Agro-Energy Audit and Management **3 1 0 4 to 4**

Course Description & Objective:

To acquaint and equip about the sources of energy, conservation of energy and its management. Energy use scenario in agricultural production system, agro-based industry. Study of energy efficiency, energy planning, forecasting and energy economics.

Course outcomes:

1. *understand need to differentiate between conventional, non-conventional & renewable energy sources.*
2. *reason out why the non-conventional energy sources need to be used as replacement to conventional form of energy.*
3. *to know the importance & role of government all over the world to promote use of the renewable energy sources*
4. *recognizing of energy sources and types of energy used in agricultural production and agro-industry*
5. *collecting of necessary data for pre-energy audit in an agricultural enterprise or agro-industry*
6. *performing of organization and planning of necessary infrastructure studies for establishing of energy management system*
7. *understanding of relationship between energy consumption and production as for energy efficiency and savings*
8. *determining of potential of energy efficiency and energy savings*

UNIT I

Energy resources on the farm: conventional and non-conventional forms of energy and their use. Heat equivalents and energy coefficients for different agricultural inputs and products.

UNIT II

Pattern of energy consumption and theirconstraints in production of agriculture.Direct and indirect energy.Energy audit of production agriculture, and rural living and scope of conservation.

UNIT III

Identification of energy efficient machinery systems, energy losses andtheir management. Energy analysis techniques and methods: energybalance, output and input ratio, resource utilization, conservation of energysources.

UNIT IV

Energy conservation planning and practices. Energy forecasting, Energy pricing and incentives for energy conservation,

UNIT V

Energyeconomics, Factorsaffecting energy economics.Energy modelling.

Suggested Readings

1. Kennedy WJ Jr. & Wayne C Turner.1984. *Energy Management*. Prentice Hall.

2. Pimental D. 1980. *Handbook of Energy Utilization in Agriculture*. CRC
3. Fluck RC & Baird CD.1984. *Agricultural Energetics*. AVI Publ.
4. Rai GD. 1998. *Non-conventional Sources of Energy*. Khanna Publ.
5. Twindal JW & Anthony D Wier 1986. *Renwable Energy Sources*. E & F.N. Spon Ltd.
6. Verma SR, Mittal JP &Surendra Singh 1994. *Energy Management and Conservation in Agricultural Production and Food Processing*. USG Publ. & Distr., Ludhiana.