

Seymour Public Schools Curriculum

Grades: 10-12

Subject: Zoology

The purpose of this class is to develop an understanding of how animals are classified and identified based on form and function. Students will survey the major phyla of Kingdom Animalia. Evolution, taxonomy, anatomy and physiology will be investigated. The course will require many laboratory-based opportunities in order to handle and/or dissect preserved animal specimens as well as live animals specimens.

Unit 1 – Introduction to Zoology

Unit 2 – Sponges & Cnidarians

Unit 3 - Worms & Mollusks

Unit 4 - Arthropods

Unit 5 - Echinoderms

Unit 6 - Chordates

Unit 7 - Fishes

Unit 8 - Amphibians

Unit 9 - Reptiles and Birds

Unit 10 - Mammals

UNIT 1- Introduction to Zoology

Subject: Grade: Time Frame:	Zoology Grades 10-12 2 weeks
CCSS Overarching Standards	Literary Standards CCR Anchor Standard 2 for Reading - Determine central ideas or themes of a text and analyze their development; summarize they key supporting details and ideas. CCR Anchor Standard 7 for Reading - Integrate and evaluate content presented in diverse formats and media, including visually and quantitatively, as well as in words. CCR Anchor Standard 8 for Reading - Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence. CCR Anchor Standard 9 for Reading - Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take. CCR Anchor Standard 10 for Reading - Read and comprehend complex literary and informational texts independently and proficiently. CCR Anchor Standard 2 for Writing - Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content. CCR Anchor Standard 7 for Writing - Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation. CCR Anchor Standard 8 for Writing - Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism. CCR Anchor Standard 9 for Writing - Draw evidence from literary or informational texts to support analysis, reflection, and research.
Enduring Understanding	<i>Zoology is a branch of biology focused on investigating the anatomy, physiology and taxonomy of animals.</i>
Essential Questions	<i>What are the key features of all animals?</i> <i>How do zoologists classify animals into various phyla and classes?</i> <i>How do scientists believe animals evolved on Earth?</i>
Priority Standards	Reading Standards for Literacy in Science and Technical Subjects Grades 11-12 students: RST 2 - Determine the central ideas of conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms. RST 3 - Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST 4 - Determine the meaning of symbols, key terms and other domain-specific words and phrases as the they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics. RST 7 - Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST 8 - Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.

	<p>RST 9 - Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p> <p>Writing Standards for Literacy in Science and Technical Subjects Grades 11-12 students:</p> <p>WHST 2 (a-e)- Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.</p> <p>WHST 7 - Conduct short as well as more sustained research projects to answer a question (including self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.</p> <p>WHST 8 - Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format of citation.</p> <p>WHST 9 - Draw evidence from informational texts to support analysis, reflection, and research.</p>		
Performance Expectations (Student outcomes)	<p>Students will be able to</p> <ul style="list-style-type: none"> ➤ discuss key characteristics of all animals. ➤ use and create a dichotomous key to discern the identity of an animal. ➤ analyze and create a cladogram to determine the evolutionary history of various animals. 		
	Strategies/Modes	Materials/Resources	Assessments
	<ul style="list-style-type: none"> ➤ Student/and or teacher lead Google presentations ➤ Lab experiments ➤ Collaborative groups ➤ Individual reading/ vocabulary building ➤ Individual note taking (T chart, graphic organizers, concept mapping, etc..) 	<ul style="list-style-type: none"> ➤ DVD - "Nature - Animal Misfits" ➤ VIDEO - "Life on Earth chapter 2 building bodies" ➤ TEXT - Prentice Hall Biology by Miller and Levine ➤ http://animals.nationalgeographic.com/animals/ ➤ www.biologycorner.com ➤ http://animaldiversity.org/ 	<p><u>Summative Assessments</u></p> <ul style="list-style-type: none"> ➤ Final Exam ➤ Final Project <p><u>Formative Assessments</u></p> <ul style="list-style-type: none"> ➤ unit test ➤ quizzes ➤ lab reports ➤ student created dichotomous key

UNIT 2- Sponges & Cnidarians

Subject: Grade: Time Frame:	Zoology Grades 10-12 2 weeks
CCSS Overarching	Literacy Standards CCR Anchor Standard 2 for Reading - Determine central ideas or themes of a text and analyze their development; summarize they key supporting details and ideas.

Standards	<p>CCR Anchor Standard 7 for Reading - Integrate and evaluate content presented in diverse formats and media, including visually and quantitatively, as well as in words.</p> <p>CCR Anchor Standard 8 for Reading - Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.</p> <p>CCR Anchor Standard 9 for Reading - Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.</p> <p>CCR Anchor Standard 10 for Reading - Read and comprehend complex literary and informational texts independently and proficiently.</p> <p>CCR Anchor Standard 2 for Writing - Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.</p> <p>CCR Anchor Standard 7 for Writing - Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.</p> <p>CCR Anchor Standard 8 for Writing - Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.</p> <p>CCR Anchor Standard 9 for Writing - Draw evidence from literary or informational texts to support analysis, reflection, and research.</p>
Enduring Understanding	<i>Sponges and cnidarians are some of the simplest animals within Kingdom Animalia.</i>
Essential Questions	<p><i>Why is a sponge an animal?</i></p> <p><i>How are cnidarians more complex animals than a sponge?</i></p>
Priority Standards	<p>Reading Standards for Literacy in Science and Technical Subjects Grades 11-12 students:</p> <p>RST 2 - Determine the central ideas of conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.</p> <p>RST 3 - Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.</p> <p>RST 4 - Determine the meaning of symbols, key terms and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.</p> <p>RST 7 - Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.</p> <p>RST 8 - Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.</p> <p>RST 9 - Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p> <p>Writing Standards for Literacy in Science and Technical Subjects Grades 11-12 students:</p> <p>WHST 2 (a-e)- Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.</p> <p>WHST 7 - Conduct short as well as more sustained research projects to answer a question (including self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.</p> <p>WHST 8 - Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose and audience; integrate information into the text selectively to</p>

	maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format of citation. WHST 9 - Draw evidence from informational texts to support analysis, reflection, and research	
Performance Expectations (Student outcomes)	Students will be able to <ul style="list-style-type: none"> ➤ compare and contrast sponges and cnidarians in terms of anatomy, physiology and taxonomy. ➤ identify specific species found with Phylum Porifera and Phylum Cnidaria. ➤ discuss the importance of sponges and cnidarians to the environment and society. 	
Strategies/Modes	Materials/Resources	Assessments
<ul style="list-style-type: none"> ➤ Student/and or teacher lead Google presentations ➤ Lab experiments ➤ Collaborative groups ➤ Individual reading/ vocabulary building ➤ Individual note taking (T chart, graphic organizers, concept mapping, etc..) 	<ul style="list-style-type: none"> ➤ TEXT - Prentice Hall Biology by Miller and Levine ➤ http://animals.nationalgeographic.com/animals/ ➤ www.biologycorner.com ➤ http://animaldiversity.org/ ➤ compound light microscopes ➤ prepared slides - <i>Hydra, granita</i> 	<u>Summative Assessments</u> <ul style="list-style-type: none"> ➤ Final Exam ➤ Final Project <u>Formative Assessments</u> <ul style="list-style-type: none"> ➤ unit test ➤ quizzes ➤ lab reports

UNIT 3- Worms & Mollusks

Subject:	Zoology
Grade:	Grades 10-12
Time Frame:	2 weeks
CCSS	Literacy Standards
Overarching Standards	<p>CCR Anchor Standard 2 for Reading - Determine central ideas or themes of a text and analyze their development; summarize they key supporting details and ideas.</p> <p>CCR Anchor Standard 7 for Reading - Integrate and evaluate content presented in diverse formats and media, including visually and quantitatively, as well as in words.</p> <p>CCR Anchor Standard 8 for Reading - Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.</p> <p>CCR Anchor Standard 9 for Reading - Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.</p> <p>CCR Anchor Standard 10 for Reading - Read and comprehend complex literary and informational texts independently and proficiently.</p> <p>CCR Anchor Standard 2 for Writing - Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.</p> <p>CCR Anchor Standard 7 for Writing - Conduct short as well as more sustained research projects based on focused questions, demonstrating</p>

	<p>understanding of the subject under investigation. CCR Anchor Standard 8 for Writing - Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism. CCR Anchor Standard 9 for Writing - Draw evidence from literary or informational texts to support analysis, reflection, and research.</p>
Enduring Understanding	<p><i>Worms can be classified into 3 distinct categories each with unique anatomical and physiological features.</i> <i>Segmentation of the body allows for greater complexity of the animal.</i></p>
Essential Questions	<p><i>How does a flatworm differ from a roundworm and a segmented worm?</i> <i>How is the worm body plan an advancement in animal evolution?</i> <i>How is segmentation displayed within mollusks?</i></p>
Priority Standards	<p>Reading Standards for Literacy in Science and Technical Subjects Grades 11-12 students: RST 2 - Determine the central ideas of conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms. RST 3 - Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST 4 - Determine the meaning of symbols, key terms and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics. RST 7 - Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST 8 - Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information. RST 9 - Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. Writing Standards for Literacy in Science and Technical Subjects Grades 11-12 students: WHST 2 (a-e)- Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. WHST 7 - Conduct short as well as more sustained research projects to answer a question (including self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation. WHST 8 - Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format of citation. WHST 9 - Draw evidence from informational texts to support analysis, reflection, and research</p>
Performance Expectations (Student outcomes)	<p>The students will be able to</p> <ul style="list-style-type: none"> ➤ distinguish between organisms found in Phylum Platyhelminthes, Annelida and Nematoda in terms of anatomy, physiology and characteristic species. ➤ create a cladogram (phylogenetic tree) detailing the evolution of animals up to and including all worms. ➤ discuss the impact of parasitic worms on human health and ecological relationships.

Strategies/Modes	Materials/Resources	Assessments
<ul style="list-style-type: none"> ➤ Student/and or teacher lead Google presentations ➤ Lab experiments ➤ Collaborative groups ➤ Individual reading/ vocabulary building ➤ Individual note taking (T chart, graphic organizers, concept mapping, etc..) 	<ul style="list-style-type: none"> ➤ DVD - "Parasites: Eating Us Alive" ➤ TEXT - Prentice Hall Biology by Miller and Levine ➤ http://animals.nationalgeographic.com/animals/ ➤ www.biologycorner.com ➤ http://animaldiversity.org/ ➤ compound light microscopes ➤ prepared slides - <i>planaria</i>, <i>ascaris</i>, 	<p><u>Summative Assessments</u></p> <ul style="list-style-type: none"> ➤ Final Exam ➤ Final Project <p><u>Formative Assessments</u></p> <ul style="list-style-type: none"> ➤ unit test ➤ quizzes ➤ lab reports (earthworm and squid dissection)

UNIT 4 - Arthropods

Subject: Grade: Time Frame:	Zoology Grades 10-12 2 weeks
CCSS Overarching Standards	Literacy Standards CCR Anchor Standard 2 for Reading - Determine central ideas or themes of a text and analyze their development; summarize they key supporting details and ideas. CCR Anchor Standard 7 for Reading - Integrate and evaluate content presented in diverse formats and media, including visually and quantitatively, as well as in words. CCR Anchor Standard 8 for Reading - Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence. CCR Anchor Standard 9 for Reading - Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take. CCR Anchor Standard 10 for Reading - Read and comprehend complex literary and informational texts independently and proficiently. CCR Anchor Standard 2 for Writing - Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content. CCR Anchor Standard 7 for Writing - Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation. CCR Anchor Standard 8 for Writing - Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism. CCR Anchor Standard 9 for Writing - Draw evidence from literary or informational texts to support analysis, reflection, and research.
Enduring Understanding	<i>The Phylum Arthropods contains the most successful and numerous animals on Earth.</i>

Essential Questions	<p><i>How does the arthropod anatomy and physiology allow it to be so successful?</i> <i>What impact do insects and other arthropods have on our environment?</i></p>
Priority Standards	<p>Reading Standards for Literacy in Science and Technical Subjects Grades 11-12 students: RST 2 - Determine the central ideas of conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms. RST 3 - Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST 4 - Determine the meaning of symbols, key terms and other domain-specific words and phrases as the they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics. RST 7 - Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST 8 - Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information. RST 9 - Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p> <p>Writing Standards for Literacy in Science and Technical Subjects Grades 11-12 students: WHST 2 (a-e)- Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. WHST 7 - Conduct short as well as more sustained research projects to answer a question (including self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation. WHST 8 - Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format of citation. WHST 9 - Draw evidence from informational texts to support analysis, reflection, and research</p>
Performance Expectations (Student outcomes)	<p>The students will be able to</p> <ul style="list-style-type: none"> ➤ discuss the diversity and unity found with Phylum Arthropoda with regard to anatomy, physiology, and characteristic species. ➤ describe the role of arthropods in an ecosystem and the impact on human population. ➤ cite examples of arthropods exhibiting co-evolution.

Strategies/Modes	Materials/Resources	Assessments
<ul style="list-style-type: none"> ➤ Student/and or teacher lead Google presentations ➤ Lab experiments ➤ Collaborative groups ➤ Individual reading/ vocabulary building ➤ Individual note taking (T chart, graphic organizers, concept mapping, etc..) 	<ul style="list-style-type: none"> ➤ VIDEO -"Life on Earth chapter 4 - swarming hordes" ➤ TEXT - Prentice Hall Biology by Miller and Levine ➤ http://animals.nationalgeographic.com/animals/ ➤ www.biologycorner.com ➤ http://animaldiversity.org/ 	<p><u>Summative Assessments</u></p> <ul style="list-style-type: none"> ➤ Final Exam ➤ Final Project <p><u>Formative Assessments</u></p> <ul style="list-style-type: none"> ➤ unit test ➤ quizzes ➤ lab reports (crayfish dissection, isopod behavior experiment, grasshopper anatomy & dissection)

UNIT 5 - Echinoderms

Subject: Grade: Time Frame:	Zoology Grades 10-12 1 week
CCSS Overarching Standards	Literacy Standards CCR Anchor Standard 2 for Reading - Determine central ideas or themes of a text and analyze their development; summarize they key supporting details and ideas. CCR Anchor Standard 7 for Reading - Integrate and evaluate content presented in diverse formats and media, including visually and quantitatively, as well as in words. CCR Anchor Standard 8 for Reading - Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence. CCR Anchor Standard 9 for Reading - Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take. CCR Anchor Standard 10 for Reading - Read and comprehend complex literary and informational texts independently and proficiently. CCR Anchor Standard 2 for Writing - Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content. CCR Anchor Standard 7 for Writing - Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation. CCR Anchor Standard 8 for Writing - Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism. CCR Anchor Standard 9 for Writing - Draw evidence from literary or informational texts to support analysis, reflection, and research.
Enduring Understanding	<i>Phylum Echinodermata contains animals that are very diverse and provide a link to the vertebrate class.</i>

Essential Questions	<i>What organ systems found within an echinoderm show a connection to vertebrate animals?</i>
Priority Standards	<p>Reading Standards for Literacy in Science and Technical Subjects Grades 11-12 students: RST 2 - Determine the central ideas of conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms. RST 3 - Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST 4 - Determine the meaning of symbols, key terms and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics. RST 7 - Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST 8 - Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information. RST 9 - Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p> <p>Writing Standards for Literacy in Science and Technical Subjects Grades 11-12 students: WHST 2 (a-e)- Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. WHST 7 - Conduct short as well as more sustained research projects to answer a question (including self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation. WHST 8 - Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format of citation. WHST 9 - Draw evidence from informational texts to support analysis, reflection, and research</p>
Performance Expectations (Student outcomes)	<p>The students will be able to</p> <ul style="list-style-type: none"> ➤ outline the key features of all echinoderms. ➤ draw conclusions about the importance of echinoderm anatomy and vertebrate evolution. ➤ create a cladogram outlining the key invertebrate phyla with corresponding characters.

Strategies/Modes	Materials/Resources	Assessments
<ul style="list-style-type: none"> ➤ Student/and or teacher lead ➤ Google presentations ➤ Lab experiments ➤ Collaborative groups ➤ Individual reading/ vocabulary building ➤ Individual note taking (T chart, graphic organizers, concept mapping, etc..) 	<ul style="list-style-type: none"> ➤ TEXT - Prentice Hall Biology by Miller and Levine ➤ http://animals.nationalgeographic.com/animals/ ➤ www.biologycorner.com ➤ http://animaldiversity.org/ 	<p><u>Summative Assessments</u></p> <ul style="list-style-type: none"> ➤ Final Exam ➤ Final Project <p><u>Formative Assessments</u></p> <ul style="list-style-type: none"> ➤ unit test ➤ quizzes ➤ lab reports

UNIT 6 - Chordates

Subject: Grade: Time Frame:	Zoology Grades 10-12 2 weeks
CCSS Overarching Standards	Literacy Standards CCR Anchor Standard 2 for Reading - Determine central ideas or themes of a text and analyze their development; summarize they key supporting details and ideas. CCR Anchor Standard 7 for Reading - Integrate and evaluate content presented in diverse formats and media, including visually and quantitatively, as well as in words. CCR Anchor Standard 8 for Reading - Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence. CCR Anchor Standard 9 for Reading - Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take. CCR Anchor Standard 10 for Reading - Read and comprehend complex literary and informational texts independently and proficiently. CCR Anchor Standard 2 for Writing - Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content. CCR Anchor Standard 7 for Writing - Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation. CCR Anchor Standard 8 for Writing - Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism. CCR Anchor Standard 9 for Writing - Draw evidence from literary or informational texts to support analysis, reflection, and research.
Enduring Understanding	<i>Phylum Chordata contains animals with the following characteristics at some point during its life cycle: dorsal, hollow nerve cord, notochord, pharyngeal pouches and a tail that extends beyond the anus.</i>

Essential Questions	<i>What makes a chordate a chordate?</i>
Priority Standards	<p>Reading Standards for Literacy in Science and Technical Subjects Grades 11-12 students: RST 2 - Determine the central ideas of conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms. RST 3 - Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST 4 - Determine the meaning of symbols, key terms and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics. RST 7 - Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST 8 - Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information. RST 9 - Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p> <p>Writing Standards for Literacy in Science and Technical Subjects Grades 11-12 students: WHST 2 (a-e)- Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. WHST 7 - Conduct short as well as more sustained research projects to answer a question (including self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation. WHST 8 - Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format of citation. WHST 9 - Draw evidence from informational texts to support analysis, reflection, and research</p>
Performance Expectations (Student outcomes)	<p>The students will be able to</p> <ul style="list-style-type: none"> ➤ state the characteristic anatomical features of all chordates. ➤ identify the major groups of chordate animals.

Strategies/Modes	Materials/Resources	Assessments
<ul style="list-style-type: none"> ➤ Student/and or teacher lead ➤ Google presentations ➤ Lab experiments ➤ Collaborative groups ➤ Individual reading/ vocabulary building ➤ Individual note taking (T chart, graphic organizers, concept mapping, etc..) 	<ul style="list-style-type: none"> ➤ TEXT - Prentice Hall Biology by Miller and Levine ➤ http://animals.nationalgeographic.com/animals/ ➤ www.biologycorner.com ➤ http://animaldiversity.org/ 	<p><u>Summative Assessments</u></p> <ul style="list-style-type: none"> ➤ Final Exam ➤ Final Project <p><u>Formative Assessments</u></p> <ul style="list-style-type: none"> ➤ unit test ➤ quizzes ➤ lab reports

UNIT 7 - Fishes

Subject: Grade: Time Frame:	Zoology Grades 10-12 2 weeks
CCSS Overarching Standards	Literacy Standards CCR Anchor Standard 2 for Reading - Determine central ideas or themes of a text and analyze their development; summarize they key supporting details and ideas. CCR Anchor Standard 7 for Reading - Integrate and evaluate content presented in diverse formats and media, including visually and quantitatively, as well as in words. CCR Anchor Standard 8 for Reading - Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence. CCR Anchor Standard 9 for Reading - Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take. CCR Anchor Standard 10 for Reading - Read and comprehend complex literary and informational texts independently and proficiently. CCR Anchor Standard 2 for Writing - Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content. CCR Anchor Standard 7 for Writing - Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation. CCR Anchor Standard 8 for Writing - Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism. CCR Anchor Standard 9 for Writing - Draw evidence from literary or informational texts to support analysis, reflection, and research.
Enduring Understanding	<i>Fishes can be classified into 3 distinct classes each with a unique set of anatomical and physiological characteristics.</i>

Essential Questions	<p><i>How does the body plan of a jawless fish vary from a shark or bony fish?</i></p> <p><i>What evolutionary adaptations have developed within the fish classes to promote success within the seas?</i></p>
Priority Standards	<p>Reading Standards for Literacy in Science and Technical Subjects Grades 11-12 students:</p> <p>RST 2 - Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.</p> <p>RST 3 - Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.</p> <p>RST 4 - Determine the meaning of symbols, key terms and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.</p> <p>RST 7 - Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.</p> <p>RST 8 - Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.</p> <p>RST 9 - Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p> <p>Writing Standards for Literacy in Science and Technical Subjects Grades 11-12 students:</p> <p>WHST 2 (a-e)- Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.</p> <p>WHST 7 - Conduct short as well as more sustained research projects to answer a question (including self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.</p> <p>WHST 8 - Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format of citation.</p> <p>WHST 9 - Draw evidence from informational texts to support analysis, reflection, and research</p>
Performance Expectations (Student outcomes)	<p>The students will be able to</p> <ul style="list-style-type: none"> ➤ compare and contrast the anatomy, physiology and characteristic species of animals within Phylum Agnatha, Phylum Chondrichthyes and Phylum Osteichthyes. ➤ create a dichotomous key to be used to categorize various species of fish.

Strategies/Modes	Materials/Resources	Assessments
<ul style="list-style-type: none"> ➤ Student/and or teacher lead Google presentations ➤ Lab experiments ➤ Collaborative groups ➤ Individual reading/ vocabulary building ➤ Individual note taking (T chart, graphic organizers, concept mapping, etc..) 	<ul style="list-style-type: none"> ➤ VIDEO - "Life on Earth chapter 5 conquest of the waters" ➤ TEXT - Prentice Hall Biology by Miller and Levine ➤ http://animals.nationalgeographic.com/animals/ ➤ www.biologycorner.com ➤ http://animaldiversity.org/ 	<p><u>Summative Assessments</u></p> <ul style="list-style-type: none"> ➤ Final Exam ➤ Final Project <p><u>Formative Assessments</u></p> <ul style="list-style-type: none"> ➤ unit test ➤ quizzes ➤ lab reports (perch dissection, how does temperature affect respiration rates of fish?)

UNIT 8 - Amphibians

Subject: Grade: Time Frame:	Zoology Grades 10-12 1 week
CCSS Overarching Standards	Literacy Standards CCR Anchor Standard 2 for Reading - Determine central ideas or themes of a text and analyze their development; summarize they key supporting details and ideas. CCR Anchor Standard 7 for Reading - Integrate and evaluate content presented in diverse formats and media, including visually and quantitatively, as well as in words. CCR Anchor Standard 8 for Reading - Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence. CCR Anchor Standard 9 for Reading - Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take. CCR Anchor Standard 10 for Reading - Read and comprehend complex literary and informational texts independently and proficiently. CCR Anchor Standard 2 for Writing - Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content. CCR Anchor Standard 7 for Writing - Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation. CCR Anchor Standard 8 for Writing - Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism. CCR Anchor Standard 9 for Writing - Draw evidence from literary or informational texts to support analysis, reflection, and research.
Enduring Understanding	<i>Members of Class Amphibia display unique traits for success on land.</i>

Essential Questions	<p><i>What evolutionary adaptations are seen in amphibians that allow for success in a terrestrial environment?</i></p> <p><i>Why does the amphibian animal still depend on water for its survival?</i></p> <p><i>How can amphibians help humans learn about the "healthiness" of our environment?</i></p>
Priority Standards	<p>Reading Standards for Literacy in Science and Technical Subjects Grades 11-12 students:</p> <p>RST 2 - Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.</p> <p>RST 3 - Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.</p> <p>RST 4 - Determine the meaning of symbols, key terms and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.</p> <p>RST 7 - Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.</p> <p>RST 8 - Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.</p> <p>RST 9 - Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p> <p>Writing Standards for Literacy in Science and Technical Subjects Grades 11-12 students:</p> <p>WHST 2 (a-e)- Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.</p> <p>WHST 7 - Conduct short as well as more sustained research projects to answer a question (including self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.</p> <p>WHST 8 - Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format of citation.</p> <p>WHST 9 - Draw evidence from informational texts to support analysis, reflection, and research</p>
Performance Expectations (Student outcomes)	<p>The students will be able to</p> <ul style="list-style-type: none"> ➤ discuss the distinct traits of all animals found within the Phylum Amphibia. ➤ compare and contrast frogs, salamanders and caecilians in terms of anatomy, physiology, habitat, range and reproduction. ➤ discuss the importance of the amphibian evolution (i.e, movement to a terrestrial habitat)

Strategies/Modes	Materials/Resources	Assessments
<ul style="list-style-type: none"> ➤ Student/and or teacher lead Google presentations ➤ Lab experiments ➤ Collaborative groups ➤ Individual reading/ vocabulary building ➤ Individual note taking (T chart, graphic organizers, concept mapping, etc..) 	<ul style="list-style-type: none"> ➤ VIDEO - "Life on Earth - chapter 6 invasion of the land" ➤ TEXT - Prentice Hall Biology by Miller and Levine ➤ http://animals.nationalgeographic.com/animals/ ➤ www.biologycorner.com ➤ http://animaldiversity.org/ 	<p><u>Summative Assessments</u></p> <ul style="list-style-type: none"> ➤ Final Exam ➤ Final Project <p><u>Formative Assessments</u></p> <ul style="list-style-type: none"> ➤ unit test ➤ quizzes ➤ lab reports

UNIT 9 - Reptiles & Birds

Subject: Grade: Time Frame:	Zoology Grades 10-12 2 weeks
CCSS Overarching Standards	Literacy Standards CCR Anchor Standard 2 for Reading - Determine central ideas or themes of a text and analyze their development; summarize they key supporting details and ideas. CCR Anchor Standard 7 for Reading - Integrate and evaluate content presented in diverse formats and media, including visually and quantitatively, as well as in words. CCR Anchor Standard 8 for Reading - Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence. CCR Anchor Standard 9 for Reading - Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take. CCR Anchor Standard 10 for Reading - Read and comprehend complex literary and informational texts independently and proficiently. CCR Anchor Standard 2 for Writing - Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content. CCR Anchor Standard 7 for Writing - Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation. CCR Anchor Standard 8 for Writing - Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism. CCR Anchor Standard 9 for Writing - Draw evidence from literary or informational texts to support analysis, reflection, and research.

Enduring Understanding	<i>Reptiles and birds are vertebrate animals with many similar characteristics to not only each other, but also to dinosaurs.</i>
Essential Questions	<i>Why can a bird be thought of as a feathered reptile? Why is the amniote egg such an important adaptation with regard to animal reproduction?</i>
Priority Standards	<p>Reading Standards for Literacy in Science and Technical Subjects Grades 11-12 students: RST 2 - Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms. RST 3 - Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST 4 - Determine the meaning of symbols, key terms and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics. RST 7 - Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST 8 - Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information. RST 9 - Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p> <p>Writing Standards for Literacy in Science and Technical Subjects Grades 11-12 students: WHST 2 (a-e)- Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. WHST 7 - Conduct short as well as more sustained research projects to answer a question (including self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation. WHST 8 - Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format of citation. WHST 9 - Draw evidence from informational texts to support analysis, reflection, and research</p>
Performance Expectations (Student outcomes)	<p>The students will be able to</p> <ul style="list-style-type: none"> ➤ articulate the key characteristics of animals found within Phylum Reptilia. ➤ articulate the key characteristics of animals found within Phylum Aves. ➤ synthesize data/information and hypothesize the evolutionary history of reptiles and birds.

Strategies/Modes	Materials/Resources	Assessments
<ul style="list-style-type: none"> ➤ Student/and or teacher lead Google presentations ➤ Lab experiments ➤ Collaborative groups ➤ Individual reading/ vocabulary building ➤ Individual note taking (T chart, graphic organizers, concept mapping, etc..) 	<ul style="list-style-type: none"> ➤ VIDEO - "Life on Earth - chapter 7 victors of dry land ➤ TEXT - Prentice Hall Biology by Miller and Levine and chapter 8 lords of the air" ➤ http://animals.nationalgeographic.com/animals/ ➤ www.biologycorner.com ➤ http://animaldiversity.org/ 	<p><u>Summative Assessments</u></p> <ul style="list-style-type: none"> ➤ Final Exam ➤ Final Project <p><u>Formative Assessments</u></p> <ul style="list-style-type: none"> ➤ unit test ➤ quizzes ➤ lab reports (owl pellet dissection, feather anatomy lab)

UNIT 10 - Mammals

Subject: Grade: Time Frame:	Zoology Grades 10-12 2 weeks
CCSS Overarching Standards	Literacy Standards CCR Anchor Standard 2 for Reading - Determine central ideas or themes of a text and analyze their development; summarize they key supporting details and ideas. CCR Anchor Standard 7 for Reading - Integrate and evaluate content presented in diverse formats and media, including visually and quantitatively, as well as in words. CCR Anchor Standard 8 for Reading - Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence. CCR Anchor Standard 9 for Reading - Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take. CCR Anchor Standard 10 for Reading - Read and comprehend complex literary and informational texts independently and proficiently. CCR Anchor Standard 2 for Writing - Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content. CCR Anchor Standard 7 for Writing - Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation. CCR Anchor Standard 8 for Writing - Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism. CCR Anchor Standard 9 for Writing - Draw evidence from literary or informational texts to support analysis, reflection, and research.
Enduring Understanding	<i>Animals classified as mammals display distinctive characteristics as well as display distinct reproduction modes that promote their widespread success on Earth.</i>

Essential Questions	<i>What are the key features found in all mammals? How do mammals reproduce? Distinguish between a monotreme, marsupial and placental mammal.</i>
Priority Standards	<p>Reading Standards for Literacy in Science and Technical Subjects Grades 11-12 students: RST 2 - Determine the central ideas of conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms. RST 3 - Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST 4 - Determine the meaning of symbols, key terms and other domain-specific words and phrases as the they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics. RST 7 - Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST 8 - Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information. RST 9 - Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p> <p>Writing Standards for Literacy in Science and Technical Subjects Grades 11-12 students: WHST 2 (a-e)- Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. WHST 7 - Conduct short as well as more sustained research projects to answer a question (including self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation. WHST 8 - Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format of citation. WHST 9 - Draw evidence from informational texts to support analysis, reflection, and research</p>
Performance Expectations (Student outcomes)	<p>The students will be able to</p> <ul style="list-style-type: none"> ➤ communicate the unique characteristics of all mammals. ➤ distinguish between mammals in terms of their reproduction modes. ➤ justify scientific evidence and theories support sequence/pattern of animal evolution.

Strategies/Modes	Materials/Resources	Assessments
<ul style="list-style-type: none"> ➤ Student/and or teacher lead ➤ Google presentations ➤ Lab experiments ➤ Collaborative groups ➤ Individual reading/ vocabulary building ➤ Individual note taking (T chart, graphic organizers, concept mapping, etc..) 	<ul style="list-style-type: none"> ➤ VIDEO - "Life on Earth chapter 9 rise of the mammals and chapter 10 theme and variations" ➤ DVD - "March of the Penguins" ➤ TEXT - Prentice Hall Biology by Miller and Levine ➤ http://animals.nationalgeographic.com/animals/ ➤ www.biologycorner.com ➤ http://animaldiversity.org/ 	<p><u>Summative Assessments</u></p> <ul style="list-style-type: none"> ➤ Final Exam ➤ Final Project <p><u>Formative Assessments</u></p> <ul style="list-style-type: none"> ➤ unit test ➤ quizzes ➤ lab reports (rat dissection)