

## Syllabus Outline

**1. GENERAL** : This course examines the economics of competing energy resources from the perspective of corporate investors and households who will adopt clean energy solutions only if it is in their self-interest. Learn how to compare alternative energy systems that require vastly different capital expenditures and ongoing operating costs. Evaluate the role of public policy instruments including taxes, regulations, and incentives in accelerating the transition away from traditional fossil fuels. Real-world case studies illustrate the issues faced by decision makers.

1.1 COURSE TITLE: Energy Transition

1.2 COURSE NUMBER: MT5212

1.3 CONTACT HRS: 40 Hours

Credits: 08

1.4 SEMESTER -OFFERED: III Semester

1.5 PREREQUISITE: None

1.6 SYLLABUS COMMITTEE MEMBER: Prof.. Sanjay Kar & Dr. Jaya Srivastava

## 2. COURSE CONTENT

Unit I	Overview of Energy Demand & Supply, India's Energy Mix, Energy Security, Energy Consumption, Energy Choices	8
Unit II	Introduction to Carbon Capture Utilization & Storage (CCUS), Strategic Value of CCUS, Role of CCUS in Energy Transition, CCUS Technology Innovation	8
Unit III	Transforming traditional fuels: Coal & Bioenergy	8
Unit IV	Various Fuel Alternatives : Natural Gas, Hydrogen, Solar & Wind Energy, Nuclear Power	8
Unit V	Biomass in Energy Application, Problem of Variable Renewable Energy, Energy Storage	8

**Reading Material** will be provided by the course instructor.

### Learning Outcomes:

- the importance of energy resources to the society,
- available energy resources on surface and subsurface,
- the energy intensity of fossil fuel in conventional/unconventional reservoirs
- renewable energy resources and their energy capacity
- the strategy of low carbon energy production
- the future of energy supply