

Education for Sustainable Energy: Comparison of Different Types of E-Learning Activities

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COURSES CONTENT

COURSE 1: SOLID AND GASEOUS WASTE TREATMENT COURSE

Part I – Solid Waste Management (SWM).

Module 1: An overview of the steps of SWM from waste generation to final use/disposal.

Module 2: Waste conversion/treatment processes: mechanical-biological treatment.

Module 3: Waste conversion/treatment processes: anaerobic digestion technologies and production of biogas fuel.

Module 4: Waste conversion/treatment processes: composting technologies.

Module 5: Waste conversion/treatment processes: thermochemical conversion technologies.

Module 6: Most suitable SWM options in a specific local context.

Module 7: Environmental and economic impact of SWM options.

Module 8: Innovative solutions of SWM in urban areas.

Module 9: An introduction to Circular Economy.

Part II – Treatment of gaseous effluents.

Module 10: Air quality and pollution control.

Module 11: The engineering control of air pollution: cyclone.

Module 12: The engineering control of air pollution: electrostatic precipitation.

Module 13: The engineering control of air pollution: wet and dry scrubbing.

Module 14: The engineering control of air pollution: thermal and catalytic oxidation.

Module 15: The engineering control of air pollution: emerging air pollution control technologies.

COURSE 2: BIOFUELS AND RENEWABLE ENERGIES COURSE

Part I – Biomass Processing Technologies.

Module 1: Introduction of bioenergy and biomass fuels.

Module 2: Combustion of biomass.

Module 3: Torrefaction, pyrolysis and gasification for the production of fuels and chemical from biomass.

Module 4: Production of biodiesel from biomass.

Module 5: Production of bioethanol from biomass.

Module 6: Production of biogas from biomass.

Module 7: Life-Cycle environmental impacts of biofuels and co-products.

Part II – Alternative renewable energy production technologies

Module 8: Hydropower technologies.

Module 9: Wind Power Technologies.

Module 10: Solar Power Technologies

Module 11: Geothermal Power Technologies.

Module 12: Other Renewable Power Technologies.

Part III – Regulatory Frameworks for Renewable Energy Sources.

Module 13: National and International Environmental Policies.

Module 14: Existing Marketplaces.