiz 7:	family name, metals/nonmetals/metalloids
	Quiz 8:	half-life, radioisotopic dating
	Quiz 9a:	uses of radioisotopes, protection against radiation
	Test 1:	Atoms. Measurements, Nuclear
	Lab :	radiation protection

Week # 4: Valence electrons, ions, oxidation numbers, writing and naming formulas, bonds, balancing equations, writing simple formulas, formula mass, calculation of formula with polyatomics, and percent composition, gas laws and solutions, and Solutions and percent solution		
Write chemical formulas and names	Quiz 9b:	valence, oxidation numbers and ions
	Quiz 10:	writing simple formulas
	Quiz 11:	writing formulas with polyatomics
	Lab :	Chemical Bonds

Week # 5: Percent solution, PPM, and dilutions, Acid-Bases, Review for Chemical Bonds and Chemical Accounting		
Balance equations, calculate percent composition, determine the characteristics of gases, calculate percent solution and the dilution formula	Quiz 12:	naming formulas, formula mass and balancing
	Quiz 13:	Percent Composition
	Quiz 14:	Gas Laws
	Quiz 15:	Solutions
	Test 2:	Chemical Bonds and Chemical Accounting
	Lab :	Practice problems

Week # 6: Acid-Bases, plating and dry cells, rechargeable Ni/Cd and lead acid and corrosion, oxidizing agents and non-chlorine bleach, Organic Chemistry - covalence, hydrocarbons, structure		
State principle differences between acids and bases, reactions of acids and bases, interpret a pH scale and explain the causes of acid rain. Draw the components of a dry cell and a lead acid battery, explain electroplating, give examples of corrosion, and state the types of oxidizing agents	Quiz 16:	Acids and bases - 1
	Quiz 17:	Acids and bases - 2
	Quiz 18:	dry cells, plating and lead acid battery
	Quiz 19:	corrosion and oxidation
	Lab :	Acids and Bases

Week # 7: Esters, amines, amides and heterocyclic, Test Review for Acid/Bases and Oxidation-Reduction, , ethers, esters, amines, amides and heterocyclic		
State principle differences between acids and bases, reactions of acids and bases, interpret a pH scale and explain the causes of acid rain. Draw the components of a dry cell and a lead acid battery, explain electroplating, give examples of corrosion, and state the types of oxidizing agents. State reactions of organic chemicals, name organic chemicals, identify functional groups	Quiz 20:	alkane series, covalence, and isomers
	Test 3:	Acid-Bases and Oxidation-Reductions

Week # 8: Polymers, Review Organic and Polymers		
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State reactions of organic chemicals, name organic chemicals, identify functional groups	Quiz 21:	alkenes, alkynes, cyclic, aromatic, chloro, fluoro, CFC, alcohol, burning alkanes, and antifreeze
	Quiz 22:	Functional Groups - alcohols, aldehydes, ketones, carboxylic acids
	Quiz 23:	Identify functional groups and carboxylic acids
	Quiz 24:	Polymers up to rubber
	Quiz 25:	Polymers rest of unit
	Test 4:	Organic and Polymers
	Lab :	polyethylene

Week # 9: Air, Water, of Earth and Energy		
State the two causes of waterborne disease, explain the effects of anaerobic and aerobic bacteria on water, define hard water, draw the processes by which drinking and wastewater are processed State the two causes of waterborne disease, explain the effects of anaerobic and aerobic bacteria on water, define hard water, draw the processes by which drinking and wastewater are processed. State the components of the atmosphere, draw the nitrogen and oxygen cycle, explain what a temperature inversion is, explain acid rain. State the three fossil fuels, show how oil is separated into components, explain the technique to produce gasoline, explain how a generating plant produces electricity	Quiz 26:	Chemistry of Earth - 1
	Quiz 27:	Chemistry of Earth - 2
	Quiz 28:	Air
	Quiz 29:	Water - 1
	Lab :	Fit to Drink

Week # 10: Air, Water, of Earth and Energy		
State the two causes of waterborne disease, explain the effects of anaerobic and aerobic bacteria on water, define hard water, draw the processes by which drinking and wastewater are processed State the two causes of waterborne disease, explain the effects of anaerobic and aerobic bacteria on water, define hard water, draw the processes by which drinking and wastewater are processed. State the components of the atmosphere, draw the nitrogen and oxygen cycle, explain what a temperature inversion is, explain acid rain. State the three fossil fuels, show how oil is separated into components, explain the technique to produce gasoline, explain how a generating plant produces electricity	Quiz 30:	Water - 2
	Quiz 31:	Energy - 1
	Quiz 32:	Energy - 2
	Test 5:	Earth, Air, Water and Energy
	Lab	Gasoline

Week # 11: - Biochemistry – Carbohydrates and Lipids		
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Draw the structures of proteins, lipids, carbohydrates, and nucleic acids. State the secret of life.	Quiz 36:	Lipids
	Quiz 37:	Carbohydrates

Week # 12: Biochemistry – Proteins and Nucleic Acids. Food		
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Draw the structures of proteins, lipids, carbohydrates, and nucleic acids. State the secret of life. List the various simple sugars and disaccharides, functions of fats, vitamins, minerals, and additives in food	Quiz 33:	proteins
	Quiz 34 :	Nucleic Acids - 1
	Quiz 35:	Nucleic Acids - 2
	Lab :	The Secret of Life

Week # 13: Food and Household Chemicals		
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List the various simple sugars and disaccharides, functions of fats, vitamins, minerals, and additives in food. Explain how soap and detergents clean, state the three basic cleaning products, state the active components in specialized cleaning products, state the components of paint, cosmetics, toothpaste, perfumes and hair products	Quiz 38:	Food -1
	Quiz 39:	Food -2
	Test 6 :	Biochemistry and Food
	Lab :	Cracking the Code of Life

Week # 14: Household Chemicals		
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Explain how soap and detergents clean, state the three basic cleaning products, state the active components in specialized cleaning products, state the components of paint, cosmetics, toothpaste, perfumes and hair products	Quiz 40:	Household Chemicals – 1
	Quiz 41:	Household Chemicals – 2
	Quiz 42:	Household Chemicals – 3
	Test 7 :	Household Chemicals

Week # 15: Drugs and Poison		
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State how aspirin and aspirin substitutes function, state what various medications do, state the function and effects of various narcotics, stimulants, psychotropic and anti-anxiety drugs. State the types and effects of corrosive, blood agent and heavy metals poisons, explain how nerve agents function on the nervous	Quiz 43:	Drugs - 1
	Quiz 44:	Drugs - 2
	Quiz 45:	Poison - 1
	Quiz 46:	Poison - 3
	Test 8 :	Drugs and Poison
	Lab :	Poisons