TE PŪ NGAO, TE PŪ WARO
CARBON AND ENERGY PROFESSIONALS NEW ZEALAND
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CEP1009: Energy Types, Forms, Media and Vectors Module Outline “Self-directed” Online Training

Prerequisites

None

Recommended prior learning/experience

None

Description

This training module on "Energy Types, Forms, Media and Vectors" aims to provide participants with a comprehensive understanding of different energy types and their significance across various sectors. It includes an analysis of the structure and functioning of the electricity market. The module examines the availability, market trends, energy density, and application suitability of both non-renewable and renewable energy sources. Additionally, it covers different energy storage technologies, their applications, and benefits. Participants will also analyse the importance of energy transition, energy efficiency, and climate change mitigation, and evaluate the role of policies and regulations in supporting these efforts.

Position and pathway

This module has an associated assessment which takes the form of an online examination. Success in the associated assessment is an element of CEP’s Certified Professional in Energy professional qualifications.

Delivery mode

The training module consists of ten (10) videos, three (3) progression quizzes and one (1) completion quiz. The progression quizzes serve as gatekeeper steps, requiring successful completion before participants can advance to the next lesson.

Hours

This module is split into six (6) lessons and totals approximately four and a half (4.5) hours of viewing time.

Students will be required to undertake three (3) progression quizzes, which should take around five (5) minutes each.

Learning outcomes

By the end of the module, students should:

1. Understand the different types of energy and their significance across various sectors.
2. Analyse the structure and functioning of the electricity market.
3. Examine the availability, market trends, energy density, and application suitability of non-renewable fuels.
4. Explore the availability, market trends, energy density, and application suitability of renewable fuels.
5. Understand different energy storage technologies, their applications, and benefits.
6. Analyse the importance of energy transition, energy efficiency, and climate change mitigation and evaluate the role of policies and regulations in supporting these efforts.

Module Structure and Progression

Lesson Outlines	
Lesson 1	**Energy Types**
	Video duration: 40 minutes approximately. Content relates to learning outcomes 1: • What is Energy? • Forms of Energy • Primary Energy Sources • Fossil Fuels • Renewable Energy Sources • Nuclear Energy • Energy for Process Heat vs Electricity • Energy Trends • Energy Density
Lesson 2	**Electricity Market**
	Video duration: 40 minutes approximately. Content relates to learning outcomes 2: • What is the Electricity Market? • Market Structure • Wholesale Electricity Markets • Contract Periods • Pricing Mechanisms • Control Pricing • Market Dynamics • Market Regulation • Market Challenges

	• Case Studies
Progression Quiz 1	
Lesson 3 – Part 1	**Non-renewable Fuels**
	Video duration: 20 minutes approximately. Content relates to learning outcomes 3: • What are Non-Renewable Fuels? • Availability of Non-Renewable Fuels • Market Trends • Energy Density • Coal: Availability and Market Trends • Coal: Application Suitability
Lesson 3 – Part 2	**Non-renewable Fuels**
	Video duration: 25 minutes approximately. Content relates to learning outcomes 3: • Oil: Availability and Market Trends • Oil: Application Suitability • Natural Gas: Availability and Market Trends • Natural Gas: Application Suitability • Environmental Considerations • Future Outlook
Lesson 4 – Part 1	**Renewable Fuels**
	Video duration: 30 minutes approximately. Content relates to learning outcomes 4: • What are Renewable Fuels? • Availability of Renewable Fuels • Market Trends • Energy Density • Solar Energy: Availability and Market Trends • Solar Energy: Application Suitability • Wind Energy: Availability and Market Trends • Wind Energy: Application Suitability • Hydroelectric Power: Availability and Market Trends • Hydroelectric Power: Application Suitability
Lesson 4 – Part 2	**Renewable Fuels**
	Video duration: 30 minutes approximately. Content relates to learning outcomes 4: • Biomass: Availability and Market Trends

	• Biomass: Application Suitability • Geothermal: Availability and Market Trends • Geothermal: Application Suitability • Hydrogen: Availability and Market Trends • Hydrogen: Application Suitability • Environmental Considerations • Future Outlook
Progression Quiz 2	
Lesson 5 – Part 1	**Energy Storage**
	Video duration: 20 minutes approximately. Content relates to learning outcomes 5: • What is Energy Storage? • Benefits of Energy Storage • Types of Energy Storage • Battery Energy Storage • Pumped Hydro Storage • Compressed Air Energy Storage • Thermal Energy Storage • Flywheel Energy Storage
Lesson 5 – Part 2	**Energy Storage**
	Video duration: 20 minutes approximately. Content relates to learning outcomes 5: • Application of Energy Storage • Challenges and Limitations • Integration with Renewable Energy • Market Trends and Outlook • Policy and Regulatory Considerations • Environmental Considerations
Lesson 6 – Part 1	**Energy Transition, Energy Efficiency, and Climate Change**
	Video duration: 15 minutes approximately. Content relates to learning outcomes 6: • Energy Transition • Renewable Energy Growth • Energy Efficiency • Energy Efficiency Strategies • Policy and Regulation
Lesson 6 – Part 2	**Energy Transition, Energy Efficiency, and Climate Change**
	Video duration: 20 minutes approximately.

	Content relates to learning outcomes 6: • Climate Change • Mitigation Strategies • Paris Agreement • Adaption Strategies • Synergies between Energy Transition, Energy Efficiency, and Climate Change Mitigation • Challenges and Barriers • Opportunities and Benefits
Progression Quiz 3	
Completion Quiz	**CEP1009: Energy Types, Forms, Media and Vectors**

Assessment

This training module does not have a formal assessment. CEP runs a credential, assessed by examination for CEP1009: Energy Types, Forms, Media and Vectors, which operates independently of this training module. Completion of this module is not a pre-requisite for the formal assessment.

Completion

The module will be considered completed and a digital “Completion” certificate will be available when the student has achieved a score of 75% or above in the Completion Quiz.