

# High School Preparatory Course Certification

## Science Rubric

School:

Course:

Evaluators:

### **Working Definition:**

A “high school-ready” course consists of intellectually rigorous coursework that covers sufficient content and requires students to demonstrate the higher-order thinking skills and develop the academic and personal behaviors that will enable them to be successful in high school.

Thank you for helping the DOE to evaluate middle school courses for HSPCC certification.

The HSPCC certification process is designed to recognize high school courses that are preparing students for high school and to reward schools with credit on the high school readiness metric of the Progress Report for all students who pass one these courses. In order to earn HSPCC certification, a course must pass both a quantitative and a qualitative evaluation.

This packet is designed to help you make a qualitative determination of the high school-readiness of a course. The qualitative evaluation focuses on two main areas: **Content** and **Academic Rigor**.

### **What you should have**

In addition to this evaluation packet, you should also have received a complete application for the course you are evaluating. That application should include the following:

1. A syllabus, curriculum map, scope and sequence, or equivalent document
2. A list of all key texts that are used in the course
3. Copies of all major assignments that students are expected to complete (including rubrics, scoring guides, etc.)
4. Copies of graded student work for two major assignments
5. An explanation of the grading policy
6. An explanation of any prerequisite requirements for student to enroll in the course
7. Written responses to short answer questions

*Where you can confidently make a decision on the course's qualitative evaluation outcome (in either direction), please do so. If you require the submission of an additional course artifact or document, please contact Valerie Samn ([vsamn@schools.nyc.gov](mailto:vsamn@schools.nyc.gov)).*

### **What is included in the application review packet**

1. **Two worksheets**, one for each category – these worksheets are intended to help you focus on aspects of the application that pertain to the categories covered in the rubric.
2. A **rubric** with 2 categories.
3. A **matrix** that demonstrates how the Rubric Determinations will be used in the Overall Determination.
4. A **guide** for your school observations.
5. A **reviewer recommendation** section where you will provide a recommendation based on your overall impression of the course.
6. An **application feedback form** where you will provide concrete strengths and areas for growth that will be shared with the school.

**Recommended use of the packet**

1. Read the application.
2. Fill out the rubric.

*The category worksheets are included to assist in your rubric determination. While they are not officially “counted” as part of the evaluation, we ask that you complete them as part of your review process.*

3. Complete the Reviewer Recommendation.

*Based on your review of the entire application, would you recommend that this course be certified as High School-Ready? Why or why not?*

4. Complete the Application Feedback form.
  - a. What are some strengths of the course that emerge from the application?
  - b. What are some areas for growth that emerge from the application?

<b>CONTENT Worksheet (Science)</b>	Very Often	Often	Somewhat Often	Infrequent or Never
<p><b><i>Based on the evidence provided, are students prepared for the content knowledge expectations of students who enroll in a high school Science course in the specific subject?</i></b></p> <ul style="list-style-type: none"> <li>• Students understand the KEY concepts or big ideas of the subject.</li> <li>• <i>Content is aligned to the NYS Science standards at the 8<sup>th</sup> grade level or beyond.</i> (See attached subject-specific concept lists to help you guide your determination.)</li> </ul>				
<p><b><i>Based on the evidence provided, are students prepared for the content knowledge expectations of students who enroll in a high school science course?</i></b></p> <ul style="list-style-type: none"> <li>• Students understand and can apply the scientific method accurately designing and conducting scientific investigations during which they formulate and test hypotheses</li> <li>• Students conduct scientific labs.</li> <li>• Students use mathematical skills/concepts to solve scientific problems.</li> <li>• Students problem solve using various strategies and approaches.</li> <li>• Students are skilled in interpreting models (graphs, diagrams, etc).</li> </ul>				

	Very Often	Often	Somewhat Often	Infrequent or Never
<p><b><i>Based on the evidence provided, are students asked to and prepared to demonstrate the Reading (RST) and Writing (WHST) skills articulated in the 6-8 grade expectations of the CCLS? The relevant anchor standards are paraphrased below.</i></b></p> <ul style="list-style-type: none"> <li>• Students analyze the author’s purpose in providing an explanation, describing a procedure, or discussing an experiment in a text. (RST.6)</li> <li>• Students determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions. (RST.2)</li> <li>• Students distinguish among facts, reasoned judgment based on research findings, and speculation in a text. (RST.8)</li> <li>• Students integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table). (RST.7)</li> <li>• Students are asked to write discipline-specific arguments supported by accurate data and logical reasoning, while distinguishing the claims from opposing claims. (WHST.1)</li> <li>• Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (WHST.4)</li> <li>• Students write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences. (WHST.10)</li> <li>• Students, with guidance and adult/peer support, develop and strengthen writing through the writing process, focusing on purpose and audience. (WHST.5)</li> <li>• Students use technology to produce and publish writing and to interact with others. (WHST.6)</li> <li>• Students use academic language in their writing. (WHST.2d)</li> <li>• Students integrate graphics (e.g. charts, tables), and multimedia when useful to aiding comprehension. (WHST.2a).</li> <li>• Students conduct short research projects drawing evidence from the text of several sources in which they assess the credibility of a source and quote or paraphrase from the texts while avoiding plagiarism. (WHST.7-9)</li> </ul>				

	Very Often	Often	Somewhat Often	Infrequent or Never
<p><b><i>Are students in the course exposed to the experimental design skills expected of students who enroll in an introductory science course in high school?</i></b></p> <ul style="list-style-type: none"> <li>• Students demonstrate the ability to create a hypothesis in an experiment.</li> <li>• Students demonstrate the ability to distinguish between research and testable questions and can design testable questions with minimal guidance.</li> <li>• Students demonstrate the ability to identify independent variables, dependent variables and constants in an experiment.</li> <li>• Students demonstrate a strong knowledge of measurement in data tables and graphs.</li> <li>• Students demonstrate the ability to design appropriate data tables and graphs and can graph their findings independently.</li> <li>• Students demonstrate the ability to use claims, evidence, and reasoning in experiments.</li> <li>• Students demonstrate the ability to identify and use standard lab equipment.</li> <li>• Students demonstrate the ability to complete a lab report.</li> <li>• Students demonstrate a working knowledge of safety procedures in a lab setting.</li> </ul>				

	Very Often	Often	Somewhat Often	Infrequent or Never
<p><b><i>Are students in the course given multiple opportunities to practice academic behaviors comprised of work habits, organizational, communication, and problem-solving skills to help prepare them for success in high school and careers?</i></b></p> <p><i>Motivation</i></p> <ul style="list-style-type: none"> <li>• Students are provided with opportunities to set long term and short term goals.</li> <li>• Students are provided with opportunities to take initiative in their learning.</li> </ul> <p><i>Engagement</i></p> <ul style="list-style-type: none"> <li>• Students have opportunities to develop their voice.</li> </ul> <p><i>Work habits and organizational skills</i></p> <ul style="list-style-type: none"> <li>• Students are given opportunities to persist through task completion.</li> <li>• Students are given opportunities to work independently.</li> <li>• Students have opportunities to learn time management and organizational skills.</li> <li>• Students are able to work with accuracy and precision.</li> </ul> <p><i>Communication/collaboration skills</i></p> <ul style="list-style-type: none"> <li>• Students have the opportunity to learn to work collaboratively.</li> <li>• Students have the opportunity to learn to communicate ideas.</li> <li>• Students develop methods of asking for help when necessary.</li> <li>• Students have the opportunity to learn to communicate in multiple formats, including appropriate use of digital literacy skills.</li> <li>• Students develop the ability to engage in scientific discourse (i.e., discuss the significance of experimental data) and engage in scientific argument (i.e., debate the reasoning behind a conclusion).</li> </ul> <p><i>Self-regulation</i></p> <ul style="list-style-type: none"> <li>• The curriculum and instructional activities provide opportunities to teach and develop problem-solving skills.</li> <li>• Students have opportunities to reflect on their learning.</li> </ul>				

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<b>Content Demand (8<sup>th</sup> Grade Science)</b>	<b>Yes</b>	<b>No</b>	<b>Notes</b>
Reproduction, Heredity, and Evolution <ul style="list-style-type: none"> <li>• Reproductive patterns and the continuity of life</li> <li>• Patterns of development and the continuity of life</li> <li>• Heredity</li> <li>• Role of sexual and asexual reproduction to human growth and development (meiosis/mitosis)</li> <li>• Natural selection: the driving mechanism behind evolution</li> <li>• Genetic diseases/case studies</li> </ul>			
Forces of Motion on Earth <ul style="list-style-type: none"> <li>• Motion and Newton's laws</li> </ul>			
Earth, Sun, Moon system <ul style="list-style-type: none"> <li>• Seasons and cycles: relationships among the Earth, Sun, and Moon</li> <li>• Solar System</li> </ul>			
Humans in their environment: needs and tradeoffs (Long-term Science Investigations) <ul style="list-style-type: none"> <li>• Natural resources and energy</li> <li>• Nutrition and food choices: impact on the environment and on</li> </ul>			

our health			
• Homeostasis and health			

<b>Content Demand (Living Environment)</b>	<b>Yes</b>	<b>No</b>	<b>Notes</b>
<b>The general structure and function of cells</b> <ul style="list-style-type: none"> <li>• The parts of the cell</li> <li>• The range and variation of cells (different types of cells, cells perform different functions for an organism, different types of organisms have cells specialized for different functions)</li> <li>• The importance of water and carbon to cells</li> <li>• The process of cell division (mitosis and meiosis) and the production of new cells and the passing on of genetic information</li> <li>• The role of DNA in eukaryotic cells</li> <li>• The role of cells in transforming energy from one form to another (photosynthesis and respiration), the production of ATP, and the chemical reactions involved in cell function</li> <li>• The transporting/exchange of materials across a membrane</li> </ul>			
<b>The genetic principles that guide the inheritance of biological traits</b> <ul style="list-style-type: none"> <li>• Mendel's laws of heredity</li> <li>• The chemical and structural properties of DNA</li> </ul>			

<b>The organization and classification of living systems</b> <ul style="list-style-type: none"> <li>• Multicellular organisms have a variety of specialized cells, tissues, organs, and systems that perform specialized functions</li> <li>• Ways in which living things can be classified based on their internal and external structure, their development, and their DNA sequence</li> </ul>			
<b>Evolution</b> <ul style="list-style-type: none"> <li>• Concept of natural selection</li> <li>• The theory of evolution</li> <li>• How DNA and protein sequences are used to infer evolutionary relationships</li> </ul>			

<b>Content Demand (Earth Science)</b>	<b>Yes</b>	<b>No</b>	<b>Notes</b>
<b>Maps and Measurements</b> <ul style="list-style-type: none"> <li>• Origin of Earth and Our Place in the Universe</li> <li>• Measurements, Reference Tables, Graphing, Nature of Earth Science</li> <li>• Locating Points on the Earth, Latitude, Longitude, Maps</li> <li>• Isomaps</li> </ul>			
<b>Dynamic Earth</b> <ul style="list-style-type: none"> <li>• Structure of Earth and Properties</li> <li>• Convection Cycles and Density</li> <li>• Evidence of Movement</li> <li>• Plate Tectonics</li> </ul>			
<b>Rocks and Minerals</b> <ul style="list-style-type: none"> <li>• Minerals</li> <li>• Igneous Rocks</li> <li>• Metamorphic Rocks</li> </ul>			

<ul style="list-style-type: none"> <li>• Sedimentary Rocks</li> <li>• Mining and Natural Resources</li> </ul>			
<b>Landscapes</b> <ul style="list-style-type: none"> <li>• Water cycle</li> <li>• Hydrology</li> <li>• Weathering Agents</li> <li>• Erosion and Deposition</li> <li>• Soils</li> </ul>			
<b>Earth History</b> <ul style="list-style-type: none"> <li>• Fossils</li> <li>• Geologic Time</li> <li>• Stratigraphy</li> <li>• Radioactive Dating</li> </ul>			
<b>Insolation</b> <ul style="list-style-type: none"> <li>• Arc of Sun's Travel</li> <li>• Seasons</li> <li>• Energy Exchanges in the Atmosphere</li> </ul>			
<b>Meteorology</b> <ul style="list-style-type: none"> <li>• Systems</li> <li>• Models</li> </ul>			
<b>Climate</b> <ul style="list-style-type: none"> <li>• Factors that Affect Climate (Altitude, Latitude)</li> <li>• Water Budget</li> </ul>			
<b>Astronomy</b> <ul style="list-style-type: none"> <li>• Phases of the Moon</li> <li>• Solar System—Eccentricity</li> <li>• Tides</li> <li>• Celestial Observations, HR Diagram</li> </ul>			

<b>ACADEMIC RIGOR – Worksheet (Science)</b>	Very Often	Often	Somewhat Often	Infrequent or Never
<b><i>Based on the evidence provided, is the course material sufficiently rigorous and intellectually challenging?</i></b>				
<b><i>In order to pass the course, are students expected to complete tasks that demonstrate mastery independently without significant assistance from the teacher or peers?</i></b>				
<b><i>Are the texts students are expected to read academically challenging enough to prepare them for a high school science course?</i></b> <ul style="list-style-type: none"> <li>• The language used is academic and discipline-specific.</li> <li>• Texts require the reader to have familiarity discipline knowledge.</li> <li>• Graphics (when used) are complex and their interpretation is essential to understanding the text and/or graphics provide an independent source of information.</li> <li>• Students read rigorous and intellectually demanding texts as defined in Appendix A of the Common Core Learning Standards.</li> </ul>				
<b><i>Based on the evidence provided, are students asked to complete tasks that ask them to use strategic thinking and reasoning (DOK Level 3) and/or extended thinking (DOK Level 4)?</i></b> <ul style="list-style-type: none"> <li>• Course work requires students to use reasoning and to develop a plan to approach a problem.</li> <li>• Course work requires decision making and justification.</li> <li>• Course work requires students to go beyond the text and explain, generalize, or connect ideas.</li> <li>• Course work requires students to develop a logical argument and cite evidence.</li> <li>• Course work involves an investigation or application to real world problems.</li> <li>• Course work requires students to analyze or synthesize information for multiple sources.</li> <li>• Course work requires time to research, problem solve, and process multiple conditions of the problem.</li> </ul>				

## Science Course Rubric

### Category I: **CONTENT**

- *Is the material taught in this class the material that students are expected to know when beginning a high school level science course?*
- *Are students who pass this course prepared with the skills they will need to succeed in a high school level science course?*
- *In order to pass the course are students expected to complete work to a level such that they demonstrate mastery of the content and skills and can apply what they learn to new and novel situations without the support of the teacher?*

	<b><i>Considering the determinations you made using the Content Worksheet criteria, how would you rate the CONTENT of this course?</i></b>
<b>High School-Ready</b>	<ul style="list-style-type: none"> <li>• Students who pass the class will be familiar with most, if not all, of the content knowledge they are expected to know in an introductory high school course.</li> <li>• The skills embedded in this course are clearly and undoubtedly sufficient to prepare students for an introductory high school course.</li> </ul>
<b>Likely High School- Ready</b>	<ul style="list-style-type: none"> <li>• Students are exposed to most of the content knowledge they are expected to know in an introductory high school course.</li> <li>• The skills embedded in this course are likely to be sufficient to prepare students for an introductory high school course.</li> </ul>
<b>Potentially High School-Ready</b>	<ul style="list-style-type: none"> <li>• Students are exposed to some of the content knowledge they are expected to know in an introductory high school course.</li> <li>• The skills embedded in this course may be sufficient to prepare students for an introductory high school course.</li> </ul>
<b>Unlikely to be High School-Ready</b>	<ul style="list-style-type: none"> <li>• The course does not cover enough of the content knowledge expected to prepare students for introductory level course.</li> <li>• The skills embedded in this course are unlikely to be sufficient to prepare students for an introductory high school course.</li> </ul>

### Category II: **ACADEMIC RIGOR**

- *Is the material taught in this class sufficiently rigorous to consider this course High School-Ready?*
- *Are students expected to complete tasks that are intellectually rigorous?*

	<b><i>Considering the determinations you made using the Academic Rigor Worksheet criteria, how would you rate the ACADEMIC RIGOR of this course?</i></b>
<b>High School-Ready</b>	<ul style="list-style-type: none"> <li>• Academic tasks are very challenging and students are required to engage in an in-depth way on a regular basis.</li> <li>• Students are regularly asked to complete demanding work requiring higher-order thinking that will prepare them for an introductory high school course.</li> </ul>
<b>Likely High School- Ready</b>	<ul style="list-style-type: none"> <li>• Academic tasks are challenging and students are required to engage in an in-depth way on a regular basis.</li> <li>• Some of the work that students are asked to complete requires higher-order thinking that will prepare them for an introductory high school course.</li> </ul>
<b>Potentially High School-Ready</b>	<ul style="list-style-type: none"> <li>• Academic tasks are challenging but students interact with the material inconsistently OR course content is inconsistently challenging.</li> <li>• Very little of work that students are asked to complete requires higher-order thinking that will prepare them for an introductory high school course.</li> </ul>
<b>Unlikely to be High School-Ready</b>	<ul style="list-style-type: none"> <li>• Academic tasks are either not challenging enough OR students are not required to engage with material at anything but a cursory level.</li> <li>• Almost none of the work that students are asked to complete requires higher-order thinking that will prepare them for an introductory high school course.</li> </ul>

## Overall Determination

In order to “Pass” the Qualitative Evaluation, a course must be eligible for either a 1- or 3-year certification according to the Rubric Determination **AND** receive a “Yes” designation from the Reviewer Recommendation.

### Rubric Determination

		ACADEMIC RIGOR			
		High School-Ready	Likely High School-Ready	Potentially High School-Ready	Unlikely to be High School-Ready
C O N T E N T	High School-Ready	3-Year Certification	3-Year Certification	Does not meet	Does not meet
	Likely High School-Ready	3-Year Certification	1-Year Certification	Does not meet	Does not meet
	Potentially High School-Ready	Does not meet	Does not meet	Does not meet	Does not meet
	Unlikely to be High School-Ready	Does not meet	Does not meet	Does not meet	Does not meet

**Reviewer Recommendation**

*Is the work (both the content and the types of tasks) that students are expected to complete at least as challenging as the courses that already count toward the High School Readiness metrics, such as a course culminating in a Regents exam or state Language Proficiency Exam?*

	<b><i>Based on your holistic review of the course and considering the entirety of the application, do you recommend that this course receive certification as a “High School-Ready” course? Indicate Yes or No and then provide a short rationale for your recommendation.</i></b>
<b>Yes</b>	
<b>No</b>	

## Application Feedback

### Strengths

Please describe 3 – 5 strengths that emerge from the application.

*Ex. As evidenced by the curriculum map and the list of key texts, the course exposes students to a variety of points of view. Additionally, assignments such as the final project ask students to interact with and react to various points of view, as well as to conduct their own independent research and develop their own perspective on an issue of historical importance.*

1.

2.

3.

### Areas for Development

Please describe 3 – 5 areas of concern that emerge from the application.

*Ex. The final project asks students to engage in an authentic, inquiry-based task. However, the formative assessments and assignments leading up to it may not provide enough opportunities for students to practice strategies that will allow for independent completion of the final project.*

1.

2.

3.

