



# CURRICULUM OUTLINE

## Modules and Learning Objectives

### Clean and Equitable Energy Development Certificate Program



COURSE	#	MODULE	LEARNING OBJECTIVES
<b>Foundations: Energy</b>  Fundamental concepts and basic knowledge in energy. *Participants can opt out based on the results of a very short placement test.	1	Units and Basics of Energy	<ul style="list-style-type: none"> <li>Learn about forms of energy, energy units and conversions, the equivalence between energy and work, and the difference between the watt (a unit of power) and the kilowatt-hour (a unit of electrical energy).</li> </ul>
	2	Laws of Thermodynamics and Thermal Efficiency	<ul style="list-style-type: none"> <li>Build an understanding of the First Law of Thermodynamics, the efficiency of heat engines, and the basics of electromagnetism.</li> </ul>
	3	Electrical Energy: Generators, Electromagnetism, and Transformers	<ul style="list-style-type: none"> <li>Learn about how electric generators produce voltage, the basics of energy transmissions and transformers, alternating current (AC) vs direct current (DC) power, and how resistance is defined and calculated.</li> </ul>
<b>Foundations: Environmental and Climate Justice</b>  Fundamental concepts and approaches in environmental and climate justice.	1	Introduction and Notions of Justice	<ul style="list-style-type: none"> <li>Discuss key concepts related to justice, environmental, and climate justice.</li> <li>Learn about the history of environmental and climate justice in the U.S. and the world.</li> <li>Reflect on the challenges and opportunities addressed by environmental and climate justice work.</li> </ul>
	2	Environmental and Climate Justice	<ul style="list-style-type: none"> <li>Discuss concepts and synergies between environmental and climate justice.</li> <li>Familiarize yourself with the concept of energy justice.</li> <li>Learn about national and international case studies centered around the principles of environmental, climate and energy justice.</li> </ul>

<p><b>Energy Justice</b></p>  <p>How can we achieve a just and equitable energy transition?</p>	1	Introduction and Energy Justice Concepts	<ul style="list-style-type: none"> <li>Learn about energy justice terms and frameworks.</li> <li>Identify restorative and voice-centering approaches of energy justice.</li> <li>Learn about how energy justice can be incorporated into energy projects.</li> <li>Discuss the Just Energy Transition.</li> </ul>
	2	Energy Justice Challenges	<ul style="list-style-type: none"> <li>Discuss challenges related to energy production and access.</li> <li>Reflect on case studies that integrated energy justice considerations.</li> <li>Learn more about the Just Energy Transition.</li> </ul>
	3	Energy Poverty and Global Justice Issues	<ul style="list-style-type: none"> <li>Reflect on the relationship between energy poverty, energy services, and energy needs.</li> <li>Discuss energy poverty as it relates to global justice issues.</li> <li>Share best practices that can be adopted in clean energy projects to address energy poverty.</li> </ul>
	4	Renewable Energy and the Just Energy Transition	<ul style="list-style-type: none"> <li>Learn about renewable energy development (RED).</li> <li>Reflect on the energy and environmental justice implications of RED.</li> <li>Learn about the social challenges related to the Just Energy Transition.</li> </ul>
	5	Just Energy Transition: Cases and Projects	<ul style="list-style-type: none"> <li>Reflect on how the Just Energy Transition has included other concepts such as clean, equitable, and affordable.</li> <li>Share different perspectives about best practices to improve and rethink energy systems.</li> </ul>
<p><b>Clean Energy Development</b></p>  <p>Learn the nuts and bolts of clean energy project development.</p>	1	Overview of Course, Development and Project Financials	<ul style="list-style-type: none"> <li>Understand the different processes of clean energy project development.</li> <li>Gain a granular understanding of a clean energy project through a financial model.</li> <li>Discover opportunities of the clean energy market.</li> <li>Learn how to fund a project.</li> </ul>
	2	Origination and Offtake	<ul style="list-style-type: none"> <li>Understand the multiple options for monetizing your energy project.</li> <li>Learn about trading markets for electricity.</li> <li>Learn how to align the type of generation with the needs of the offtaker.</li> </ul>
	3	Interconnection and Project Design Essentials	<ul style="list-style-type: none"> <li>Learn about the interconnection process.</li> <li>Understand the impacts of interconnection on project value and timing.</li> <li>Learn about project design essentials (performance engineering, CapEx estimates, structure and technical concepts, among others).</li> </ul>
	4	Siting and Community Engagement	<ul style="list-style-type: none"> <li>Gain understanding on critical siting considerations and criteria.</li> <li>Understand siting opportunities and challenges.</li> <li>Learn how to build relationships and collaborate with different stakeholders.</li> <li>Learn how to navigate the permitting process.</li> <li>Learn how to engage with local communities.</li> </ul>
	5	Procurement of Equipment, Construction, and O&M	<ul style="list-style-type: none"> <li>Understand the execution of a project in the field (from idea to reality).</li> <li>Discuss how trade policy can impact your project.</li> <li>Understand how to manage the supply chain, equipment, construction, and operations and maintenance.</li> </ul>