



EG INTERNATIONAL ACADEMY

(by EMERALDGEARS INITIATIVE FOUNDATION GLOBAL under EGIF - capacity-strengthening initiatives)

A Certificate Programme on Renewable Energy, Net Zero, and Sustainability

This 40-hour program is carefully designed to balance core concepts, practical applications, and project-based learning, while emphasizing sustainability as an integral component across all modules. Below is the updated structure:

Module 1: Introduction to Renewable Energy, Net Zero Energy, and Sustainability (4 Hours)

- **Overview of Renewable Energy Sources**
 - Solar, Wind, Hydro, Biomass, Geothermal
- **Net Zero Energy Concept**
 - Definition, Importance, and Global Targets
 - Role of Sustainability in Achieving Net Zero Goals
 - Global and Regional Policies (Paris Agreement, SDGs, Net Zero Pledges)
- **Current Trends and Market Dynamics**
 - Emerging Technologies and Sustainability Challenges

Module 2: Solar, Wind Energy Systems, and Sustainable Practices (4 Hours)

- **Solar Energy Technologies**
 - Photovoltaics (PV) and Concentrated Solar Power (CSP)
 - Sustainable Solar System Design and Applications
- **Wind Energy Technologies**
 - Onshore and Offshore Wind Systems
 - Wind Turbine Design, Performance, and Environmental Impact
- **Case Studies on Solar and Wind Integration for Sustainability**

Module 3: Energy Efficiency, Demand-Side Management, and Sustainability Strategies (6 Hours)

- **Energy Efficiency Strategies**
 - Building Energy Management Systems (BEMS)
 - Retrofitting for Energy Efficiency with Sustainability Considerations

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O-464, Gaur City Center, Gaur Chowk, West, Sector 4, Greater Noida, Uttar Pradesh-201318, INDIA

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- **Demand-Side Management Techniques**
 - Smart Grids and Smart Meters.
 - Role of AI, IoT, and Sustainability in Demand Response
- **Life Cycle Assessment (LCA) of Energy Systems**
 - Sustainability Metrics and Carbon Footprint Reduction

Module 4: Net Zero Energy Buildings (NZEB) and Sustainable Architecture (4 Hours)

- **Principles of NZEB**
 - Sustainable Design, Materials, and Technologies
- **Energy Simulation Tools**
 - Software like Energy Plus, RET Screen with a focus on Sustainability Metrics
- **Policy and Financing for Sustainable NZEB Implementation**

Module 5: Policy, Economics, and Financing of Renewable Energy and Sustainability (4 Hours)

- **Energy Policy and Governance**
 - National and International Frameworks with Sustainability Dimensions
- **Renewable Energy Economics**
 - Cost Analysis, Business Models, and Long-Term Sustainability
- **Incentives and Financing Mechanisms**
 - Carbon Credits, Green Bonds, and Sustainability Financing

Module 6: Decarbonization, Climate Change Mitigation, and Sustainability Strategies (4 Hours)

- **Pathways to Net Zero and Sustainability**
 - Carbon Sequestration
 - Green Hydrogen and Energy Storage Technologies
- **Carbon Accounting and Reporting**
 - Tools like GHG Protocol with a Focus on Sustainability Metrics

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- **Climate Change Adaptation**

- Resilience and Sustainability Strategies for Communities.

Module 7: Project Work, Capstone, and Sustainability Integration (16 Hours)

- **Project Development**

- Designing a Sustainable Net Zero Energy Plan for a Community/Industry

- **Simulation and Feasibility Analysis**

- Integration of Sustainability Goals

- **Presentation and Evaluation**

- Sustainability Impacts and Long-Term Benefits

Features of the Programme

1. **Delivery Format:** Hybrid (online and offline), including lectures, case studies, and simulations.
2. **Learning Resources:** Interactive videos, e-books, and hands-on tools with a focus on sustainability practices.
3. **Assessment:** Quizzes, assignments, and a final project evaluation.
4. **Certification:** Awarded upon completion of all modules and assessments.

This updated framework ensures that sustainability is woven into every aspect of the program, empowering participants to apply holistic, sustainable approaches in the renewable energy sector. Would you like to further expand or customize any of the modules?

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