BIOMASS CONVERSION AND BIOREFINERY

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IIT Guwahati

TYPE OF COURSE : Rerun | Elective | UG/PG

COURSE DURATION   : 12 Weeks (24 Jan' 22 - 15 Apr' 22)

EXAM DATE   : 23 Apr 2022

INTENDED AUDIENCE : Final year BE/B.Tech., ME/M.Tech./MS/MSc and PhD students

INDUSTRIES APPLICABLE TO : All industries that process biomass to various products such as biofuels, platform chemicals and other value- added products

COURSE OUTLINE :

Since last two decades, researchers worldwide have drawn their attention to biomass based fuels as well as other value added products as biomass is not only renewable but also CO2 neutral. This course will provide an insight to the basics of biomass, various conversion technologies and the different types of products that can be obtained upon successful conversion. In first few lectures types biomass, their structure and composition has been discussed followed by details on various pre-treatment technologies currently adapted to produce cellulose.

ABOUT INSTRUCTOR :

Prof. Kaustubha Mohanty has obtained his PhD degree in Chemical Engineering from Indian Institute Technology Kharagpur and is currently working as a Professor of Chemical Engineering at Indian Institute Technology Guwahati. He has more than 13 years of teaching and research experience at IIT Guwahati. His key research areas are biofuels, bioseparation, biological wastewater treatment, membrane technology, ionic liquids, and microalgae biorefinery and biomass pyrolysis. He has supervised twelve PhD students and fifteen more are currently pursuing their PhD research under his supervision.

COURSE PLAN :

 Week 1**:** Introduction

 Week 2**:** Biomass

 Week 3**:** Biorefinery

 Week 4**:** Biomass Pretreatment

 Week 5**:** Physical and Thermal Conversion Processes

 Week 6**:** Microbial Conversion Process

 Week 7**:** Biodiesel

 Week 8**:** Biooil and Biochar

 Week 9**:** Bioethanol and Biobutanol

 Week 10**:** Hydrogen, Methane and Methanol

 Week 11**:** Organic Commodity Chemicals from Biomass

 Week 12**:** Integrated Biorefinery