

## Shoreline School District Secondary Science 9<sup>th</sup>-10<sup>th</sup> Grade Standard/Honors Program Differentiated Performance Expectations

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### Science Programs at Shorecrest and Shorewood High Schools:

#### 9<sup>th</sup> Grade: Integrated Physical Science

This course provides a practical and broad-based exploration of the physical sciences. Topics include introductions to physics, chemistry, geology, meteorology, and astronomy. Students will develop critical-thinking and problem-solving skills through direct experience in the laboratory, in research investigations, in inquiry-based activities, and in role-playing and case studies. Emphasis is placed on the use of the scientific method to approach and solve problems and on the clear communication of the knowledge and skills gained in written and oral form. All students are expected to read and write regularly as a vehicle for gaining scientific literacy and demonstrating understanding and reasoning.

Required Materials: course notebook and course textbook

#### 9<sup>th</sup> Grade: Honors Integrated Physical Science

This course will explore the same topics and skills as the general IPS course but with greater depth and detail. In addition to the expectations of students described for the general IPS course, students are expected to use critical thinking skills as they independently work to solve problems, analyze and interpret data, and design experiments. Students will be asked to engage in routine outside reading that may occur over the summer in preparation for the course or in addition to regularly assigned homework. To be successful in this course, students must possess an established skill base which includes: basic algebra, above grade-level reading, and the ability to communicate ideas in writing with a high level of supporting detail and attention to standard writing conventions.

Required Materials: course notebook, course textbook, scientific calculator

Prerequisites: B or better in Algebra I (highly recommended), B or better in literature/composition course, B or better in previous science course.

**The student uses scientific principles and demonstrates their understanding of scientific concepts (properties and characteristics of physical and living things, interconnections of physical and living systems, exchanges of matter and energy between physical and living things) through written and oral communication.**

Performance Standard	Standard	Honors
<b>Written work</b>	<p>Student answers questions, analyzes data, and expresses ideas in written work with complete sentences which incorporate questions and comprehensively answers the questions posed.</p> <p>Student writes legibly and conforms to standard writing conventions (including spelling, grammar, tenses, and sentence structure).</p>	<p><b><u>In addition to the expectations of students in the standard program:</u></b></p> <p>Student expresses a depth of understanding and insight that exceeds the basic requirements (does more than simply answer the question).</p> <p>Student connects concepts to other experiences and situations and poses new questions.</p>

<p><b>Homework, assignments, and readings</b></p>	<p>Student regularly completes readings and assigned work to be done in class and at home.</p> <p>Readings and work are completed and turned in by assigned times and dates.</p> <p>Student takes the initiative to determine and complete work missed by excused or pre-planned absences.</p>	<p><b><u>In addition to the expectations of students in the standard program:</u></b></p> <p>Student independently consults resource material obtained from sources other than those provided by course texts to comprehensively explore, understand, and complete assignments.</p> <p>In an effort to ensure thoughtful, thorough, and detailed completion of work and to manage, school work, home life, and extracurricular activities, the student begins working on available coursework well in advance of the due date and may turn in work prior to the due date.</p>
<p><b>Course notebook</b></p>	<p>Student maintains and brings course notebook to class daily.</p> <p>Pages in the notebook are dated and numbered.</p> <p>Work in the notebook is the student's original work and conforms to written work guidelines.</p> <p>Assignments in the notebook are clearly labeled and are completed in the order of their assignment.</p>	<p><b><u>In addition to the expectations of students in the standard program:</u></b></p> <p>Student continually reflects on learning and revises and edits work. Although work should not be removed or erased from course notebook, insight gained from subsequent class discussions and explorations may be added at the end of assignments.</p> <p>Student recognizes areas of struggle with course content and independently chooses to practice with supplemental work. Such work may consist of additional problems or questions not specifically assigned by the teacher.</p>
<p><b>Formal discussions</b></p>	<p>Student answers questions and actively engages in and contributes to class discussions.</p> <p>Student responds to teacher or peer-posed questions with specific content knowledge.</p> <p>Student recognizes and</p>	<p><b><u>In addition to the expectations of students in the standard program:</u></b></p> <p>Student initiates and/or furthers class discussions with their questions, insights, and learning gained from independent review of material found in news, magazine, or</p>

	positively responds to the contributions of others and does not dominate discussions.	other sources.  Student responds with a clear depth of understanding and sophistication of thought during discussions.
<b>Exams</b>	Student is expected to answer questions, analyze data, and express learning of concepts, readings, activities, videos, and other curriculum materials presented in class.	<b><u>In addition to the expectations of students in the standard program:</u></b>  Student is expected to draw from class concepts, readings, activities, videos, other curriculum materials, personal experience, prior knowledge, and individual research to apply learning to new situations.  Student responds to exam questions and problems in a clear and concise manner and demonstrates logical thought. Student responses to exam questions and problems demonstrate a depth of thought that, although the correct answer may not be arrived at, the logic and reasoning the student used to arrive at the answer may be followed and evaluated.

### The Student Knows and Uses the Skills and Processes of Science and Technology

<b>Performance Standard</b>	<b>Standard</b>	<b>Honors</b>
<b>Laboratory investigation and activities</b>	<p>Student is prepared for labs and activities by reading the lab in advance; familiarizing themselves with materials, procedures, and safety precautions; and preparing for the lab in their course notebook.</p> <p>Student is prepared to ask questions for clarification.</p> <p>Student follows all procedures, safety precautions, and teacher instructions while performing the lab or activity.</p>	<p><b><u>In addition to the expectations of students in the standard program:</u></b></p> <p>Student is able to understand and clearly explain the purpose behind experimental procedures.</p> <p>Student is able to take familiar lab materials and procedures and pose new questions to be explored and design procedures and instruments to test these new questions.</p> <p>Student is able to calmly,</p>

	<p>Student shares leadership and responsibility for the lab with lab partner(s).</p> <p>Student behavior during the lab is safe, responsible, and mature.</p> <p>Student cleans up and puts away lab materials without the need for prompting.</p> <p>Student completes lab analysis work at home if they are unable to complete it in class.</p> <p>Student independently arranges with the teacher to make up lab work missed by excused absences in a timely manner.</p> <p>Student is able to identify the question being asked by an experimental investigation and writes a hypothesis that conforms to standard science practice. At the conclusion of the investigation, the student is able to clearly state support for or refute the experimental hypothesis.</p> <p>Student identifies variables in experimental investigations and is able to employ proper controls.</p>	<p>maturely, and reasonably deal with unexpected difficulties while conducting laboratory investigations.</p> <p>Student independently consults resource material obtained from sources other than those provided by course texts to understand, explore, and attempt to answer proposed questions.</p> <p>Student is able to design and conduct complex laboratory investigations that may have several variables and employ multiple controls.</p>
<p><b>Projects, research papers, and formal lab reports</b></p>	<p>Student produces products that are neatly composed, meet all project guidelines, have been proofed and edited, and are turned in on time.</p> <p>Student writes clear and descriptive objectives for science projects / papers / reports.</p> <p>Student produces scientific projects / papers / reports that conform to standard writing and science conventions, including objectivity and lack of bias and personal tone.</p> <p>Student produces scientific</p>	<p><b><u>In addition to the expectations of students in the standard program:</u></b></p> <p>Student includes <u>relevant</u> information through independent research beyond the basic requirements of the project / paper / report. Student finds including this information <u>necessary</u> to fully communicate their learning and understanding (not simply to make the paper longer).</p> <p>Student begins project / paper / report well in advance of the due date, independently breaking the project / paper /</p>

	<p>projects / papers / reports that include diagrams, tables, graphs, and charts that are neatly prepared, properly labeled, and conform to standard scientific practices.</p> <p>Student prepares a bibliography to accompany scientific projects / papers / reports that conforms to standard MLA or APA format.</p>	<p>report into smaller components. The student continuously works on these components, revising the work.</p> <p>Student independently seeks input from teachers, peers, and/or parents as part of the revising process.</p> <p>Student <u>may</u> choose to turn the project / paper / report in prior to the due date to ensure its thorough completion.</p> <p>Student annotates the bibliography (if required), commenting on the type and quality of information provided by the source.</p>
<p><b>Mathematics in science</b></p>	<p>Student employs basic mathematics to understand course concepts.</p> <p>Student recognizes and understands the importance of mathematical formulae as a universal language of science.</p> <p>Student makes accurate measurements using the metric system and reports the measurements according to standard science principles and practices.</p> <p>Student constructs graphs that are of appropriate type for the information being communicated, are neatly prepared, properly labeled, and conform to standard scientific practices.</p>	<p><b><u>In addition to the expectations of students in the standard program:</u></b></p> <p>Student routinely identifies the need for and performs conversions between various metric units.</p> <p>Student intensively employs algebra, geometry, and graphical analysis to analyze and solve problems.</p> <p>Student is able to identify important information, weed out extraneous information, identify unknown variables, and identify and employ correct mathematical and scientific expressions to solve problems.</p> <p>Student routinely calculates and reports the percentage of error in their measurements.</p> <p>Student is able to interpret graphs to understand the relationship between variables. Student is able to consider a scientific or mathematical expression, identify the relationship between the variables, and predict the graph that appropriately</p>

		communicates the relationship.
<b>Model use and building</b>	<p>Student uses and/or builds models to understand scientific concepts, principles, and theories.</p> <p>Models are handles and/or prepared with care, skill, and attention to detail.</p> <p>Student is able to clearly articulate and communicate how the model aids in the explanation of complex scientific concepts.</p>	<p><b><u>In addition to the expectations of students in the standard program:</u></b></p> <p>Student is able to identify and communicate the limitations of the model and offer alternative models.</p> <p>Student uses the model to make predictions.</p> <p>Student uses the model to identify and explain analogous scenarios.</p>
<b>Student conduct and behavior</b>	<p>Student conducts him/herself safely, responsibly, and with maturity. Student's conduct in the class enhances (and does not impede) the learning of others.</p> <p>Student is able and willing to work with any peer in an effective and productive manner.</p>	<p><b><u>In addition to the expectations of students in the standard program:</u></b></p> <p>Student conducts him/herself as an exemplary citizen, demonstrating leadership and string communication skill and work ethic.</p> <p>Student is able to work synergistically with peers during group work.</p>