# CUNY Common Core Course Submission Form

Instructions: All courses submitted for the Common Core must be liberal arts courses. Courses may be submitted for only one area of the Common Core and must be 3 credits. STEM waiver courses do not need to be approved by the Common Core Course Review Committee. The form should not be used for STEM waiver courses.

College	Lehman College		
Course Prefix and	GE0170		
Number (e.g., ANTH 101,			
if number not assigned,			
enter XXX)			
Course Title	Earth Science and Society		
Department(s)	Earth, Environmental and Geospatial Science		
Discipline	Earth Science		
Credits	3		
Contact Hours	3		
Pre-requisites (if none, enter N/A)	N/A		
Co-requisites (if none, enter N/A)	N/A		
Catalogue Description	Structures and interactions between four main Earth layers: lithosphere, hydrosphere, atmosphere, biosphere and lithosphere in the context of societal activities.		
Special Features (e.g., linked courses)			
Sample Syllabus	Syllabus must be included with submission		
Indicate the status of this course being nominated:			
CUNY COMMON CORE Location			
Please check below the area of the Common Core for which the course is being submitted. (Select only one )			
Required			

Learning Outcomes

In the left column explain the course assignments and activities that will address the learning outcomes in the right column.

#### I. Required Core (12 credits)

#### A. English Composition: Six credits

A course in this area <u>must meet all the learning outcomes</u> in the right column. A student will:

<ul> <li>Read and listen critically and analytically, including identifying an argument's major assumptions and assertions and evaluating its supporting evidence.</li> </ul>
<ul> <li>Write clearly and coherently in varied, academic formats (such as formal essays, research papers, and reports) using standard English and appropriate technology to critique and improve one's own and others' texts.</li> </ul>
<ul> <li>Demonstrate research skills using appropriate technology, including gathering, evaluating, and synthesizing primary and secondary sources.</li> </ul>
<ul> <li>Support a thesis with well-reasoned arguments, and communicate persuasively across a variety of contexts, purposes, audiences, and media.</li> </ul>
<ul> <li>Formulate original ideas and relate them to the ideas of others by employing the conventions of ethical attribution and citation.</li> </ul>

## B. Mathematical and Quantitative Reasoning: Three credits

A course in this area must meet all the learning outcomes in the right column. A student will:

<ul> <li>Interpret and draw appropriate inferences from quantitative representations, such as formulas, graphs, or tables.</li> </ul>
<ul> <li>Use algebraic, numerical, graphical, or statistical methods to draw accurate conclusions and solve mathematical problems.</li> </ul>
<ul> <li>Represent quantitative problems expressed in natural language in a suitable mathematical format.</li> </ul>
<ul> <li>Effectively communicate quantitative analysis or solutions to mathematical problems in written or oral form.</li> </ul>
<ul> <li>Evaluate solutions to problems for reasonableness using a variety of means, including informed estimation.</li> </ul>
<ul> <li>Apply mathematical methods to problems in other fields of study.</li> </ul>

C. Life and Physical Sciences: Three credits A course in this area must meet all the learning outcomes in the right column. A student will: Students will learn the fundamental concept of the Earth Science Identify and apply the fundamental concepts and methods of a life or physical postulating the interconnectedness between Earth System elements science. such as hydrosphere, litosphere, atmosphere and biosphere. This interconnectedness is a basis for our understanding of the link between society and planet Earth. Students will, for example, review historical works of Alexander von Humboldt (1769 – 1859) and Vladimir Vernadsky (1863–1945) who were the first among other scientists who noticed and described the connection between earth system elements. In addition, students will be introduced to scientific method and methodology of the short- and long term of measurements in Earth Science. Students will have to complete weekly guizzes, 20 min each. Here is an example of the assessment using multiple choice: Question: Which one relates to scientific method? Potential Answers: 1. series of steps 2. lab analysis - statistical analysis 3. statistical analysis mathematical algorithm 4. Homework assignment: students will write a brief essay on advantages and deficiency of the scientific method. Students will assess the performance of scientific method in key • Apply the scientific method to explore natural phenomena, including hypothesis discoveries related to all four elements of the Earth System, i.e. development, observation, experimentation, measurement, data analysis, and data presentation. hydrosphere, litosphere, atmosphere and biosphere. Students will, for example, review the discovery of the continental drift in 1913 and plate tectonics in 1970s (lithosphere) as well as origin of life (biosphere) from inorganic matter. In relation to connection between lithosphere and biosphere students will be introduced to the famous hypothesis by Vernadsky who staged series of experiments to prove it. This experimentation not only demonstrated the connection between lithosphere and biosphere but also provided a foundation for endemic disease studies. Students will have to complete weekly guizzes, 20 min each. Here is an example of the assessment using multiple choice: Question: which brief explanation reflects the essence of Vernadsky's experiment? Potential Answers: 1. Geochemistry of soils

Ciganic matters     Granic matters     Granic subjects     Granic matters     Granic matter     Gran	2. We are what we eat	
4. Heatty body, healthy soul       Homework assignment: students will write a brief essay to distinguish between global measurements in four spheres of the Earth.       Students will expend data portals and tools from the Mational Aeronautics and Space Administration (NASA) as well as other ganceles to learn about current investigations and discoveries in Earth Science.       Students will expend betweekly quizzes, 20 min each. Here is an example of the assessment using multiple choice:       1. Olivine       2. Granit       3. Ringwoodite       4. Stromatolite       Homework assignment: students will vorte at visualization for NSAs portal and conduct interpretation of hurricane activity in the region current vasessessment using multiple choice is an example of the assessment using multiple choice:       9. Olivine       2. Granit       3. Ringwoodite       4. Stromatolite       Homework assignment: students will use free NASA software Panophy to visualize global rainfall distribution for a selected day.       Students will are vases assignment is pordue maps and chars.       They will bern vasios statistical methods to interpret data and present it in an effective written laboratory of fieldwork report.       Students will be to complete weekly quizzes, 20 min each. Here is an example of the assessment using multiple choice:       Students will are to complete weekly quizzes, 20 min each. Here is an example of the assessment using multiple choice:       Question: why hurricane patterns are different in the northern and southern hemispheres?       Potential Answers: <tr< th=""><th>3. Organic matters</th><th></th></tr<>	3. Organic matters	
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	4. Prevailing wind direction	
Homework assignment: students will use free NASA software Panoply	Homework assignment: students will use free NASA software Panoply	

to visualize hurricane Helene, 2024.	
Students will learn about peer-reviewed method in science and the	<ul> <li>Identify and apply research ethics and unbiased assessment in gathering and</li> </ul>
difference between data sources and publication outlets. They will	reporting scientific data.
review historic cases that involve controversial methodologies and	
data sources.	
For example, alimate change is one of the highly debetable issues in	
For example, climate change is one of the highly debatable issues in	
scientific ethics and data reporting and assessment. Just one example	
is a "nockey stick" chart presented to scientific community to explain	
increase of mean temperature record of the past 500 to 2000 years.	
This specific topic involves understanding of the so-called "climate	
proxies". Students will be introduced to various aspects of critical	
review of data and publications on the topic.	
Students will have to complete weekly guizzes, 20 min each. Here is an	
example of the assessment using multiple choice.	
example of the assessment using maniple choice.	
Question: which element of scientific process eliminates conspiracy	
or often controversial theories in Earth Science?	
Potential Answers:	
1 High quotation in journals	
2 Methodology is approved by few high experts in the field	
2. Methodology is approved by rew high experts in the new	
5. The results of the discovery match expectations of scientific	
team	
4. Method is repeatable by various scientists	
Homework assignment: students will discuss a controversial theory	
on Sun as a primary factor in global warming/climate change. Paper	
reference: Dudok de Wit, T., B. Funke, M. Haberreiter, and K. Matthes	
(2018), Better data for modeling the Sun's influence on climate, Eos,	
99. https://doi.org/10.1029/2018EO104403. Published on 04 September	
2018.	
II. Flexible Core (18 credits)	
Six three-credit liberal arts and sciences courses, with at least one course from	n each of the following five areas and no more than two courses in any discipline or
interdisciplinary field.	
A World Cultures and Global Issues	
A. World Cultures and Clobal Issues	
A Flexible Core course must meet the three learning outcomes in the right colu	umn.
	Gather, interpret, and assess information from a variety of sources and points of
	Evaluate evidence and arguments critically or analytically.
	Produce well-reasoned written or oral arguments using evidence to support
	conclusions.

A course in this area (II.A) must meet at least three of the additional learning outcomes in the right column. A student will:

<ul> <li>Identify and apply the fundamental concepts and methods of a discipline or interdisciplinary field exploring world cultures or global issues, including, but not limited to, anthropology, communications, cultural studies, economics, ethnic studies, foreign languages (building upon previous language acquisition), geography, history, political science, sociology, and world literature.</li> </ul>
<ul> <li>Analyze culture, globalization, or global cultural diversity, and describe an event or process from more than one point of view.</li> </ul>

<ul> <li>Analyze the historical development of one or more non-U.S. societies.</li> </ul>
<ul> <li>Analyze the significance of one or more major movements that have shaped the world's societies.</li> </ul>
<ul> <li>Analyze and discuss the role that race, ethnicity, class, gender, language, sexual orientation, belief, or other forms of social differentiation play in world cultures or societies.</li> </ul>
<ul> <li>Speak, read, and write a language other than English, and use that language to respond to cultures other than one's own.</li> </ul>

## B. U.S. Experience in its Diversity

A Flexible Core course <u>must meet the three learning outcomes</u> in the right column.

٠	Gather, interpret, and assess information from a variety of sources and points of view.
٠	Evaluate evidence and arguments critically or analytically.
٠	Produce well-reasoned written or oral arguments using evidence to support conclusions.

A course in this area (II.B) must meet at least three of the additional learning outcomes in the right column. A student will:

<ul> <li>Identify and apply the fundamental concepts and methods of a discipline or interdisciplinary field exploring the U.S. experience in its diversity, including, but not limited to, anthropology, communications, cultural studies, economics, history, political science, psychology, public affairs, sociology, and U.S. literature.</li> </ul>
<ul> <li>Analyze and explain one or more major themes of U.S. history from more than one informed perspective.</li> </ul>
<ul> <li>Evaluate how indigenous populations, slavery, or immigration have shaped the development of the United States.</li> </ul>
• Explain and evaluate the role of the United States in international relations.
<ul> <li>Identify and differentiate among the legislative, judicial, and executive branches of government and analyze their influence on the development of U.S. democracy.</li> </ul>
• Analyze and discuss common institutions or patterns of life in contemporary U.S. society and how they influence, or are influenced by, race, ethnicity, class, gender, sexual orientation, belief, or other forms of social differentiation.

#### C. Creative Expression

A Flexible Core course <u>must meet the three learning outcomes</u> in the right column.

<ul> <li>Gather, interpret, and assess information from a variety of sources and points of view.</li> </ul>
• Evaluate evidence and arguments critically or analytically.
<ul> <li>Produce well-reasoned written or oral arguments using evidence to support conclusions.</li> </ul>

A course in this area (II.C) must meet at least three of the additional learning outcomes in the right column. A student will:

<ul> <li>Identify and apply the fundamental concepts and methods of a discipline or interdisciplinary field exploring creative expression, including, but not limited to, arts, communications, creative writing, media arts, music, and theater.</li> </ul>
<ul> <li>Analyze how arts from diverse cultures of the past serve as a foundation for those of the present, and describe the significance of works of art in the societies that created them.</li> </ul>
<ul> <li>Articulate how meaning is created in the arts or communications and how experience is interpreted and conveyed.</li> </ul>
<ul> <li>Demonstrate knowledge of the skills involved in the creative process.</li> </ul>
Use appropriate technologies to conduct research and to communicate.

#### D. Individual and Society

A Flexible Core course must meet the three learning outcomes in the right column.

•	Gather, interpret, and assess information from a variety of sources and points of view.
•	Evaluate evidence and arguments critically or analytically.
•	Produce well-reasoned written or oral arguments using evidence to support conclusions.

A course in this area (II.D) must meet at least three of the additional learning outcomes in the right column. A student will:

<ul> <li>Identify and apply the fundamental concepts and methods of a discipline or interdisciplinary field exploring the relationship between the individual and society, including, but not limited to, anthropology, communications, cultural studies, history, journalism, philosophy, political science, psychology, public affairs, religion, and sociology.</li> </ul>
<ul> <li>Examine how an individual's place in society affects experiences, values, or choices.</li> </ul>
<ul> <li>Articulate and assess ethical views and their underlying premises.</li> </ul>
<ul> <li>Articulate ethical uses of data and other information resources to respond to problems and questions.</li> </ul>
<ul> <li>Identify and engage with local, national, or global trends or ideologies, and analyze their impact on individual or collective decision-making.</li> </ul>

## E. Scientific World

A Flexible Core course must meet the three learning outcomes in the right column.

•	Gather, interpret, and assess information from a variety of sources and points of view.
٠	Evaluate evidence and arguments critically or analytically.
•	Produce well-reasoned written or oral arguments using evidence to support conclusions.

A course in this area (II.E) must meet at least three of the additional learning outcomes in the right column. A student will:

<ul> <li>Identify and apply the fundamental concepts and methods of a discipline or interdisciplinary field exploring the scientific world, including, but not limited to: computer science, history of science, life and physical sciences, linguistics, logic, mathematics, psychology, statistics, and technology-related studies.</li> </ul>
<ul> <li>Demonstrate how tools of science, mathematics, technology, or formal analysis can be used to analyze problems and develop solutions.</li> </ul>
<ul> <li>Articulate and evaluate the empirical evidence supporting a scientific or formal theory.</li> </ul>
<ul> <li>Articulate and evaluate the impact of technologies and scientific discoveries on the contemporary world, such as issues of personal privacy, security, or ethical responsibilities.</li> </ul>
<ul> <li>Understand the scientific principles underlying matters of policy or public concern in which science plays a role.</li> </ul>