

Big History 12

School Name: Porter Creek Secondary School

Developed by: Tim Falkenberg
Big History Project

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See: <https://course.bighistoryproject.com/bhplive> and <https://course.bighistoryproject.com/media/homepage/media/BHPFAQ2013.pdf>

Date Developed: The Big History Project was made available to educators in October 2013 after a two year pilot project. This application is being filled out in January 2014.

Principal's Name: Brendan Kelly

Department Authorized Approval Date: _____

Superintendent Signature: _____

Course Name: Big History 11

Grade Level of Course: Grade 11

Number of Course Credits: 4

Number of Hours of Instruction: 110-120 hours

Prerequisite: Social Studies 10

Special Training, Facilities, or Equipment Required:

Teachers will need access to a projector or interactive white board to show online content, and occasional access to a computer lab for projects and tests.

Course Synopsis:

Big History 11 weaves evidence and insights about the Universe and our place in it from many scientific and historical disciplines into a single, cohesive, science-based origin story. Big History challenges students to think critically and broadly and tries to ignite a passion for inquiry. Big History requires students to examine big questions:

How has the Universe and life within it grown more complex over the past 13.7 billion years?

How do we know what we know about the past?

How can we judge claims about the past?

Why does what we “know” change over time?

How does what happened during the early days of the Universe, the Solar System, and the Earth shape what we are experiencing today?

First Nations Involvement:

In the examination of Origin Stories in the first unit, Yukon First Nations stories will be incorporated. The impact of diseases on First Nations will be the subject of a student investigation. Students will look at early technologies and an attempt will be made to show Yukon First Nation examples.

Organizational Structure:

Unit	Title	Time
Unit 1	What is Big History?	9 hours
Unit 2	The Big Bang	14 hours
Unit 3	Stars and Elements	9 hours
Unit 4	Our Solar System & Earth	9 hours
Unit 5	Life	11 hours
Unit 6	Early Humans	14 hours
Unit 7	Agriculture & Civilization	11 hours
Unit 8	Expansion & Interconnection	14 hours
Unit 9	Acceleration	14 hours
Unit 10	The Future	5 hours
	Total Hours	110 hours

Unit Descriptions:

“BHP Standards 2013”

<https://course.bighistoryproject.com/media/homepagemedia/BHPStandards2013.pdf>

Unit 1 What is Big History?

Unit 1 introduces students to the concept of history on multiple scales, the role that origin stories have played in human history, and some of the core concepts and themes that support all aspects of the course. The concept assessments for this unit measures students’ ability to:

1. Explain the role that scale plays in making big history different from other approaches to history.
2. Define central course concepts of thresholds of increasing complexity, Goldilocks conditions, scale, collective learning, claim testing, and origin stories.
3. Explain the difference between claims based on intuition, authority, logic, and empirical or observable evidence.
4. Identify the major features of at least two origin stories and compare these to the big history narrative.
5. Navigate the course site and locate content, quizzes, investigations, and other course materials.

Unit 2 The Big Bang

The second unit begins the big history story by focusing students on how the Universe formed and how and why our views of the Universe have evolved through time. The concept assessments for this unit measure students’ ability to:

1. Use the big history themes of collective learning and claim testers to evaluate changes in human understanding of the Universe, from the Ptolemaic to the Heliocentric to current views.
2. Explain the basics of the Big Bang theory and the claim tests that support this explanation for the origin of the Universe.
3. Identify the role that Ptolemy, Copernicus, Galileo, Newton, Leavitt, Hubble, and inventions or institutions (the telescope and Vatican Observatories, for example) played in shaping our understanding of the origin and nature of the Universe.
4. Apply the concepts “threshold of increasing complexity” and “Goldilocks Conditions” to the Big Bang and its consequences.

Unit 3 The Stars and Elements

In the third unit, students work on developing an explanation for how stars and chemical elements formed and why these are important thresholds of complexity. The concept assessments for this unit measure students' ability to:

1. Describe how stars form and differentiate the lifecycles and scale of low-mass and highmass stars.
2. Explain how the heavier chemical elements are made by aging and dying stars.
3. Justify David Christian's argument that formation of stars and the emergence of elements are major "thresholds of increasing complexity."
4. Use the periodic table to identify elements emerging from the Big Bang and the lifecycle of stars.

Unit 4 Our Solar System & Earth

The course introduces students to scientific explanations for the development of the Solar System and the formation of the Earth and its layered structure. The concept assessments for this unit measure students' ability to:

1. Use the concepts of gravity and accretion to explain how our Solar System, the planets, and Earth formed.
2. Describe the early Earth, its geologic features, and the changes it would undergo to eventually support life.
3. Explain the basic mechanisms of plate tectonics, the key pieces of evidence supporting plate tectonics, and why it is significant for life on Earth.
4. Evaluate the argument that formation of Solar System and the Earth marked a threshold of increasing complexity.

Unit 5 Life

With Unit 5, the students learn to differentiate living organisms from inanimate objects, explain how life evolved, and identify and explain the evidence for evolution. The concept assessments for this unit measure students' ability to:

1. Compare life to nonlife and explain why the emergence of life indicates a threshold of increasing complexity.
2. Describe the conditions that made it possible for life to emerge on Earth.
3. Trace the major events in the development of life on Earth and explain what is meant by the term biosphere.
4. Use evidence to explain adaptation and evolution, including Darwin's theory of natural selection and DNA.
5. Apply the concept of Goldilocks Conditions to the development of life on Earth.

Unit 6 ***Early Humans***

Expanding on the ideas introduced in the previous unit, students move from studying biological evolution to cultural evolution. In this unit, students focus on what makes humans different from other animals, and how Paleolithic humans lived. The concept assessments for this unit measure students' ability to:

1. Explain how human ancestors evolved and cite the available evidence.
2. Analyze the role that language plays in enabling collective learning and the degree to which language and collective learning make humans different.
3. Identify the migration patterns of early humans and how early humans were able to adapt to live all over the Earth.
4. Describe the life-ways of Paleolithic people and the roles that archeologists, paleontologists, and anthropologists have played in generating information about human life before written records.

Unit 7 ***Agriculture***

In this unit, students learn how agriculture enabled complex human societies and ultimately cities, states, empires, and civilizations. The concept assessments for this unit measure students' ability to:

1. Define agriculture, identify where it emerged, and explain the Goldilocks Conditions that made its development possible.
2. Contrast the lifestyles of hunter-gatherers and farmers using primary and secondary sources.
3. Identify the features and major innovations of agrarian civilizations and explain the role collective learning played in their growth and development.
4. Compare the similarities and cultural differences among the four world zones prior to 1492. Students describe, analyze, compare, and situate (on maps), the type and nature of key networks of exchange (intercivilization/interregional systems/routes) occurring within each of the four world zones and explain what --for example, goods, ideas, peoples, organisms, technologies—moved across these spaces
5. Analyze the reasons why the emergence of agriculture is a threshold of increasing complexity.

Unit 8 Expansion & Interconnection

Unit 8 takes up the consequences of oceanic travel, tracing the expansion of the agrarian civilizations and the connection of the four world zones that followed the growth of oceanic travel. The concept assessments for this unit measure students' ability to:

1. Analyze what propelled the expansion and interconnection of agrarian civilizations.
2. Evaluate the implications of interconnected societies and networks of exchange on the spread of ideas, resources, and peoples.
3. Contrast changes in human life before and after the connection of the four world zones.
4. Explain how new networks of exchange enhanced collective learning and innovation.

Unit 9 Acceleration

In Unit 9, students learn about the “modern revolution” that accelerated changes that were both a cause and consequence of industrialism, nationalism, and imperialism. The concept assessments for this unit measure students' ability to:

1. Describe and analyze the factors that explain accelerating global change and the impacts of those changes on the biosphere.
2. Explain why the modern revolution over the past 250 years constitutes a threshold of increasing complexity.
3. Evaluate the impact of the modern revolution on the demographic, political, economic, and intellectual life of people.
4. Evaluate the degree to which the modern revolution has been a positive force.

Unit 10 The Future

In the final unit, students examine the challenges facing our species today and project possible outcomes, identifying viable solutions for sustainability. The concept assessments for this unit measure students' ability to:

1. Explain the 13.8-billion-year big history story in their own words.
2. Identify important human and environmental issues that affect the future of our species, the biosphere, and our entire planet.
3. Propose and argue their view on what will be the next major threshold of increasing complexity based on both short-term and long-term trends studied in the big history course.

Instructional Components:

“Teaching Big History”

<https://course.bighistoryproject.com/media/homepagemedia/CourseGuide.pdf>

Each unit includes the following lesson resources:

Activities

Activities are woven into every unit and are an integral part of every lesson. A variety of activity types and worksheets offer different ways for students to learn, experience, practice, and test concepts covered in the course. Certain activity types are included in multiple units, offering students and teachers some consistent practices for exploring big history themes within and outside their classrooms. Activities have been created and used by big history teachers. They can be used to introduce, reinforce, and extend big history in the classroom while developing students’ skills.

Investigations

Investigations are inquiry-based activities that help frame some of the big issues tackled in each unit. They invite students to take up a problem and require them to analyze, synthesize, and evaluate evidence to construct their own answers. They encourage students to use documents, artifacts, and objects to make arguments and explanations about change over time, while developing student literacy and critical thinking skills. The skills used in these investigations are revisited in a spiraling way for continual development throughout the course. Each investigation asks students to:

1. Frame an historical or social scientific problem
2. Read, analyze, corroborate, and synthesize sources from a carefully selected library of texts and experiences
3. Develop an explanation or build an argument to resolve their research question
4. Evaluate their own and other’s claims

Project-based learning activities

Project-based learning (PBL) is a method of instruction that has students take part in an extended inquiry about a complex question, problem, or challenge. Big History 11 includes three PBL activities:

- Unit 5: Invent a Species
- Unit 7: How Many People Could Earth Support Now and 100 Years from Now?
- Unit 10: What Is the Next Threshold?

Each of these activities is written to cover two weeks of instructional time. In each,

students work in groups to research their questions, compose a written response, and share their results with their class.

Assessment Component:

“Teaching Big History”

<https://course.bighistoryproject.com/media/homepagedmedia/CourseGuide.pdf>

Big History 11 includes a rich array of assessment material ranging from short quizzes, to single-day writing exercises, to multi-week activities. These activities include resources for teachers and students to monitor their learning and identify areas in need of improvement along the way.

Big History 11 includes five key assessment instruments:

Quizzes

Each unit includes a brief multiple choice quiz covering core concepts and a glossary quiz in which students match terms and definitions.

Tests

There are three longer tests included in the course, which consist of multiple choice and short-answer identification questions.

Investigations

Each unit includes an in-depth student investigation that requires research, writing, and presentation skills.

Project-based learning activities

There are three, two-week long PBL activities that provide students with opportunities to apply their knowledge and develop their own ideas.

Little Big History project

The capstone project to the course, the Little Big History project spans more than two weeks and provides rich opportunities for students to explore ideas within the course more deeply, and to represent their understanding through writing, presenting, and other artifacts.

Learning Resources:

“Teaching Big History”

<https://course.bighistoryproject.com/media/homepagedmedia/CourseGuide.pdf>

The Big History Project course includes a wide range of materials. All course contents come with teaching notes, are available online, and can be downloaded for offline use.

These resources include the following:

Videos

A series of talks by David Christian and other noted scholars presenting challenging topic to students, including visualizations of more complex ideas.

Texts

A series of articles and essays by noted scholars and BHP staff, including first source material.

Infographics

Data-rich illustrations created to illuminate complex topics such as the life of stars and the chemical make-up of the oceans .

Comics

Comic strips are used to describe the process of evaluating claims used in the course .

Image galleries

Each lesson includes a set of historical and informational illustrations to highlight key ideas and concepts.

Additional Information:

Much of the content for this course framework has been taken from documents provided by the Big History Project for this purpose.

“Teaching Big History”

<https://course.bighistoryproject.com/media/homepagemedia/CourseGuide.pdf>

BHP Standards 2013

<https://course.bighistoryproject.com/media/homepagemedia/BHPStandards2013.pdf>

“Big History Project FAQ”

<https://course.bighistoryproject.com/media/homepagemedia/BHPFAQ2013.pdf>