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Syllabus Development Guide: AP Biology

<u>To the AP teacher</u>: 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.

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.

Key Terms To ensure the clarity of certain terms or expressions that may have multiple meanings, each of these terms is clearly defined.

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.

Important Considerations Aligned with the Evaluation Guidelines, these statements provide advice on the type of evidence your syllabus should include.

Reference As appropriate, references to specific sections of the official AP Course Description or other pertinent publications are included here.

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.

<table>
<tr><th>Curricular Requirements</th><th colspan="4">Scoring Components, Key Terms, Evaluation Guidelines, Important Considerations, References and Samples of Evidence</th></tr>
<tr><td rowspan="6">Curricular Requirement: The course emphasizes the biological concepts as specified in the three overarching topics listed in the Topic Outline in the Course Description: Molecules and Cells; Heredity and Evolution; Organisms and Populations.</td><td colspan="4">Scoring Component 1*: The course emphasizes the biological and chemical concepts of molecules.</td></tr>
<tr><td colspan="4">*Note Each Curricular Requirement may be subdivided into two or more distinct Scoring Components.</td></tr>
<tr><td>Key Term(s)</td><td>Evaluation Guideline(s)</td><td>Important Consideration(s)</td><td>Reference</td></tr>
<tr><td>All terminology in the Scoring Component is clear. No clarification is needed.</td><td>Mentioning a practice or topic delineated in the scoring component is sufficient evidence when the resource materials collectively address the content. Specific chapters or sections need not be associated with the practice or topic.

If the syllabus sufficiently cites (author, title, and edition) textbooks or materials included in the College Board’s example textbook lists, evidence is sufficient.

If there is no textbook mentioned, evidence is not sufficient.</td><td>Evidence can be demonstrated through a list specific chapter(s) in textbook(s) on molecules.

Evidence can be demonstrated through 25% of the course focusing on molecules and cells.</td><td>For more information see page 5 of the AP Biology Course Description.</td></tr>
<tr><td colspan="4">Samples of Evidence</td></tr>
<tr><td>Sample 1</td><td>Sample 2</td><td colspan="2">Sample 3</td></tr>
<tr><td>The syllabus follows the AP Course Outline and includes Chemistry of Life as a subtopic.</td><td>The syllabus cites a textbook that begins with chapters on chemistry and biochemistry</td><td colspan="2">In the course outline, the syllabus includes carbon and the molecular diversity of life.</td></tr>
</table>

Curricular Requirement: The course emphasizes the biological concepts as specified in the three overarching topics listed in the Topic Outline in the Course Description: Molecules and Cells; Heredity and Evolution; Organisms and Populations.	**Scoring Component 2: The course emphasizes the biological concept of cells.**			
	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 content. Specific chapters or sections need not be associated with the practice or topic. If the syllabus sufficiently cites (author, title, and edition) textbooks or materials included in the College Board's example textbook lists, evidence is sufficient. If there is no textbook mentioned, evidence is not sufficient	The syllabus should include cellular energetics as a subtopic to evidence emphasis of biological concept of cells. The syllabus should include structure and function as a subtopic to evidence emphasis of biological concept of cells.	For more information see page 5 of the AP Biology Course Description.
	Samples of Evidence			
	Sample 1	Sample 2	Sample 3	
	The syllabus includes a comparison of prokaryotic and eukaryotic cell structures.	Cellular respiration is discussed throughout the course.	The syllabus includes photosynthesis as an ongoing discussion throughout the course.	

Curricular Requirement: The course emphasizes the biological concepts as specified in the three overarching topics listed in the Topic Outline in the Course Description: Molecules and Cells; Heredity and Evolution; Organisms and Populations.	**Scoring Component 3: The course emphasizes the biological concepts of heredity and evolution.**			
	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 content. Specific chapters or sections need not be associated with the practice or topic. If the syllabus sufficiently cites (author, title, and edition) textbooks or materials included in the College Board's example textbook lists, evidence is sufficient. If there is no textbook mentioned, evidence is not sufficient.	Scoring Component is clear and explicit. No Important Considerations are needed.	For more information see page 5 of the AP Biology Course Description.
	Samples of Evidence			
	Sample 1	Sample 2	Sample 3	
	The syllabus references a specific text book, for example, "Chapters XXX in Campbell and Reece, Biology: 7th Edition."	In the heredity and evolution unit, the syllabus includes a subtopic of mechanisms of evolution.	Heredity and evolution are topics integrated throughout the course.	

Curricular Requirement: The course emphasizes the biological concepts as specified in the three overarching topics listed in the Topic Outline in the Course Description: Molecules and Cells; Heredity and Evolution; Organisms and Populations.	**Scoring Component 4: The course emphasizes the biological concept of organisms.**			
	Key Term(s)	Evaluation Guideline(s)	Important Consideration(s)	Reference
	Organisms: general characteristics of members of the three domains: Bacteria, Archaebacteria, and Eukarya, which include Animals, Plants, Fungi, Protozoa, and Algae. General characteristics of viruses are also included.	If structure and function of plants and animals are not covered, then evidence is not sufficient. If bacteria and viruses are not included, evidence is not sufficient. If a survey of the diversity of life is not mentioned, evidence is not sufficient. If there is no mention of a textbook, the scoring component is not met.	Scoring Component is clear and explicit. No Important Considerations are needed.	For more information see page 5 of the AP Biology Course Description.
	Samples of Evidence			
	Sample 1	Sample 2	Sample 3	
	The syllabus includes citing a textbook unit on biological diversity.	The syllabus threads the topic of biological diversity throughout the course.	The syllabus emphasizes the topic of biological diversity through citing a textbook.	

Curricular Requirement: The course emphasizes the biological concepts as specified in the three overarching topics listed in the Topic Outline in the Course Description: Molecules and Cells; Heredity and Evolution; Organisms and Populations.	**Scoring Component 5: The course emphasizes the biological concept of populations.**			
	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 content. Specific chapters or sections need not be associated with the practice or topic. If the syllabus sufficiently cites (author, title, and edition) textbooks or materials included in the College Board's example textbook lists, evidence is sufficient. If there is no textbook mentioned, evidence is not sufficient.	Scoring Component is clear and explicit. No Important Considerations are needed.	For more information see page 5 of the AP Biology Course Description.
	Samples of Evidence			
	Sample 1	Sample 2	Sample 3	
	Population Dynamics is a subtopic in the Organisms and Populations section of the course.	Population Ecology is a subtopic of the Ecology unit.	Population Genetics is a subtopic of Genetics and Evolution unit.	

Curricular Requirement: The course provides students with an opportunity to develop a conceptual framework for modern biology emphasizing: an understanding of science as a process rather than an accumulation of facts; recognition of evolution as the foundation of modern biological models and thought; the integration of the general topics of biology through the eight major themes as specified in the Course Description; and applications of biological knowledge and critical thinking to environmental and social concerns.	**Scoring Component 6: The course provides students with an opportunity to develop a conceptual framework for modern biology emphasizing an understanding of science as a process rather than an accumulation of facts.**			
	Key Term(s)	Evaluation Guideline(s)	Important Consideration(s)	Reference
	Science as a process: a way of knowing and studying the natural world. It can involve a discovery process using inductive reasoning, or it can be a process of hypothesis testing.	When topical instruction provided in the syllabus indicates that students are provided with this opportunity, then evidence is sufficient. For example: Labs that require students to collect data and reach conclusions will meet this scoring component, either as labs recommended in the AP Course Description or those with evidence that they meet the learning objectives of these labs. Promotion of discussion in class meets this scoring component.	Evidence is sufficient if a minimum of 12 hands-on labs (component 11) is carried out. Discussion of published scientific research constitutes sufficient evidence.	For more information see page 6 of the AP Biology Course Description.
	Samples of Evidence			
	Sample 1	Sample 2	Sample 3	
	The syllabus demonstrates through the course outline that all 12 AP labs are conducted throughout the course.	In the laboratory section, the syllabus includes student designed and conducted experiments.	In the introduction to the course, the syllabus includes a discussion of how discoveries were made and used towards teaching topics throughout the course (may be described in introduction to syllabus).	

Curricular Requirement: The course provides students with an opportunity to develop a conceptual framework for modern biology emphasizing: an understanding of science as a process rather than an accumulation of facts; recognition of evolution as the foundation of modern biological models and thought; the integration of the general topics of biology through the eight major themes as specified in the Course Description; and applications of biological knowledge and critical thinking to environmental and social concerns.	**Scoring Component 7: The course emphasizes recognition of evolution as the foundation of modern Biology.**			
	Key Term(s)	Evaluation Guideline(s)	Important Consideration(s)	Reference
	All terminology in the Scoring Component is clear. No clarification is needed.	The course must provide students with an opportunity to develop a conceptual framework for modern Biology emphasizing recognition of evolution as the foundation of modern Biology. Evolution must be taught in more than one unit (i.e. across topics, heredity and evolution, organisms and population, etc).	Scoring Component is clear and explicit. No Important Considerations are needed.	For more information see pages 4-6 of the AP Biology Course Description.
	Samples of Evidence			
	Sample 1	Sample 2	Sample 3	
	The syllabus cites a textbook and chapter focusing on evolution.	In the course outline, the syllabus includes the topic of evolution and also includes evolution as a subtopic in the comparative anatomy unit.	In the course outline, the syllabus includes the topic of evolution and also includes evolution as a subtopic in the taxonomy/classification unit on plants and animals.	

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	Key Term(s)	Evaluation Guideline(s)	Important Consideration(s)	Reference
	Eight major themes: includes science as a process, evolution, energy transfer, continuity and change, relationship of structure to function, regulation, interdependence in nature, and science, technology, and society.	Listing the 8 major themes along with a complete syllabus is sufficient evidence.	Evidence can be demonstrated through indication of which themes apply to various units taught.	For more information see pages 4 and 6 of the AP Biology Course Description.
	Samples of Evidence			
	Sample 1	Sample 2	Sample 3	
	All eight major themes are listed in the introduction to the syllabus with descriptions of how each is integrated in the course.	All topics listed on the syllabus are keyed to one or more of the eight themes.	The eight major themes are mentioned repeatedly throughout the syllabus as they occur.	

Curricular Requirement: The course provides students with an opportunity to develop a conceptual framework for modern biology emphasizing: an understanding of science as a process rather than an accumulation of facts; recognition of evolution as the foundation of modern biological models and thought; the integration of the general topics of biology through the eight major themes as specified in the Course Description; and applications of biological knowledge and critical thinking to environmental and social concerns.	**Scoring Component 9: The course provides students with an opportunity to develop a conceptual framework for modern Biology, emphasizing applications of biological knowledge to environmental concerns.**			
	Key Term(s)	Evaluation Guideline(s)	Important Consideration(s)	Reference
	All terminology in the Scoring Component is clear. No clarification is needed.	If environmental concerns are listed as a topic, then evidence is sufficient.	The syllabus should reference specific chapter(s) in textbook(s) related to environmental issues.	For more information see pages 4-6 of the AP Biology Course Description.
	Samples of Evidence			
	Sample 1	Sample 2	Sample 3	
	The syllabus cites a chapter from a textbook, for example conservation biology.	As an activity in the environmental concerns unit, the syllabus includes, “The instructor and students participate in an ecology project outdoors.”	As a classroom activity in the environmental concerns unit, students watch and discuss a film such as “An Inconvenient Truth” as part of the course.	

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	Key Term(s)	Evaluation Guideline(s)	Important Consideration(s)	Reference
	All terminology in the Scoring Component is clear. No clarification is needed.	If social concerns are listed as a topic, then evidence is sufficient.	Evidence can be demonstrated through a specific reference to one social issue.	For more information see pages 4-6 of the AP Biology Course Description.
	Samples of Evidence			
	Sample 1	Sample 2	Sample 3	
	The syllabus includes stem cell research as a topic regarding a major issue of social concern.	The syllabus includes cancer as an issue of social concern.	The syllabus includes global warming as a topic regarding a major issue of social concern	

Curricular Requirement: The course includes a laboratory component that fulfills all of the objectives of the recommended AP Biology labs as listed in the Course Description. Students must spend a minimum of 25% of instructional time engaged in hands-on laboratory work.	**Scoring Component 11: The course includes a hands-on laboratory component that fulfills all of the objectives recommended in the AP Biology labs as listed in the Course Description.**		
	Key Term(s)	Evaluation Guideline(s)	Important Consideration(s)/Reference(s)
	All terminology in the Scoring Component is clear. No clarification is needed.	The title and frequency (# of labs), with a minimum of 12 labs, must be evident for the scoring component to be satisfied.	For more information see pages 7-16 of the AP Biology Course Description.
	Samples of Evidence		
	Sample 1	Sample 2	Sample 3
	The pre and post objectives of the 12 recommended labs are conveyed through hands-on labs.	The syllabus includes all 12 AP Biology recommended labs.	A combination of the AP Biology recommended labs and other hands-on labs are cited on the syllabus.

Curricular Requirement: The course includes a laboratory component that fulfills all of the objectives of the recommended AP Biology labs as listed in the Course Description. Students must spend a minimum of 25% of instructional time engaged in hands-on laboratory work.	**Scoring Component 12: Students must spend a minimum of 25% of instructional time engaged in hands-on laboratory work.**			
	Key Term(s)	Evaluation Guideline(s)	Important Consideration(s)	Reference
	All terminology in the Scoring Component is clear. No clarification is needed.	This requirement must be met either by an explicit statement and/or by an easy calculation of class schedule and class time engaged in laboratory work.	Evidence of 25% of instructional time engaged in hands-on laboratory work can be demonstrated through reference of the time students spend engaged in laboratory work during class. .	For more information see page 8 of the AP Biology Course Description.
	Samples of Evidence			
	Sample 1	Sample 2	Sample 3	
	The syllabus provides a course outline listing the number of weeks spent on each unit and the number of labs conducted during each unit. The number of days engaged in laboratory work divided by the number of days spent in class time equals 25%.	The syllabus provides a course outline with the number of days spent on each topic and the number of days engaged in hands-on laboratory work. The total lab time equals 25% of instructional time.	The syllabus states, “Students are engaged in hands-on laboratory work 25% of instruction time throughout the course.”	