

## Competency Rubric Bank for the Sciences (CRBS)

#	Competency	5	4	3	2	1	Suggested assignment types	Suggested scale for developmental stage
	<b>Content Knowledge</b>							
<b>1</b>	Content Knowledge: Accuracy of scientific understanding	<ul style="list-style-type: none"> <li>Reflects well-developed understanding of current scientific theory and concepts.</li> <li>Explicitly summarizes essential background information.</li> </ul>		<ul style="list-style-type: none"> <li>Reflects understanding of current scientific theory and concepts.</li> <li>Summarizes most of the essential background</li> </ul>		<ul style="list-style-type: none"> <li>Reflects inaccuracies or large gaps in understanding of current scientific theory and concepts.</li> <li>Does not summarize essential background and information</li> </ul>	Paper Notebook Poster Oral	Entry (5) Mid (5) Capstone (5)
	<b>Higher Order Cognitive Skills (HOCS)</b>							
<b>3</b>	Analysis: Clarity of Research Question	<ul style="list-style-type: none"> <li>Clearly identifies the research question and its inherent complexities</li> <li>Identifies a study that is feasible and testable</li> </ul>		<ul style="list-style-type: none"> <li>Identifies a research question</li> <li>Identifies a study that is feasible and/or testable.</li> </ul>		<ul style="list-style-type: none"> <li>Does not clearly identify a research question or line of study.</li> <li>Gaps in feasibility and testability were evident from the outset.</li> </ul>	Paper Notebook Poster Oral	Entry (3) Mid (4) Capstone (5)
<b>4</b>	Analysis: Identifies Rationale, Hypothesis, or Systematic Approach	<ul style="list-style-type: none"> <li>Very clearly identifies a hypothesis, rationale, or clarifies a systematic approach for exploration</li> <li>Explicitly draws support for his/her rationale from experience, observation, and/or the literature base.</li> <li>Most variables are thoughtfully identified.</li> <li>Explicit link of current theory to the individual's own research study.</li> </ul>		<ul style="list-style-type: none"> <li>Identifies a hypothesis, rationale, or approach for exploration</li> <li>Limited support for the rationale</li> <li>Some variables are identified.</li> <li>Links current theory to the individual's own research study (may be implied or vague).</li> </ul>		<ul style="list-style-type: none"> <li>Hypothesis, rationale, or line of inquiry is not identified or has inconsistencies.</li> <li>Does not support rationale</li> <li>Variables are inadequately addressed</li> <li>Does not link current theory to the individual's own research study.</li> </ul>	Paper Notebook Poster Oral	Entry (3) Mid (4) Capstone (5)
<b>5</b>	Synthesis: Design of Methodology	<ul style="list-style-type: none"> <li>Demonstrates meaningful synthesis of prior research to design appropriate methodologies including procedures, techniques, instrumentation and precautions.</li> <li>Clear and complete description of steps that will achieve the purpose of the research study and</li> </ul>		<ul style="list-style-type: none"> <li>Designs an appropriate methodology to achieve the purpose of the study including procedures and instrumentation.</li> <li>Description of steps for research study are included.</li> </ul>		<ul style="list-style-type: none"> <li>Methodology is confusing or contains gaps.</li> <li>Methodology will not achieve the intended purpose of the study.</li> <li>Does not include description of steps for research study.</li> </ul>	Paper Notebook (3) Poster (3) Oral	Entry (3) Mid (4) Capstone (5)

#	Competency	5	4	3	2	1	Suggested assignment types	Suggested scale for developmental stage
		allow for replication of the study.						
6	Application: Safety and Ethical Considerations	<ul style="list-style-type: none"> <li>All necessary safety hazards including appropriate handling of materials and equipment discussed thoroughly.</li> <li>Considers and addresses all ethical aspects.</li> <li>Seeks IRB approval, if applicable.</li> </ul>		<ul style="list-style-type: none"> <li>Most necessary safety hazards including appropriate handling of materials and equipment discussed.</li> <li>Attempt is made to address ethical issues.</li> <li>Seeks IRB approval, if applicable.</li> </ul>		<ul style="list-style-type: none"> <li>Safety hazards and ethical considerations not addressed.</li> </ul> AND <ul style="list-style-type: none"> <li>IRB approval not met.</li> </ul>	Notebook  Instructor observation of technique	Entry (3) Mid (4) Capstone (5)
7	Application and analysis: Data Collection and Analysis	<ul style="list-style-type: none"> <li>Very appropriate use of instruments &amp; tools to make careful measurements.</li> </ul>		<ul style="list-style-type: none"> <li>Appropriate use of instruments &amp; tools to make careful measurements.</li> </ul>		<ul style="list-style-type: none"> <li>Inappropriate use of tools &amp; instruments.</li> </ul>	Notebook  Instructor observation of technique	Entry (3) Mid (4) Capstone (5)
8	Application: Data Presentation	<ul style="list-style-type: none"> <li>Highly consistent and appropriate use of scientific units of measurement, labels, symbols, and equations.</li> <li>Concise visuals convey pertinent data that are otherwise difficult to convey; thus, increasing the efficiency and effectiveness of the presentation.</li> <li>Visuals enhance the communication process by utilizing the appropriate balance between effective visuals and text.</li> </ul>		<ul style="list-style-type: none"> <li>Consistent use of scientific labels, units of measurement, symbols, and equations.</li> <li>Minor inaccuracies or omissions noted, such as skipping a step, inaccurate equation (e.g., lack of labels, typographical errors, etc.)</li> <li>Visuals convey data that are pertinent and add to the presentation, with some balance between text and visuals</li> </ul>		<ul style="list-style-type: none"> <li>Does not attempt to use scientific labels, symbols, or equations.</li> <li>Major inaccuracies or omissions are noted.</li> <li>Visuals distract from presentation by being too wordy or too limited (e.g., too much text or visual)</li> </ul>	Paper Notebook Poster Oral	Entry (3) Mid (4) Capstone (5)
9	Synthesis: Conclusions	<ul style="list-style-type: none"> <li>Clearly addresses the research question(s).</li> <li>Draws inferences that are highly consistent with the data and scientific reasoning</li> </ul> <p><i>Example 1: Significance in differences or similarities between samples are determined statistically; an inference is drawn appropriately from that statistical assessment.</i></p>		<ul style="list-style-type: none"> <li>Addresses the research question(s).</li> <li>Identifies conclusions based on observation.</li> <li>Attempts to identify directions for future research</li> <li>Defines limitations in broad terms</li> </ul>		<ul style="list-style-type: none"> <li>Conclusions do not address the research question(s).</li> <li>Conclusions not evaluated for accuracy and precision.</li> <li>Does not identify future directions</li> <li>Does not identify limitations.</li> </ul>	Paper Notebook Poster Oral	Entry (3) Mid (4) Capstone (5)

#	Competency	5	4	3	2	1	Suggested assignment types	Suggested scale for developmental stage
		<p><i>Example 2: A trend(s) is identified and evaluated statistically; an inference is drawn appropriately from that statistical assessment.</i></p> <ul style="list-style-type: none"> <li>Identifies well-reasoned directions for future research.</li> <li>Explicitly discusses limitations.</li> </ul>						
10	Evaluation: Accuracy & Precision	<ul style="list-style-type: none"> <li>Evaluates the accuracy &amp; precision of the data.</li> <li>Clearly examines the evidence and identifies specific sources of error and determines means for reducing error in future studies.</li> <li>Carefully selects and systematically applies appropriate data analysis (quantitative, qualitative, exploratory or other)</li> </ul>		<ul style="list-style-type: none"> <li>Examines the evidence and identifies error in general terms.</li> <li>Notes that there may be some inconsistencies in data but explanation is not developed.</li> <li>Selects and applies appropriate data analysis method with few errors (quantitative, qualitative, exploratory or other)</li> </ul>		<ul style="list-style-type: none"> <li>Conclusions are not evaluated for accuracy and precision</li> <li>Sources of error are not identified.</li> <li>Does not use appropriate data analysis method.</li> </ul>	Paper Notebook Poster Oral	Entry (3) Mid (4) Capstone (5)
11	Evaluation: Relevance  NOS: Social and Cultural Nature of Science Understandings: Science is a human enterprise, practiced within and affecting society and culture.	<ul style="list-style-type: none"> <li>Clearly articulates scientific and societal relevance of the study.</li> </ul>		<ul style="list-style-type: none"> <li>Identifies a general relevance of the study.</li> </ul>		<ul style="list-style-type: none"> <li>Does not identify the relevance of the study.</li> </ul>	Paper Poster Oral	Entry (3) Mid (4) Capstone (5)
	<b>Communication Skills</b>							
12	Organization & Sequence	<ul style="list-style-type: none"> <li>Clearly organized and logical using format of commonly accepted scientific literature.</li> <li>Explicitly differentiates main from secondary ideas.</li> </ul>		<ul style="list-style-type: none"> <li>Organized, using clear divisions of the segments within the presentation.</li> <li>Main ideas are emphasized.</li> </ul>		<ul style="list-style-type: none"> <li>Format is disorganized.</li> <li>Main ideas are lost</li> </ul>	Paper Poster Oral	Entry (3) Mid (4) Capstone (5)
14	Writing Conventions	<ul style="list-style-type: none"> <li>Very consistent use of discipline specific language*</li> </ul>		<ul style="list-style-type: none"> <li>Attempts to use discipline specific language*</li> </ul>		<ul style="list-style-type: none"> <li>Does not attempt to use discipline specific language*</li> </ul>	Paper Poster	Entry (3) Mid (4)

#	Competency	5	4	3	2	1	Suggested assignment types	Suggested scale for developmental stage
		AND • “Excellent” quality of writing on university writing rubric	AND	• “Competent” quality of writing on the university writing rubric	AND	• “Unacceptable” quality of writing on the university writing rubric	Oral	Capstone (5)
15	Oral Presentation Skills	<ul style="list-style-type: none"> <li>Exhibits exemplary professional demeanor</li> <li>High level of poise</li> <li>Communicates high level of preparation for the presentation.</li> <li>Communicates an enthusiasm or strong scholarly interest in the subject manner.</li> <li>Handles questions from the audience with confidence</li> <li>Rate of speech (or presentation) facilitates audience understanding</li> </ul>	<ul style="list-style-type: none"> <li>Exhibits professional demeanor</li> <li>Maintains composure throughout the presentation.</li> <li>Communicates competent level of preparation.</li> <li>Communicates a desire to perform well</li> <li>Communicates willingness to interact with the audience.</li> <li>Rate of speech (or presentation) does not detract from audience understanding</li> </ul>	<ul style="list-style-type: none"> <li>Does not exhibit professional demeanor</li> <li>Composure is lost during presentation.</li> <li>Seems unprepared</li> <li>Communicates little interest in the subject manner.</li> <li>Lackadaisical attitude is evident.</li> <li>Rate of speech (or presentation) detracts from audience understanding.</li> </ul>	Poster  Oral	Entry (3) Mid (4) Capstone (5)		
	<b>Nature of Science</b>							
16	<b>Empirical NOS:</b> Scientific knowledge is based on and/or derived from observations of the natural world (data)	<p><u>Research paper or presentation</u> <i>Permeated with the</i> understanding that scientific knowledge is based on and/or derived from observations of the natural world.</p> <p><b>Example:</b> - Empirical observations (data) are presented and serve as the primary basis for the conclusions</p>	<p><u>Research paper or presentation</u> <i>Expresses</i> the understanding that scientific knowledge is based on observations of the natural world.</p> <p><b>Example:</b> - empirical observations (data) are presented, but only weakly support the conclusions - conclusions primarily recite prior theory or note experimental expectations, with little logical connection to the data</p>	<p><u>Research paper or presentation</u> <i>Does not express</i> the understanding that scientific knowledge is based on observations of the natural world.</p> <p><b>Examples:</b> - empirical observations (data) are not presented and/or may not support conclusions; - conclusions only recite prior theory or note experimental expectations based on that theory.</p>	Paper Notebook Poster Oral	Entry (5) Mid (5) Capstone (5)		
17	<b>Tentative NOS:</b> Scientific knowledge is subject to change with new observations and with the reinterpretations of	<p><u>Research paper or presentation</u> • <i>Clearly acknowledges</i> the principle that scientific knowledge <u>is</u> subject to change.</p> <p><b>Examples:</b> - Introduction and/or conclusions note gaps or misunderstandings in</p>	<p><u>Research paper or presentation</u> • <i>Acknowledges</i> the principle that scientific knowledge <u>is</u> subject to change.</p>	<p><u>Research paper or presentation</u> • <i>Expresses the naïve view</i> that scientific knowledge <u>is not</u> subject to change.</p> <p><b>Examples:</b> - Fails to acknowledge gaps or misunderstandings, varied</p>	Paper Notebook Poster Oral	Entry (3) Mid (4) Capstone (5)		

#	Competency	5	4	3	2	1	Suggested assignment types	Suggested scale for developmental stage
	existing observations.	current scientific knowledge-base (e.g. "It is currently unknown whether..."); varied interpretations of data; controversies/alternative theories				interpretations , or controversies - States the purpose of research as confirming rigid theory or reproducing prior findings - <i>Uses naïve language</i> by stating non-tentative conclusions: e.g. " <i>prove</i> "		
18	<b>Inferential NOS:</b> Scientific knowledge is based on both observation and inference.  There is a critical distinction between scientific claims (e.g., inferences) and evidence on which such claims are based (e.g., observations)	<u>Research paper or presentation</u> • <i>Inferences are made appropriately and well-justified:</i>  <i>Examples:</i> Conclusions are formed after the evidence is critically evaluated in relation to, and synthesized with - accepted theory(ies), AND - other evidence (e.g. published data)  • <i>Clearly shows evidence of the distinction</i> between inference and observation  <i>Example:</i> - appropriate scientific language, such as: "The data presented here support the following conclusion:..."	<u>Research paper or presentation</u> • <i>Inferences are made but not well-justified:</i>  <i>Examples:</i> Conclusions are formed after the evidence is evaluated relative to - accepted theory, OR - other evidence (e.g. published data)  <i>Shows evidence of the distinction</i> between inference and observation.	<u>Research paper or presentation</u> • <i>Inferences are not made, or are not justified:</i>  <i>Example:</i> Evidence is not evaluated in relation to prior theory, NOR synthesized with other evidence.  <i>Does not distinguish</i> between inference and observation.  <i>Example:</i> - The conclusions may only restate the observations or expectations.			Paper (Notebook?) Poster Oral	Entry (3) Mid (4) Capstone (5)
20	<b>Theory-laden NOS:</b> Scientific knowledge and investigation are influenced by scientists' theoretical and disciplinary commitments.	<u>Research paper or presentation</u> • <i>Clearly and appropriately acknowledges</i> prior theory by applying a well-founded theoretical model to the rationale for the research project, and any conclusions or inferences	<u>Research paper or presentation</u> • <i>Acknowledges</i> prior theory; states a theory-based rationale for the research project, and bases some inferences on established theory	<u>Research paper or presentation</u> • <i>Does not acknowledge</i> prior theory; no reference to prior theory or theoretical model is made			Paper Poster Oral	Entry (3) Mid (4) Capstone (5)
22	<b>Myth of the "Scientific Method":</b> There is no universal	<u>Research paper or presentation</u> <i>Uses or articulates multiple approaches</i> to generating knowledge	<u>Research paper or presentation</u> <i>Uses or articulates an alternative approach</i> to validating findings.	<u>Research paper or presentation</u> <i>Does not propose any alternative approach</i>			Paper Poster Oral	Entry (3) Mid (4) Capstone

#	Competency	5	4	3	2	1	Suggested assignment types	Suggested scale for developmental stage
	<p>step-wise method that guarantees the generation of valid scientific knowledge</p> <p>Many different methodologies are valid means of scientific knowledge formation, and contribute together to validate a hypothesis</p>	<p>- multiple alternative approaches may include alternate experimental designs, and/or non-experimental studies, such as correlative field studies, informatics, or modeling work</p> <p><i>Example:</i> Alternative methodologies are suggested in a paragraph on 'future work' in the discussion</p>		<p>- multiple alternative approaches may include alternate experimental designs, and/or non-experimental studies, such as correlative field studies, informatics, or modeling work;</p> <p><i>Example:</i> An alternative methodology is suggested in a paragraph on 'future work' in the discussion</p>		<p><i>Endorses the naïve viewpoint</i> that there is one universal step-wise method that guarantees the generation of valid knowledge (i.e., myth of "scientific method")</p> <p><i>Example:</i> Discussion of 'Future work' is restricted to repetition of the same methodology</p>		(5)
	<b>NOS items, for explicit NOS assignments</b>							
<b>16 NOS</b>	<p><b>Empirical NOS:</b> Scientific knowledge is based on and/or derived from observations of the natural world (data)</p>	<p><i>Assignment explicitly about NOS:</i> <b>Clearly expresses the understanding that</b> scientific knowledge is based on and/or derived from observations of the natural world.</p>		<p><i>Assignment explicitly about NOS:</i> <b>Expresses</b> the understanding that scientific knowledge is based on observations of the natural world.</p>		<p><i>Assignment explicitly about NOS:</i> <b>Does not express</b> the understanding that scientific knowledge is based on observations of the natural world.</p>	NOS-specific assignment: (e.g. essay or class discussion regarding NOS concepts)	Entry (5) Mid (5) Capstone (5)
<b>17 NOS</b>	<p><b>Tentative NOS:</b> Scientific knowledge is subject to change with new observations and with the reinterpretations of existing observations.</p> <p>Scientific knowledge is not absolute nor certain.</p>	<p><i>Assignment explicitly about NOS:</i></p> <ul style="list-style-type: none"> <li>• <b>Clearly acknowledges</b> the principle that scientific knowledge <u>is</u> subject to change, with examples.</li> <li>• <b>Clearly expresses</b> the principle that scientific knowledge <u>is not</u> absolute nor certain, providing more than one reason</li> </ul> <p><i>Examples:</i></p> <ul style="list-style-type: none"> <li>- There is uncertainty in scientific knowledge due to current lack of data or theory to explain data</li> <li>- uncertainty due to <b>social/cultural NOS</b></li> </ul>		<p><i>Assignment explicitly about NOS:</i></p> <ul style="list-style-type: none"> <li>• <b>Acknowledges</b> the principle that scientific knowledge <u>is</u> subject to change.</li> <li>• <b>Expresses</b> the principle that scientific knowledge <u>is not</u> absolute nor certain</li> </ul>		<p><i>Assignment explicitly about NOS:</i></p> <ul style="list-style-type: none"> <li>• <b>Expresses the naïve view</b> that scientific knowledge <u>is not</u> subject to change.</li> <li>• <b>Expresses the naïve view</b> that scientific knowledge <u>is</u> absolute and certain</li> </ul> <p><i>Examples:</i></p> <ul style="list-style-type: none"> <li>- Explains scientific controversies only in terms of one party not fully understanding the data or theory, or only being politically swayed to the wrong conclusions</li> </ul>	NOS-specific assignment: (e.g. essay or class discussion regarding NOS concepts)	Entry (3) Mid (4) Capstone (5)

#	Competency	5	4	3	2	1	Suggested assignment types	Suggested scale for developmental stage
		- uncertainty due to <b>creative NOS</b> - there is historical development of theories (e.g. paradigm shifts; revolutions)						
<b>19 NOS</b>	<b>Creative NOS:</b> Science is a creative process, not completely rational, lifeless and orderly  In this manner, there is an unavoidable subjectivity in science  Thus, scientific concepts, such as atoms or species, are useful models, not perfect copies of reality	<u>Assignment explicitly about NOS:</u> • <b>Clearly states a role for creativity</b> in the formation of research questions, study design, and inference making  • <b>Clearly acknowledges</b> subjectivity in science deriving from creative NOS  • <b>Clearly acknowledges</b> the imperfect match of models with reality	<u>Assignment explicitly about NOS:</u> • <b>States a role for creativity</b> in the formation of research questions, study design, OR inference making  • <b>Acknowledges</b> subjectivity in science deriving from creative NOS  • <b>Acknowledges</b> the imperfect match of models with reality	<u>Assignment explicitly about NOS:</u> • <b>States the misconception that the practice of science is not creative</b>  • <b>Naively equates science</b> with non-creative objective rationality  • <b>Naively equates</b> reality with models			NOS-specific assignment: (e.g. essay or class discussion regarding NOS concepts)	Entry (3) Mid (4) Capstone (5)
<b>20 NOS</b>	<b>Theory-laden NOS:</b> Scientific knowledge and investigation are influenced by scientists' theoretical and disciplinary commitments.  Because scientific knowledge is theory-laden, there is an unavoidable subjectivity to science	<u>Assignment explicitly about NOS:</u> • <b>Clearly acknowledges that</b> scientific inference formation is influenced by scientists' theoretical and disciplinary commitments, with examples (e.g. commitments to Newton's theories of motion impacted early models of the atom) • <b>Clearly acknowledges</b> subjectivity derived from the theory-laden aspect of science	<u>Assignment explicitly about NOS:</u> • <b>Acknowledges that</b> scientific inference formation is influenced by scientists' theoretical and disciplinary commitments • <b>Acknowledges subjectivity</b> derived from the theory-laden aspect of science	<u>Assignment explicitly about NOS:</u> • <b>Does not acknowledge</b> that theoretical and disciplinary commitments influence scientific inference formation • <b>Does not acknowledge</b> subjectivity in the theory-laden aspect of science <b>OR</b> • <b>inappropriately invokes extreme</b> subjectivity			NOS-specific assignment: (e.g. essay or class discussion regarding NOS concepts)	Entry (3) Mid (4) Capstone (5)
<b>21 NOS</b>	<b>Social and Cultural NOS:</b> Science is a human	<u>Assignment explicitly about NOS:</u> <b>Clearly acknowledges</b> that science is a the human enterprise	<u>Assignment explicitly about NOS:</u> <b>Acknowledges</b> that science is a the human enterprise embedded	<u>Assignment explicitly about NOS:</u> <b>Does not acknowledge</b> that the social and cultural setting of			NOS-specific assignment:	Entry (3) Mid (4) Capstone

#	Competency	5	4	3	2	1	Suggested assignment types	Suggested scale for developmental stage
	<p>enterprise, practiced within and affecting society and culture.</p> <p>Scientists are influenced by culture – in their beliefs, values, norms, and prior knowledge (thus, scientific knowledge is somewhat subjective)</p> <p>The scientific community is a culture unto itself, with its own norms and values, and systems of approving knowledge</p>	<p>embedded in society and culture</p> <p><b>Clearly acknowledges</b> that the social and cultural setting of research may affect the interpretation of the data; there are potential biases derived from the social/cultural setting</p> <p><b>Clearly acknowledges</b> the scientific community as a culture unto itself;</p> <ul style="list-style-type: none"> <li>- shared values and norms</li> <li>- funding agency directives</li> <li>- effect of the peer-review system</li> </ul>	<p>in society and culture</p> <p><b>Acknowledges</b> that the social and cultural setting of research may affect the interpretation of the data; there are potential biases derived from the social/cultural setting.</p> <p><b>Acknowledges</b> the scientific community as a culture unto itself;</p> <ul style="list-style-type: none"> <li>- shared values and norms</li> <li>- funding agency directives</li> <li>- peer-review</li> </ul>	<p>research may affect the interpretation of the data;</p> <p>Retains the naïve conception that science is purely objective and unaffected by the broader culture</p> <p><b>Does not acknowledge</b> the scientific community as a culture unto itself;</p> <ul style="list-style-type: none"> <li>- shared values and norms</li> <li>- funding agency directives</li> <li>- peer-review</li> </ul>			(e.g. essay or class discussion regarding NOS concepts)	(5)
22 NOS	<p><b>Myth of the “Scientific Method”:</b> There is no universal step-wise method that guarantees the generation of valid scientific knowledge</p> <p>Many different methodologies are valid means of scientific knowledge formation, and contribute together to validate a hypothesis</p>	<p><b>Assignment explicitly about NOS:</b> <i>Clearly expresses the view that multiple methods are valid means of scientific inquiry, with examples</i> (e.g. social scientists, astronomers, earth scientists, and many ecologists work mostly without any classical experimental methods, yet still generate valid findings.)</p> <p><b>Clearly acknowledges the validity and necessity</b> of findings from multiple alternate experimental <u>and</u> non-experimental studies.</p>	<p><b>Assignment explicitly about NOS:</b> <i>Expresses the view that multiple methods are valid means of scientific inquiry.</i></p> <p><b>Acknowledges the validity</b> of conclusions drawn from alternate experimental <u>and</u> non-experimental studies.</p>	<p><b>Example:</b> Correct use of “the method” gives us “the right answer”. - A “method” may be applied to the research paper as a veneer, when in fact the project was performed without any stated hypothesis or experiments.</p> <p><b>Assignment explicitly about NOS:</b> <i>Naively holds to a universal experimental method: Does not consider</i> non-experimental findings a valid means of knowledge generation</p> <p><b>Does not acknowledge the need for multiple converging methodologies</b> to best validate a hypothesis</p>			NOS-specific assignment: (e.g. essay or class discussion regarding NOS concepts)	Entry (3) Mid (4) Capstone (5)