Correlation to Missouri Course Level Science Expectations[1]

Chemistry I (Grades 9-12)

A Natural Approach to Chemistry (NAC) is written by Hsu, Chaniotakis, Carlisle, and Damelin, and is published by, and available exclusively from, LAB-AIDS, Ronkonkoma NY. This correlation is intended to show selected locations in NAC programs that support the Missouri CLEs for chemistry. It is not an exhaustive list; other locations may exist that are not listed here.

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[1] http://dese.mo.gov/divimprove/curriculum/GLE/SCcleall.html (Missouri State Department of Education, November 2007, revised August 2010)

The Natural Approach to Chemistry		
THEMES		
Energy is a unifying theme that explains why chemistry occurs		
The atomic model of matter is consistently woven through every chapter		
Understanding of 'why' chemistry occurs is emphasized		
Principles are illustrated with examples from the human body and the environment		
ORGANIZATION OF CONTENT		
Fundamentals	Chapters 1 -4	Present comprehensive overview of all main ideas in chemistry such as the atomic nature of matter, systems, temperature, and energy. *"Big Picture"*
Core Concepts	Chapters 5 -14	Present in-depth coverage of all major topic areas. They developed usable understanding of the big ideas laid out in the first four chapters. The treatment includes strong conceptual development as well as algebra-based quantitative problem solving. *All academic content and instruction standards for chemistry have been met by the end of Chapter 14.*
Applications	Chapter 15 - 21	Provide deeper exploration of significant areas of interest in chemistry. *Examples include rechargeable batteries, materials science, planetary atmospheres, etc.*
COMPLETE LEARNING SYSTEM		
Coordinated student textbook		
Integrated laboratory investigations manual containing 58 labs to choose from		
New laboratory control, data collection and probe system		
Evaluation elements throughout the curriculum (student book and lab investigation manual) through which student knowledge or skills are assessed or applied		

Correlation Citation Reference Key:

Locations are given in the student book (SB) and/or laboratory manual (LM).

SB 1.2 pp. 19-25

Means Student Book Chapter 1 Section 1.2 pages 19 – 25

LM 1A, 3D, 11A: 6, 12A: 6, 12B: 1, 6

Means Lab Investigations Manual Chapter 1 Investigation 1A;

Chapter 3 Investigation 3D;

Chapter 11 Investigation 11A Part 6;

Chapter 12 Investigation 12B Part 1 and Part 6

Relevant questions from the student book (SB) and lab manual (LM) problem sets and questions are indicated, e.g.,

SB 1.2 18-30, 51-55

Means Student Book Chapter 1 Section 1.2 questions 18-30 and questions 51-55

LM 9A Pt 4a-c; **9B** Pts 3-5

Means Laboratory Investigations Manual Chapter 9 Investigation 9A Part 4 a-c, Investigation 9B Part 3 – Part 5.

Missouri CLE	Location in NAC		Assessment
	Student book	Lab Manual	
1. Changes in properties and states of matter provide evidence of the atomic theory of matter			
A. Objects, and the materials they are made of, have properties that can be used to describe and classify them			
a. Compare the densities of regular and irregular objects using their respective measures of volume and mass	1.1, pp. 10-11	1C, 2D	**SB 1.1**, 14, p. 32; 70, 73-78, p. 35 **LM 2D**, 2a-d, p. 22
b. Identify pure substances by their physical and chemical properties (i.e., color, luster/reflectivity, hardness, conductivity, density, pH, melting point, boiling point, specific heat, solubility, phase at room temperature, chemical reactivity)	2.1, pp. 39-40	2D, 3B, 13A	**SB 2.1**, 30, 32-37, p. 67
c. Classify a substance as being made up of one kind of atom (element) or a compound when given the molecular formula or structural formula (or electron dot diagram) for the substance	2.1, p. 42; 2.2, p. 47-52	2A, 2B	**SB 2.2**, 12-14, 42-44; pp. 66-68
d. Compare and contrast the common properties of metals, nonmetals, metalloids (semi-conductors), and noble gases	6.2, pp. 177-182	6A, 6B	**SB 6.2** 23, 25, 28, 29, p. 193; 48-49, p. 195
B. Properties of mixtures depend upon the concentrations, properties, and interactions of particles			
a. Classify solutions as either dilute or concentrated; as either saturated, unsaturated, or supersaturated	9.2, pp. 270-276	9A, 9B	**SB 9.2** 12, 14-16 44-48, pp. 290-291; 76-77 p. 292
b. Compare and contrast the properties of acidic, basic, and neutral solutions	13.1, pp 410-415	13A	**SB 13.1**, 1-9, 21-23, p. 436
c. Predict the effects of solvent and solute polarity on solubility ("like dissolves like"); and predict the effects of temperature, surface area, particle size, and agitation on rates of solubility	9.1, pp. 262-269		**SB 9.1**, 30-34, 41-42, p. 291
C. Properties of matter can be explained in terms of moving particles too small to be seen			

Missouri CLE	Location in NAC		Assessment
	Student book	Lab Manual	
without tremendous magnification			
Not assessed at this level			
D. Physical changes in states of matter due to thermal changes in materials can be explained by the Kinetic Theory of Matter			
a. Using the Kinetic Theory model, explain the changes that occur in the distance between atoms/molecules and temperature of a substance as energy is absorbed or released during a phase change	3.1, pp. 72-74, 78	3D	**SB 3.1**, 6-8, p. 98; **SB 3.3,** 22-33, p. 99; 74-77, p. 101
b. Predict the effect of a temperature change on the properties (e.g., pressure, density) of a material (solids, liquids, gases)	3.3, pp. 88-93 9.2, p. 274		**SB 3.3,** 22-33, p. 99; 74-77, p. 101
c. Predict the effect of pressure changes on the properties (e.g., temperature, density) of a material (solids, liquids, gases)	3.3 p. 94, 14.1, pp. 442-447		**SB 14.1**, 7, 12, 14, 16, p. 468
E. The atomic model describes the electrically neutral atom			
a. Describe the atom as having a dense, positive nucleus surrounded by a cloud of negative electrons	5.1, pp. 136-140		**SB 5.1**, 23, 38-40, p. 163
b. Calculate the number of protons, neutrons, and electrons of an isotope, given its mass number and atomic number	5.1, pp. 137-139	5A	**SB 5.4**, 16-19, 22, p. 162
c. Describe the information provided by the atomic number and the mass number (i.e., electrical charge, chemical stability)	5.1, pp. 137-141	5A	**SB 5.4**, 16-19, 22, p. 162
F. The periodic table organizes the elements according to their atomic structure and chemical reactivity			
a. Explain the structure of the periodic table in terms of the elements with common properties (groups/families) and repeating properties (periods)	6.1, p. 168-176		**SB 6.2**, 24-25, 29, p. 193
b. Classify elements as metals, nonmetals, metalloids (semi-conductors), and noble gases according to their location on the	6.2, pp. 177-182	6A, 6B	**SB 6.2** 23, 25, 28, 29, p. 193; 48-49, p. 195

Missouri CLE	Location in NAC		Assessment
	Student book	Lab Manual	
Periodic Table			
c. Predict the chemical reactivity of elements, and the type of bonds that may result between them, using the Periodic Table	7.1, pp. 201-205	7A	**SB 7.1**, 15-18, p. 224; 43-46, p. 226
G. Properties of objects and states of matter can change chemically and/or physically			
a. Distinguish between physical and chemical changes in matter	4.1, p. 104-106	4B, 4C	**SB 4.1**, 2, 4, 36-38, pp. 128-129
H. Chemical bonding is the combining of different pure substances (elements, compounds) to form new substances with different properties			
a. Describe how the valence electron configuration determines how atoms interact and may bond	6.3, pp. 184-185	6C	**SB 6.3**, 9-11, p. 192; 36-38, p. 194
Chemistry II Content *b. Predict the reaction rates of different substances based on their properties (i.e., concentrations of reactants, pressure, temperature, state of matter, surface area, type of reactant material)*	*12.1, pp. 368-377*	*12B*	***SB 12.1,** 20-34, p. 405; 59-61, p. 407*
c. Compare and contrast the types of chemical bonds (i.e., ionic, covalent)	7.1, pp. 201-205	7A	**SB 7.1**, 15-18, p. 224; 43-46, p. 226
d. Predict the products of an acid/base (neutralization), oxidation (rusting), and combustion (burning) reaction	10.3, pp. 305-308	10B	**SB 10.3**, 7-14, p. 322
I. Mass is conserved during any physical or chemical change			
a. Compare the mass of the reactants to the mass of the products in a chemical reaction or physical change as support for the Law of Conservation of Mass	10.1, p. 298		**SB 10.1**, 5-6, p. 322; 29-31, p. 323
b. Recognize whether the number of atoms of the reactants and products in a chemical equation are balanced	10.2, pp. 302-304	10B	**SB 10.2**, p. 323; 53-63, pp. 324-325
2. Energy has a source, can be stored, and can be transferred but is conserved within a system			
A. Forms of energy have a source, a means of transfer (work and heat), and a receiver			

Missouri CLE	Location in NAC		Assessment
	Student book	**Lab Manual**	
a. Differentiate between thermal energy (the total internal energy of a substance which is dependent upon mass), heat (thermal energy that transfers from one object or system to another due to a difference in temperature), and temperature (the measure of average kinetic energy of molecules or atoms in a substance)	3.1-3.2, pp. 72-97	3A	**SB 3.2**, 11-21, p. 98; 39-44, p. 99
b. Describe the relationship among wavelength, energy, and frequency as illustrated by the electromagnetic spectrum	5.2, p. 145-146		**SB 5.3**, 10, 13, 14, p. 162
Chemistry II Content *c. Describe sources and common uses of different forms of energy: chemical (the energy stored in the electrical fields between atoms in a compound), nuclear, thermal, mechanical, electromagnetic*	*3.2, pp. 80-87; 4.2, pp. 118-121; 20.4, p. 647, 655*		***SB 4.2,** 50-58, p. 130*
d. Describe the effect of different frequencies of electromagnetic waves on the Earth and living organisms (e.g., radio, infrared, visible, ultraviolet, gamma, cosmic rays)	5.4, p. 156-159; 20.2, p. 639-641; 20.5, pp. 656-657		**SB 20.2**, 51-53, p. 662; **20.5**, 89-91, p. 663
B. Mechanical energy comes from the motion (kinetic energy) and/or relative position (potential energy) of an object			
Chemistry II Content *a. Relate kinetic energy to an object's mass and its velocity*	*1.3, p. 28; 14.1, 448-449*		
C. Electromagnetic energy from the Sun (solar radiation) is a major source of energy on Earth			
Chemistry II Content *a. Describe how electromagnetic energy is transferred through space as electromagnetic waves of varying wavelength and frequency*	*21.2, p. 677*	*21A*	***SB 21.2**, 28-29, p. 689*
D. Chemical reactions involve changes in the bonding of atoms with the release or absorption of energy			
a. Describe evidence of energy transfer and transformations that occur during exothermic and endothermic chemical	4.2, pp. 118-119	4B	**SB 4.2**, 21-22, p. 128; 53-55,

Missouri CLE	Location in NAC		Assessment
	Student book	Lab Manual	
reactions			p. 130
E. Nuclear energy is a major source of energy throughout the universe			
a. Describe how changes in the nucleus of an atom during a nuclear reaction (i.e., nuclear decay, fusion, fission) result in emission of radiation	20.2, pp. 637-641; 20.4, pp. 652-655		**SB 20.2**, p. 660; 44-46, 49-50, p. 661
F. Energy can be transferred within a system as the total amount of energy remains constant (i.e., Law of Conservation of Energy)			
a. Classify the different ways to store energy (i.e., chemical, nuclear, thermal, mechanical, electromagnetic) and describe the transfer of energy as it changes from kinetic to potential, while the total amount of energy remains constant, within a system (e.g., using gasoline to move a car, photocell generating electricity, electromagnetic motor doing work, energy generated by nuclear reactor)	1.3, p. 28-29; 3.1, p. 81; 4.2, pp. 119-120; 20.4, p. 647, 653, 655		**SB 1.3**, 31-34, 58, pp. 33-34;4.2, 50, 51, 56, p. 130; 20.4, 60-63, p. 662
Strand 5: Processes and Interactions of the Earth's Systems (Geosphere, Atmosphere, and Hydrosphere)			
A. The Earth's crust is composed of various materials, including soil, minerals, and rocks, with characteristic properties			
Not at this grade level			
B. The hydrosphere is composed of water (a material with unique properties) and other materials			
a. Recognize the importance of water as a solvent in the environment as it relates to acid rain and water pollution	9.1, pp. 262-265; 10.4, pp. 318-319	9B, 19A	**SB 9.1** 31-33, p. 291
C. The atmosphere (air) is composed of a mixture of gases, including water vapor, and minute particles			
a. Relate the composition of gases and temperature of the layers of the atmosphere (i.e., troposphere, stratosphere, ionosphere) to cloud	19.1, pp. 606-614		**SB 19.1**, 1-5, 24-42, p. 630-631

Missouri CLE	Location in NAC		Assessment
	Student book	Lab Manual	
formation and transmission of radiation (e.g., ultraviolet, infrared)			
b. Describe the causes and consequences of observed and predicted changes in the ozone layer	12.4, pp. 400-401; 19.1, p. 611		**SB 12.4**, 53, 55, p. 407
2. Earth's Systems (geosphere, atmosphere, and hydrosphere) interact with one another as they undergo change by common processes			
A-E Not assessed at this grade level			
F. Climate is a description of average weather conditions in a given area due to the transfer of energy and matter through Earth's systems.			
a. Provide evidence (e.g., variations in sea level, glaciation, and permafrost layers, fossils, desertification) that supports theories of climate change due to natural phenomena and/or human interactions	19.1, pp. 610-613		**SB 19.1**, 4, 33-34, 40-41
Strand 7: Scientific Inquiry			
A. Scientific inquiry includes the ability of students to formulate a testable question and explanation, and to select appropriate investigative methods in order to obtain evidence relevant to the explanation			
a. Formulate testable questions and hypotheses	1.2 pp. 19-25	1A, 11A, 12A, 12B	**SB 1.2** 18-30, pp. 32-33; 51-55, p. 34; **1.3** 57, p. 34 **LM 1A**, Pts 3-4, p. 2; **11A** Pt 6; **12A**: Pt 6 p.94; **12B** Pts 4, 6 p. 97-98
b. Analyzing an experiment, identify the components (i.e., independent variable, dependent variables, control of constants, multiple trials) and explain their importance to the design of a valid experiment		11B, 12A	**LM 12A,** Pt 7
c. Design and conduct a valid experiment	1.2 pp. 19-25	1A, 11A, 12A, 12B	**SB 1.2** 18-30, pp. 32-33; 51-55, p. 34; **1.3**

Missouri CLE	Location in NAC		Assessment
	Student book	Lab Manual	
			57, p. 34 **LM 1A**, Pts 3-4, p. 2; **11A** Pt 6; **12A**: Pt 6 p.94; **12B** Pts 4, 6 p. 97-98
d. Recognize it is not always possible, for practical or ethical reasons, to control some conditions (e.g., when sampling or testing humans, when observing animal behaviors in nature)	10.4, p. 318-321; 11.4, p. 359; 17.3, p 557; 18.4, pp. 598-599		Not assessed
e. Acknowledge some scientific explanations (e.g., explanations of astronomical or meteorological phenomena) cannot be tested using a controlled laboratory experiment, but instead by using a model, due to the limits of the laboratory environment, resources, and/or technologies	5.1, pp. 135-136; 6.1, pp. 171-175; 14.2: p. 454		**SB 5.1** 23-25, 38 p. 163; **6.1** 12-13, 15-16, p. 192; **14.2** 25, p. 468
f. Acknowledge there is no fixed procedure called "the scientific method", but that some investigations involve systematic observations, carefully collected and relevant evidence, logical reasoning, and some imagination in developing hypotheses and other explanations	1.2, pp. 19-26, 30; 2.1, p. 43; 2.2, p. 48; 3.1, p. 72; 5.1 p. 132; 5.2, p. 149; 6.3, p. 189; 7.3, p. 222; 8.4, p. 254; 11.4, p. 359; 18.4, p. 596		**SB 1.2** 18-30, pp. 32-33; 51-55, p. 34; **5.1** & **5.2** 23-28, 31-33, 37 p. 163
g. Evaluate the design of an experiment and make suggestions for reasonable improvements		9A-C; 12B	
B. Scientific inquiry relies upon gathering evidence from qualitative and quantitative observations			
a. Make qualitative and quantitative observations using the appropriate senses, tools and equipment to gather data (e.g., microscopes,		See for example, xiii-xvi, 1C, 2A, 2C,	**Safety: LM** xv-xiv (Safety quiz), **10B** Pt 1; **4C** Pt 1; **14B** Pt

Missouri CLE	Location in NAC		Assessment
	Student book	Lab Manual	
thermometers, analog and digital meters, computers, spring scales, balances, metric rulers, graduated cylinders)		2D, 3A-B, 4A, 5B, 8A, 9A-C, 10B-C, 11A, 12A, 13A, 14B, 15A-D, 17B	1 Tools: **LM 1C** Pt 2; **2A**, Pt 2; **2C**: Pt 3; **2D**: Pt 2; **3A** pts 1-6; **3B** Pts 1,4; **4A** Pt 1; **5B** Pts 2-3…
b. Measure length to the nearest millimeter, mass to the nearest gram, volume to the nearest milliliter, force (weight) to the nearest Newton, temperature to the nearest degree Celsius, time to the nearest second		1B, 1C, 2D, 3A-3D, 4B, 4C, 8A…	Skill Sheet 1.3
c. Determine the appropriate tools and techniques to collect, analyze, and interpret data		See for example, xiii-xvi, 1C, 2A, 2C, 2D, 3A-B, 4A, 5B, 8A, 9A-C, 10B-C, 11A, 12A, 13A, 14B, 15A-D, 17B	**Safety: LM** xv-xiv (Safety quiz), **10B** Pt 1; **4C** Pt 1; **14B** Pt 1 Tools: **LM 1C** Pt 2; **2A**, Pt 2; **2C**: Pt 3; **2D**: Pt 2; **3A** pts 1-6; **3B** Pts 1,4; **4A** Pt 1; **5B** Pts 2-3…
d. Judge whether measurements and computation of quantities are reasonable	1.2 pp. 19-25	1A, 3D, 11A, 12A, 12B	**SB 1.2** 18-30, pp. 32-33; 51-55, p. 34 **LM 1A**, Pts 3-4, p. 2; **3D** Pt 3, p. 36; **11A** Pt 6; **12A**: Pt 6 p.94; **12B** Pts 4, 6 p. 97-98
e. Calculate the range, average/mean, percent, and ratios for sets of data	11.2, pp. 339-342	11A, 11B, 13B, 13C, 13D	**SB 11.2**, 6, 23, 25, 46-49, pp. 360-363
f. Recognize observation is biased by the experiences and knowledge of the	1.2 pp. 25-	1A	**SB 1.2** 18-30, pp. 32-33; 51-

Missouri CLE	Location in NAC		Assessment
	Student book	Lab Manual	
observer (e.g., strong beliefs about what should happen in particular circumstances can prevent the detection of other results)	26		55, p. 34 **LM 1A**, Pts 3-4, p. 2
C. Scientific inquiry includes evaluation of explanations (laws/principles, theories/models) in light of evidence (data) and scientific principles (understandings)			
a. Use quantitative and qualitative data as support for reasonable explanations (conclusions)	1.1, p. 18	3B, 3D, 9C, 11A, 13D, 14A	**SB 1.1**: 13, 33, 66-67, 73, 75, 76-78 p. 32-35 **LM 3B** Pt 2 all, 3c, e-f; 5d; **3D** Pt 2 all, pt 3b-3; **9C** Pt 4, steps 3, 5; **11A** Pt 3a, e, g, 4a-e, Pt 5a-f…
b. Analyze experimental data to determine patterns, relationships, perspectives, and credibility of explanations (e.g., predict/extrapolate data, explain the relationship between the independent and dependent variable)	1.2, pp. 22 - 24	5B, 5C, 6C, 10A, 10B, 12B, 13C, 13D, 14A	**SB 1.2**, 18-30, 54-55, pp. 32-34
c. Identify the possible effects of errors in observations, measurements, and calculations, on the validity and reliability of data and resultant explanations (conclusions)		3B: 6; 8A: 3; 9B: 6; 11B: 5 & 6; 12B: 6; 13B: 4; 14A: 3	**LM 3B**: 6e; **8A**: 3a-f; **9B**: 6 steps 1-4; **11B**: 5g, 6d-f; **12B**: 6i-j; **13B**: 4b; **14A**: 3f
d. Analyze whether evidence (data) and scientific principles support proposed explanations (laws/principles, theories/models)	1.2, pp. 19-26	14A, 14B	**SB 1.2**, 18-30, 54-55, pp. 32-34
D. The nature of science relies upon communication of results and justification of explanations			
a. Communicate the procedures and results of investigations and explanations through: o oral presentations		3C: Pt 1; 4A: Pts 2-3; 5B: Pt 4; 5C: Pt 3;	**LM 3C**: 2d; **4A**: 3a-d; **5B**: 4c, e-g; **5C**: see puzzle cards;

Missouri CLE	Location in NAC		Assessment
	Student book	**Lab Manual**	
○ drawings and maps ○ data tables (allowing for the recording and analysis of data relevant to the experiment such as independent and dependent variables, multiple trials, beginning and ending times or temperatures, derived quantities) ○ graphs (bar, single, and multiple line) ○ equations and writings		7A-B; 9A: 2; 9B; 12B: 5; 13A: 8; 14B: 3…	**7A**: Pt 3-4; **7B**: 1a-b, 2a-c, 3a-d, 4a-d; **9A**: 2a, e; **9B**: Pts 4-5…
b. Communicate and defend a scientific argument	1.2, pp. 19-26	2D, 3A, 5b, 5C, 6C, 9B, 9C, 10A, 12B, 13B	**SB 1.2**, 18-30, 51-55, pp. 32-34
c. Explain the importance of the public presentation of scientific work and supporting evidence to the scientific community (e.g., work and evidence must be critiqued, reviewed, and validated by peers; needed for subsequent investigations by peers; results can influence the decisions regarding future scientific work)	1.2, p. 26		**SB 1.2** 18-30, pp. 32-33; 51-55, p. 34 **LM 1A**, Pts 3-4, p. 2
Strand 8: Impact of Science, Technology and Human Activity			
2. Historical and cultural perspectives of scientific explanations help to improve understanding of the nature of science and how science knowledge and technology evolve over time			
A. People of different gender and ethnicity have contributed to scientific discoveries and the invention of technological innovations			
a. Recognize contributions to science are not limited to the work of one particular group, but are made by a diverse group of scientists representing various ethnic and gender groups	Not covered		
B. Scientific theories are developed based on the body of knowledge that exists at any particular time and must be rigorously questioned and tested for validity			

Missouri CLE	Location in NAC		Assessment
	Student book	Lab Manual	
a. Identify and describe how explanations (laws/principles, theories/models) of scientific phenomena have changed over time as a result of new evidence (e.g., basic structure of matter, structure of an atom)	1.2, p. 20, 22; 5.1, pp. 135-136; 6.1, pp. 171-175; 14.2: p. 454		**SB 1.2** 18-30, pp. 32-33; 51-55, p. 34
3. Science and technology affect, and are affected by, society			
A. People, alone or in groups, are always making discoveries about nature and inventing new ways to solve problems and get work done			
Not assessed at this level			
B. Social, political, economic, ethical and environmental factors strongly influence, and are influenced by, the direction of progress of science and technology			
a. Analyze the roles of science and society as they interact to determine the direction of scientific and technological progress (e.g., prioritization of and funding for new scientific research and technological development is determined on the basis of individual, political and social values and needs; understanding basic concepts and principles of science and technology influences debate about the economics, policies, politics, and ethics of various scientific and technological challenges)	See for example, 1.3, pp. 30-31; 4.3, pp.126-127; 5.4, pp. 160-161; 6.3, pp. 190-191; 7.3, pp. 222-223; 10.4, pp. 318-319; 18.4, pp.598-599, etc.	17A, 19A, 19B	**SB 4.2**: 66-67, p. 130; **10.2**: 61, p. 324 **LM 17A**: 5d-f; 1**9A**: 6b-d; **19B**: 5e
b. Identify and describe major scientific and technological challenges to society and their ramifications for public policy (e.g., global warming, limitations to fossil fuels, genetic engineering of plants, space and/or medical research)	1.3 pp. 30-31; 17.3 pp. 556-563; 20.1-20.5, p 636-659; 21.1, pp. 666-672	17A, 21A	**SB 1.3** 57, p. 34; **17.3** 69, 70, 73-76, 79, 82-83, p. 567; **21.1** 2, 4, 5, 8, 9 p. 688
D. Scientific information is presented through a number of credible sources, but is at times influenced in such a way to become non-credible			
a. Evaluate a given source for its scientific credibility (e.g., articles in a	Not		

Missouri CLE	Location in NAC		Assessment
	Student book	**Lab Manual**	
new periodical quoting an "eye witness", a scientist speaking within or outside his/her area of expertise)	covered		
b. Explain why accurate record-keeping, openness, and replication are essential for maintaining an investigator's credibility with other scientists and society	1.2, pp. 19-26 5.1, pp. 135-136		**SB 1.2**, 18-30, p. 32; 5.1, 23-25, 26, p. 163