SUBJECT NO-CH60016, SUBJECT NAME- FUNDAMENTALS OF BIOENERGY

LTP- 3-0-0,CRD- 3

SYLLABUS :-

Earths energy budget and momentum transfer; Climate systems, Green House Gases, Energy challenge for emerging nations; Food vs. Fuel debate; Land use and Remote Sensing analysis; Bioenergy crops: second generation crops, new opportunities and synergies based on land analysis; Life Cycle Analysis.Biomass resources: Starch, Sugar, Lignocellulose, Oilseeds, Municipal Solid Wastes; Cellular Bioenergetic Pathways; Enzyme Kinetics, Immobilized Enzymes; Microbial and Fungal Growth; Design, Analysis and Stability of Bioreactors; Production of Cellulosic Fuels: effects of mass transport on reaction kinetics; Biodiesel production: kinetics and thermodynamics; Bio-hydrogen production: fermentation and photobiological methods; Bio-gas production: anaerobic digestion; Microbial Fuel Cells; By-product recovery and utilization.Text/Reference Books:1. Biofuels Engineering Process Technology, C. M. Drapcho, N.P. Nhuan, T.H. Walker, McGraw Hill, 20082. Biomass to Renewable Energy Processes, Ed. Jay Cheng, CRC Press, Taylor and Francis Group, 20103. Ecological Climatology: Concepts and Applications, by Gordon B. Bonan, Cambridge University Press, 2008