



Central International University-CIU
Diversity Learning Institute-DLI
Twikatane e.V Germany

Skills Curriculum/Syllabus

Course Duration: 3 to 6 months

Renewable Energy and Green Technologies

Course Summary

- Introduction to Renewable Energy
 - Solar Energy Systems
 - Wind Energy Systems
 - Hydroelectric Power Systems
- Biomass Energy and Biogas Systems
 - Geothermal Energy Systems
 - Energy Efficiency and Conservation
- Green Building Design and Sustainable Architecture
 - Energy Storage and Grid Integration
 - Policy, Economics, and Project Development

Course Objectives

1. **Understanding Renewable Energy Sources:** To develop a comprehensive understanding of various renewable energy sources, such as solar, wind, hydro, biomass, and geothermal, including their characteristics, availability, and potential applications.
2. **Energy Transition:** To explore the importance of transitioning from fossil fuels to renewable energy sources for achieving sustainability, reducing greenhouse gas emissions, and mitigating climate change.
3. **Technological Knowledge:** To acquire knowledge of the different green technologies and systems used in harnessing and utilizing renewable energy, including solar panels, wind turbines, hydroelectric power systems, bioenergy systems, and geothermal heat pumps.
4. **System Design and Integration:** To learn the principles and methodologies involved in designing, integrating, and optimizing renewable energy systems within existing infrastructures, including grid integration and energy storage technologies.
5. **Environmental Impact Assessment:** To understand the environmental impact of renewable energy technologies and evaluate their sustainability, including considerations such as land use, wildlife conservation, water usage, and lifecycle analysis.
6. **Policy and Regulatory Frameworks:** To explore the policy and regulatory frameworks related to renewable energy and green technologies, including incentives, subsidies, feed-in tariffs, and net metering, as well as understanding international agreements and initiatives.
7. **Energy Efficiency and Conservation:** To recognize the importance of energy efficiency and conservation measures in conjunction with renewable energy systems to maximize overall energy sustainability and reduce energy consumption.
8. **Economic Viability and Market Trends:** To analyze the economic viability and market trends associated with renewable energy technologies, including cost-benefit analysis, financial incentives, investment opportunities, and the emerging job market in the green energy sector.

9. **Project Development and Management:** To develop the skills necessary for the development, implementation, and management of renewable energy projects, including feasibility studies, resource assessment, permitting processes, project financing, and stakeholder engagement.
10. **Integration of Green Technologies:** To explore the integration of green technologies beyond energy production, such as energy-efficient building design, smart grids, electric vehicles, and sustainable transportation systems.
11. **Research and Innovation:** To foster research skills and encourage innovation in the field of renewable energy and green technologies, including conducting studies, evaluating new technologies, and proposing advancements in the sector.
12. **Global and Local Impacts:** To understand the global and local impacts of renewable energy adoption, including its potential to enhance energy access, improve rural electrification, create employment opportunities, and contribute to sustainable development goals.

By pursuing these objectives, students studying Renewable Energy and Green Technologies can contribute to the development and deployment of sustainable and clean energy solutions, addressing climate change, reducing dependence on fossil fuels, and promoting a more environmentally friendly future.