



Syllabus Development Guide: AP Physics C: Mechanics

To the AP teacher: Please take full advantage of this guide. It is designed to support you as you develop your syllabus for the AP Course Audit. The guide contains the following sections and information:

Curricular Requirements	The curricular requirements are the core elements of the course. Your syllabus must provide clear evidence that each requirement is fully addressed in your course.	Important Considerations	Aligned with the Evaluation Guidelines, these statements provide advice on the type of evidence your syllabus should include.
Scoring Components	Some curricular requirements consist of complex, multi-part statements. These particular requirements are broken down into their component parts and restated as “scoring components”. Reviewers will look for evidence that each scoring component is included in your course.	Reference	As appropriate, references to specific sections of the official AP Course Description or other pertinent publications are included here.
Key Terms	To ensure the clarity of certain terms or expressions that may have multiple meanings, each of these terms is clearly defined.	Samples of Evidence	For each scoring component, three separate samples of evidence are provided. These statements provide either verbatim samples from actual authorized syllabi or clear descriptions of what acceptable evidence should look like.
Evaluation Guidelines	These are the exact guidelines used by reviewers as they evaluate the evidence in your syllabus. Use these to interpret any requirement you may find ambiguous.		

Curricular Requirements	Scoring Components, Key Terms, Evaluation Guidelines, Important Considerations, References and Samples of Evidence			
<p>Curricular Requirement 1: The course covers Newtonian mechanics in depth and provides instruction in each of the following six content areas outlined in the Course Description: Kinematics Newton's laws of motion Work, energy, and power Systems of particles, linear momentum Circular motion and rotation Oscillations and gravitation</p>	Scoring Component 1*: The course covers Newtonian mechanics in depth and provides instruction in kinematics.			
	*Note Each Curricular Requirement may be subdivided into two or more distinct Scoring Components.			
	Key Term(s)	Evaluation Guideline(s)	Important Consideration(s)	Reference
	All terminology in the Scoring Component is clear. No clarification is needed.	<p>Mentioning a practice or topic delineated in the scoring component is sufficient evidence when the resource materials collectively address the required content. Specific chapters or sections need not be associated with the practice or topic. In addition, topical concepts need not be presented in the syllabus in any particular order, i.e. they need not be laid out in the strict order of the AP Course Description outline.</p> <p>If the syllabus sufficiently cites (author, title, and edition) textbooks or materials included in the College Board's example textbook lists and the practice or topic in the scoring component is identified as being taught, then the scoring component has been satisfied.</p>	Scoring Component is clear and explicit. No Important Considerations are needed.	For more information see page 12 of the AP Physics C: Mechanics Course Description.
	Samples of Evidence			
	Sample 1	Sample 2	Sample 3	
The syllabus explicitly mentions 1/D and 2/D kinematics/motion and provides sufficient resources to demonstrate evidence of these topics.	The syllabus explicitly and briefly describes a required lab(s) in 1/D and 2/D kinematics/motion.	The syllabus explicitly mentions 1/D and 2/D kinematics/motion and provides a list with a brief description of the required lab(s) conducted pertaining to this topic.		

<p>Curricular Requirement 2: The course covers Newtonian mechanics in depth and provides instruction in each of the following six content areas outlined in the Course Description: Newton's laws of motion</p>	Scoring Component 2: The course covers Newtonian mechanics in depth and provides instruction in Newton's laws of motion.			
	Key Term(s)	Evaluation Guideline(s)	Important Consideration(s)	Reference
	All terminology in the Scoring Component is clear. No clarification is needed.	<p>Mentioning a practice or topic delineated in the scoring component is sufficient evidence when the resource materials collectively address the required content. Specific chapters or sections need not be associated with the practice or topic. In addition, topical concepts need not be presented in the syllabus in any particular order, i.e. they need not be laid out in the strict order of the AP Course Description outline.</p> <p>If the syllabus sufficiently cites (author, title, and edition) textbooks or materials included in the College Board's example textbook lists and the practice or topic in the scoring component is identified as being taught, then the scoring component has been satisfied.</p>	Scoring Component is clear and explicit. No Important Considerations are needed.	For more information see page 12 of the AP Physics C: Mechanics Course Description.
	Samples of Evidence			
	Sample 1	Sample 2	Sample 3	
The syllabus explicitly mentions Newton's laws of motion and provides sufficient resources to demonstrate evidence of this topic.	The syllabus explicitly mentions Newton's 1st, 2nd and 3rd laws of motion and provides sufficient resources to demonstrate coverage of this topic.	The syllabus explicitly and briefly describes a required lab(s) in Newton's laws of motion.		

Curricular Requirement 3: The course covers Newtonian mechanics in depth and provides instruction in each of the following six content areas outlined in the Course Description: Work, energy, and power	Scoring Component 3: The course covers Newtonian mechanics in depth and provides instruction in work.			
	Key Term(s)	Evaluation Guideline(s)	Important Consideration(s)	Reference
	All terminology in the Scoring Component is clear. No clarification is needed.	Mentioning a practice or topic delineated in the scoring component is sufficient evidence when the resource materials collectively address the required content. Specific chapters or sections need not be associated with the practice or topic. In addition, topical concepts need not be presented in the syllabus in any particular order, i.e. they need not be laid out in the strict order of the AP Course Description outline. If the syllabus sufficiently cites (author, title, and edition) textbooks or materials included in the College Board's example textbook lists and the practice or topic in the scoring component is identified as being taught, then the scoring component has been satisfied.	Scoring Component is clear and explicit. No Important Considerations are needed.	For more information see page 12 of the AP Physics C: Mechanics Course Description.
	Samples of Evidence			
Sample 1	Sample 2	Sample 3		
The syllabus explicitly mentions work and provides sufficient resources to demonstrate evidence of this topic.	The syllabus explicitly and briefly describes a required lab(s) in work.	The syllabus explicitly mentions work and provides a list with a brief description of the required lab(s) conducted pertaining to this topic.		

<p>Curricular Requirement 3 (continued): The course covers Newtonian mechanics in depth and provides instruction in each of the following six content areas outlined in the Course Description: Work, energy, and power</p>	Scoring Component 4: The course covers Newtonian mechanics in depth and provides instruction in energy.			
	Key Term(s)	Evaluation Guideline(s)	Important Consideration(s)	Reference
	<p>All terminology in the Scoring Component is clear. No clarification is needed.</p>	<p>Mentioning a practice or topic delineated in the scoring component is sufficient evidence when the resource materials collectively address the required content. Specific chapters or sections need not be associated with the practice or topic. In addition, topical concepts need not be presented in the syllabus in any particular order, i.e. they need not be laid out in the strict order of the AP Course Description outline.</p> <p>If the syllabus sufficiently cites (author, title, and edition) textbooks or materials included in the College Board's example textbook lists and the practice or topic in the scoring component is identified as being taught, then the scoring component has been satisfied.</p>	<p>Scoring Component is clear and explicit. No Important Considerations are needed.</p>	<p>For more information see page 12 of the AP Physics C: Mechanics Course Description.</p>
	Samples of Evidence			
Sample 1	Sample 2	Sample 3		
<p>The syllabus explicitly mentions conservation of energy and provides sufficient resources to demonstrate evidence of these topics.</p>	<p>The syllabus explicitly and briefly describes a required lab(s) in the conservation of energy.</p>	<p>The syllabus explicitly mentions conservation of energy and provides a list with a brief description of the required lab(s) conducted pertaining to this topic.</p>		

<p>Curricular Requirement 3 (continued): The course covers Newtonian mechanics in depth and provides instruction in each of the following six content areas outlined in the Course Description: Work, energy, and power</p>	Scoring Component 5: The course covers Newtonian mechanics in depth and provides instruction in power.			
	Key Term(s)	Evaluation Guideline(s)	Important Consideration(s)	Reference
	All terminology in the Scoring Component is clear. No clarification is needed.	<p>Mentioning a practice or topic delineated in the scoring component is sufficient evidence when the resource materials collectively address the required content. Specific chapters or sections need not be associated with the practice or topic. In addition, topical concepts need not be presented in the syllabus in any particular order, i.e. they need not be laid out in the strict order of the AP Course Description outline.</p> <p>If the syllabus sufficiently cites (author, title, and edition) textbooks or materials included in the College Board's example textbook lists and the practice or topic in the scoring component is identified as being taught, then the scoring component has been satisfied.</p>	Scoring Component is clear and explicit. No Important Considerations are needed.	For more information see page 12 of the AP Physics C: Mechanics Course Description.
	Samples of Evidence			
	Sample 1	Sample 2	Sample 3	
The syllabus explicitly mentions power and provides sufficient resources to demonstrate evidence of this topic.	The syllabus explicitly and briefly describes a required lab(s) in power	The syllabus explicitly mentions power and provides a list with a brief description of the required lab(s) conducted pertaining to this topic.		

Scoring Component 6: The course covers Newtonian mechanics in depth and provides instruction in systems of particles.				
Key Term(s)	Evaluation Guideline(s)	Important Consideration(s)	Reference	
<p>Curricular Requirement 4: The course covers Newtonian mechanics in depth and provides instruction in each of the following six content areas outlined in the Course Description: Systems of particles, linear momentum</p>	<p>All terminology in the Scoring Component is clear. No clarification is needed.</p>	<p>Mentioning a practice or topic delineated in the scoring component is sufficient evidence when the resource materials collectively address the required content. Specific chapters or sections need not be associated with the practice or topic. In addition, topical concepts need not be presented in the syllabus in any particular order, i.e. they need not be laid out in the strict order of the AP Course Description outline.</p> <p>If the syllabus sufficiently cites (author, title, and edition) textbooks or materials included in the College Board's example textbook lists and the practice or topic in the scoring component is identified as being taught, then the scoring component has been satisfied.</p>	<p>Scoring Component is clear and explicit. No Important Considerations are needed.</p> <p>For more information see page 12 of the AP Physics C: Mechanics Course Description.</p>	
	Samples of Evidence			
	Sample 1	Sample 2	Sample 3	
<p>The syllabus explicitly mentions systems of particles/center of mass and provides sufficient resources to demonstrate evidence of this topic.</p>	<p>The syllabus explicitly and briefly describes a required lab(s) in systems of particles/center of mass.</p>	<p>The syllabus explicitly mentions systems of particles/center of mass and provides a list with a brief description of the required lab(s) conducted pertaining to this topic.</p>		

<p>Curricular Requirement 4 (continued): The course covers Newtonian mechanics in depth and provides instruction in each of the following six content areas outlined in the Course Description: Systems of particles, linear momentum</p>	Scoring Component 7: The course covers Newtonian mechanics in depth and provides instruction in linear momentum.			
	All terminology in the Scoring Component is clear. No clarification is needed.	Mentioning a practice or topic delineated in the scoring component is sufficient evidence when the resource materials collectively address the required content. Specific chapters or sections need not be associated with the practice or topic. In addition, topical concepts need not be presented in the syllabus in any particular order, i.e. they need not be laid out in the strict order of the AP Course Description outline.	Evidence of instruction in linear momentum can be demonstrated through labs.	For more information see page 12 of the AP Physics C: Mechanics Course Description.
	Samples of Evidence			
	Sample 1	Sample 2	Sample 3	
	The syllabus explicitly mentions conservation of linear momentum and provides sufficient resources to demonstrate evidence of this topic.	The syllabus explicitly and briefly describes a required lab(s) in conservation of linear momentum.	The syllabus explicitly mentions conservation of linear momentum and provides a list with a brief description of the required lab(s) conducted pertaining to this topic.	

<p>Curricular Requirement 5: The course covers Newtonian mechanics in depth and provides instruction in each of the following six content areas outlined in the Course Description: Circular motion and rotation</p>	Scoring Component 8: The course covers Newtonian mechanics in depth and provides instruction in circular motion.			
	Key Term(s)	Evaluation Guideline(s)	Important Consideration(s)	Reference
	<p>Circular motion: other than explicitly stating “circular motion,” instructors may provide evidence of coverage through lab activities relating to the topic. Instructors may also use the term “centripetal.”</p>	<p>Mentioning a practice or topic delineated in the scoring component is sufficient evidence when the resource materials collectively address the required content. Specific chapters or sections need not be associated with the practice or topic. In addition, topical concepts need not be presented in the syllabus in any particular order, i.e. they need not be laid out in the strict order of the AP Course Description outline.</p> <p>If the syllabus sufficiently cites (author, title, and edition) textbooks or materials included in the College Board's example textbook lists and the practice or topic in the scoring component is identified as being taught, then the scoring component has been satisfied.</p>	<p>Evidence of coverage can be provided indirectly, for example through a lab or by listing centripetal acceleration and centripetal force.</p>	<p>For more information see page 12 of the AP Physics C: Mechanics Course Description.</p>
	Samples of Evidence			
	Sample 1	Sample 2	Sample 3	
<p>The syllabus explicitly mentions circular motion/centripetal motion and provides sufficient resources to demonstrate evidence of this topic.</p>	<p>The syllabus explicitly and briefly describes a required lab(s) in circular motion/centripetal motion.</p>	<p>The syllabus explicitly mentions circular motion/centripetal motion and provides a list with a brief description of the required lab(s) conducted pertaining to this topic.</p>		

<p>Curricular Requirement 5 (continued): The course covers Newtonian mechanics in depth and provides instruction in each of the following six content areas outlined in the Course Description: Circular motion and rotation</p>	Scoring Component 9: The course covers Newtonian mechanics in depth and provides instruction in rotation.			
	Key Term(s)	Evaluation Guideline(s)	Important Consideration(s)	Reference
	All terminology in the Scoring Component is clear. No clarification is needed.	Mentioning a practice or topic delineated in the scoring component is sufficient evidence when the resource materials collectively address the required content. Specific chapters or sections need not be associated with the practice or topic. In addition, topical concepts need not be presented in the syllabus in any particular order, i.e. they need not be laid out in the strict order of the AP Course Description outline. If the syllabus sufficiently cites (author, title, and edition) textbooks or materials included in the College Board's example textbook lists and the practice or topic in the scoring component is identified as being taught, then the scoring component has been satisfied.	Activities or labs may provide evidence of conservation of angular momentum.	For more information see page 12 of the AP Physics C: Mechanics Course Description.
	Samples of Evidence			
	Sample 1	Sample 2	Sample 3	
The syllabus explicitly mentions rotational kinematics, rotational dynamics and conservation of angular momentum and provides sufficient resources to demonstrate evidence of these topics.	The syllabus explicitly and briefly describes a required lab(s) in rotational kinematics, rotational dynamics and conservation of angular momentum.	The syllabus explicitly mentions rotational kinematics, rotational dynamics and conservation of angular momentum and provides a list with a brief description of the required lab(s) conducted pertaining to these topics.		

Curricular Requirement 6:
The course covers Newtonian mechanics in depth and provides instruction in each of the following six content areas outlined in the Course Description:
Oscillations and gravitation

Scoring Component 10: The course covers Newtonian mechanics in depth and provides instruction in oscillations.			
Key Term(s)	Evaluation Guideline(s)	Important Consideration(s)	Reference
Oscillations: may also use "simple harmonic motion."	<p>Mentioning a practice or topic delineated in the scoring component is sufficient evidence when the resource materials collectively address the required content. Specific chapters or sections need not be associated with the practice or topic. In addition, topical concepts need not be presented in the syllabus in any particular order, i.e. they need not be laid out in the strict order of the AP Course Description outline.</p> <p>If the syllabus sufficiently cites (author, title, and edition) textbooks or materials included in the College Board's example textbook lists and the practice or topic in the scoring component is identified as being taught, then the scoring component has been satisfied.</p>	Scoring Component is clear and explicit. No Important Considerations are needed.	For more information see page 12 of the AP Physics C: Mechanics Course Description.
Samples of Evidence			
Sample 1	Sample 2	Sample 3	
The syllabus explicitly mentions oscillations/simple harmonic motion and provides sufficient resources to demonstrate evidence of these topics.	The syllabus explicitly and briefly describes a required lab(s) in oscillations/simple harmonic motion.	The syllabus explicitly mentions oscillations/simple harmonic motion and provides a list with a brief description of the required lab(s) conducted pertaining to these topics.	

<p>Curricular Requirement 6 (continued): The course covers Newtonian mechanics in depth and provides instruction in each of the following six content areas outlined in the Course Description: Oscillations and gravitation</p>	<p>Scoring Component 11: The course covers Newtonian mechanics in depth and provides instruction in gravitation.</p>			
	<p>Key Term(s)</p>	<p>Evaluation Guideline(s)</p>	<p>Important Consideration(s)</p>	<p>Reference</p>
	<p>Gravitation: if the topic is not listed as Gravitation, then explicit mention of coverage of the universal law of gravitation and/or Kepler’s laws is needed.</p>	<p>Mentioning a practice or topic delineated in the scoring component is sufficient evidence when the resource materials collectively address the required content. Specific chapters or sections need not be associated with the practice or topic. In addition, topical concepts need not be presented in the syllabus in any particular order, i.e. they need not be laid out in the strict order of the AP Course Description outline.</p> <p>If the syllabus sufficiently cites (author, title, and edition) textbooks or materials included in the College Board's example textbook lists and the practice or topic in the scoring component is identified as being taught, then the scoring component has been satisfied.</p>	<p>Scoring Component is clear and explicit. No Important Considerations are needed.</p>	<p>For more information see page 12 of the AP Physics C: Mechanics Course Description.</p>
	<p>Samples of Evidence</p>			
	<p>Sample 1</p>	<p>Sample 2</p>	<p>Sample 3</p>	
	<p>The syllabus explicitly mentions gravitation and provides sufficient resources to demonstrate evidence of these topics.</p>	<p>The syllabus explicitly and briefly describes a required lab(s) in gravitation.</p>	<p>The syllabus explicitly mentions gravitation and provides a list with a brief description of the required lab(s) conducted pertaining to these topics.</p>	

<p>Curricular Requirement 7: The course utilizes guided inquiry and student-centered learning to foster the development of critical thinking skills.</p>	Scoring Component 12: The course utilizes guided inquiry to foster the development of critical thinking skills.			
	Key Term(s)	Evaluation Guideline(s)	Important Consideration(s)	Reference
	<p>Guided inquiry: the teacher acts as a facilitator and directs students through individual, inquiry based exercises. This should not be confused with the laboratory component. Evidence of labs alone will not satisfy this requirement.</p> <p>Critical thinking: the ability to define, clarify, make judgments, and draw conclusions on conceptual problems. Students are required to think beyond the rote facts and basic problem solving skills both individually and through class discussion.</p>	Evidence of labs alone will not satisfy this scoring component. This component is an addition to the inquiry that occurs in the laboratory component of the course.	<p>Evidence should be demonstrated through some description of how students will meet these objectives. Some discussion of pedagogy is often helpful in meeting this scoring component. For example, evidence of this scoring component might be included in descriptions of homework assignments, demonstrations, and computer-based discussion boards, lab activities with open-ended questions, class discussion, inquiries, or peer instruction.</p> <p>The syllabus should demonstrate evidence either by mentioning that an activity utilizes “guided inquiry” or by describing a situation in which students are led through an inquiry-based exercise.</p>	For more information see page 10 of the AP Physics C: Mechanics Course Description.
	Samples of Evidence			
	Sample 1	Sample 2	Sample 3	
The syllabus explicitly describes several examples of guided-inquiry activities that are interwoven throughout the entire course.	The syllabus explicitly discusses pedagogy including descriptions of how guided-inquiry is interwoven throughout the entire course.	The syllabus explicitly discusses pedagogy and describes several examples of guided-inquiry activities that are interwoven throughout the entire course.		

Scoring Component 13: The course utilizes student-centered learning to foster the development of critical thinking skills.				
Key Term(s)	Evaluation Guideline(s)	Important Consideration(s)	Reference	
<p>Curricular Requirement 7 (continued): The course utilizes guided inquiry and student-centered learning to foster the development of critical thinking skills.</p>	<p>Student centered learning: the use of pedagogical techniques by the teacher to engage students through group and/or individual work, making them active participants in the construction of knowledge, while being sensitive to different learning styles and common misconceptions. Student-centered learning is when the student works to understand material rather than having it presented to them in a lecture by the instructor. Instructors are recommended to incorporate two or more of the following examples to meet this requirement.</p>	<p>The syllabus must include some description of how students will meet these objectives. Some discussion of pedagogy is often helpful in meeting this scoring component. For example, evidence of this scoring component might be included in descriptions of homework assignments, demonstrations, computer-based discussion boards, lab activities with open-ended questions, class discussion, inquiries, or peer instruction.</p>	<p>Evidence should be demonstrated through some description of how students will meet these objectives. Some discussion of pedagogy is often helpful in meeting this scoring component. For example, evidence of this scoring component might be included in descriptions of homework assignments, demonstrations, and computer-based discussion boards, lab activities with open-ended questions, class discussion, inquiries, or peer instruction.</p>	
	<p>Critical thinking: the ability to define, clarify, make judgments, and draw conclusions on conceptual problems. Students are required to think beyond the rote facts and basic problem solving skills both individually and through class discussion.</p>	<p>Student-centered learning must be used throughout the course, not only in labs.</p>		<p>For more information see page 10 of the AP Physics C: Mechanics Course Description.</p>
	Samples of Evidence			
Sample 1	Sample 2	Sample 3		
<p>The syllabus explicitly describes several examples of student-centered learning activities that are interwoven throughout the entire course.</p>	<p>The syllabus explicitly discusses pedagogy including descriptions of how student centered learning is interwoven throughout the entire course.</p>	<p>The syllabus explicitly discusses pedagogy and describes several examples of student centered learning activities that are interwoven throughout the entire course.</p>		

Curricular Requirement 8: Introductory differential and integral calculus is used throughout the course.	Scoring Component 14: Introductory differential and integral calculus are used throughout the course.			
	Key Term(s)	Evaluation Guideline(s)	Important Consideration(s)	Reference
	All terminology in the Scoring Component is clear. No clarification is needed.	<p>If a calculus course is mentioned as a pre- or co-requisite, or if a calculus-based textbook is identified, then this scoring component is met.</p> <p>Appropriate textbook must support a calculus-based course.</p>	Scoring Component is clear and explicit. No Important Considerations are needed.	For more information see page 10-11 of the AP Physics C: Mechanics Course Description.
	Samples of Evidence			
	Sample 1	Sample 2	Sample 3	
The syllabus sufficiently sites an AP approved calculus-based textbook.	The syllabus sufficiently sites an AP approved calculus-based textbook and explicitly mentions that introductory differential and integral calculus is used throughout the course.	On the first page of the syllabus, after the introduction, the syllabus states, "Calculus is an important part of the course," and sufficiently sites an AP approved calculus-based textbook.		

<p>Curricular Requirement 9: The course includes a laboratory component comparable to a semester-long, college-level physics laboratory. Students spend a minimum of 20 percent of instructional time engaged in laboratory work. A hands-on laboratory component is required. Each student should complete a lab notebook or portfolio of lab reports.</p>	<p>Scoring Component 15: The course includes a laboratory component comparable to a semester-long, college-level physics laboratory.</p>			
	<p>Key Term(s)</p>	<p>Evaluation Guideline(s)</p>	<p>Important Consideration(s)</p>	<p>Reference</p>
	<p>All terminology in the Scoring Component is clear. No clarification is needed.</p>	<p>Scoring Component is clear and explicit. No Evaluation Guideline is needed.</p>	<p>Scoring Component is clear and explicit. No Important Considerations are needed.</p>	<p>For more information see pages 7-8, 11 and 16 of the AP Physics C: Mechanics Course Description.</p>
	<p>Samples of Evidence</p>			
	<p>Sample 1</p>	<p>Sample 2</p>	<p>Sample 3</p>	
<p>Description of labs in which students are expected to fit curves to data obtained in experiment.</p>	<p>The syllabus explicitly describes all required labs providing evidence of their college-level comparability.</p>	<p>Description of labs in which students are expected to estimate errors and discuss meaning of experimental results in light of those errors.</p>		

	Scoring Component 16: Students spend a minimum of 20% of instructional time engaged in laboratory work.			
	Key Term(s)	Evaluation Guideline(s)	Important Consideration(s)	Reference
	<p>Curricular Requirement 9 (continued): The course includes a laboratory component comparable to a semester-long, college-level physics laboratory. Students spend a minimum of 20 percent of instructional time engaged in laboratory work. A hands-on laboratory component is required. Each student should complete a lab notebook or portfolio of lab reports.</p>	All terminology in the Scoring Component is clear. No clarification is needed.	Scoring Component is clear and explicit. No Evaluation Guideline is needed.	Scoring Component is clear and explicit. No Important Considerations are needed.
Samples of Evidence				
Sample 1		Sample 2	Sample 3	
The syllabus explicitly states meeting the 20% minimum time and evidence is provided in a descriptive list of labs with approximate time for each lab.	The syllabus explicitly states at least one full class period a week is devoted to labs and evidence is provided in a matching list of labs.	The syllabus explicitly states the total number of student contact hours, the total number of lab hours and the ratio of total time to contact time is a minimum of 20% and evidence is provided in a matching list of required labs.		

<p>Curricular Requirement 9 (continued): The course includes a laboratory component comparable to a semester-long, college-level physics laboratory. Students spend a minimum of 20 percent of instructional time engaged in laboratory work. A hands-on laboratory component is required. Each student should complete a lab notebook or portfolio of lab reports.</p>	Scoring Component 17: A hands-on laboratory component is required. Note: Online course providers utilizing virtual labs (simulations rather than hands-on) should submit their laboratory materials for the audit. If these lab materials are determined to develop the skills and learning objectives of hands-on labs, then courses which use these labs may receive authorization to use the "AP" designation.*			
	Key Term(s)	Evaluation Guideline(s)	Important Consideration(s)	Reference
	<p>Hands-On Laboratory: an interactive experience during which students directly observe and manipulate physical objects, materials, organisms, or phenomena in order to fulfill the learning objectives of a laboratory experience. These objectives include, but are not limited to, generating and exploring answers to experimental questions, gathering data and making observations, drawing and evaluating conclusions, and thinking and communicating effectively about science.</p>	<p>If the hands-on lab* component meets the instructional time requirement and fulfills the objectives described in the Course Description, then the scoring component is satisfied—even if the lab contains additional virtual, simulated, or teacher-led lab investigations.</p> <p>Virtual and teacher-led demonstrations should be considered neither a virtual nor hands-on lab experience in and of themselves, though these elements may enhance the course's primary laboratory component.</p> <p>This scoring component can be met either by an explicit statement and/or by an easy calculation of class schedule and class time engaged in laboratory work. Contradicting evidence will not fulfill this scoring component.</p> <p>Stating that the labs are hands on is sufficient, however, the hands-on nature of the experiments should be obvious in the description of the experiment</p>	<p>Scoring Component is clear and explicit. No Important Considerations are needed.</p>	<p>For more information see pages 7-11 of the AP Physics C: Mechanics Course Description.</p>
	Samples of Evidence			
	Sample 1	Sample 2	Sample 3	
<p>The syllabus explicitly states that all required labs are hands-on.</p>	<p>The syllabus explicitly states that the hands-on labs alone meet the minimum 20% of instructional time.</p>	<p>The syllabus explicitly states that all required labs are hands-on and further demonstrates evidence by providing a description of the labs completed throughout the course.</p>		

<p>Curricular Requirement 9 (continued): The course includes a laboratory component comparable to a semester-long, college-level physics laboratory. Students spend a minimum of 20 percent of instructional time engaged in laboratory work. A hands-on laboratory component is required. Each student should complete a lab notebook or portfolio of lab reports.</p>	Scoring Component 18: Each student should complete a lab notebook or portfolio of lab reports.			
	Key Term(s)	Evaluation Guideline(s)	Important Consideration(s)	Reference
	<p>Portfolio: indicates a collection of lab reports. It does not have to be an actual physical portfolio. Formal lab reports are acceptable as well as lab notebooks in which entries are made as the lab activities are performed (mirroring the lab notebook that a practicing physicist would keep).</p>	Each student must complete a lab notebook or portfolio of lab reports in order to meet the scoring component.	Scoring Component is clear and explicit. No Important Considerations are needed.	For more information see pages 9 and 11 of the AP Physics C: Mechanics Course Description.
	Samples of Evidence			
	Sample 1	Sample 2	Sample 3	
The syllabus explicitly states students are required to complete written lab reports.	The syllabus explicitly states students are required to use a lab notebook for their labs.	At the beginning of the lab section, the syllabus states, "Students are required to keep a lab portfolio during the duration of the class. All work completed and relating to labs will be kept in this portfolio throughout the year. Additionally, students turn in their portfolios from time to time to receive a grade from the instructor."		