NANOTECHNOLOGY IN AGRICULTURE

PROF. MAINAK DAS
Dept. of Biological Sciences and Bioengineering & Design
IIT Kanpur

INTENDED AUDIENCE : Students of Agriculture Engineering, Biotechnology, Botany, Biochemistry and Design
PRE-REQUISITES : 10+2 in science
INDUSTRIES APPLICABLE TO : Agriculture industry,Seed industry,Fertilizer industry,Food technology industry

COURSE OUTLINE :

Modern agriculture is a chemical intensive process starting from fertilizer, pesticide to food preservation. Modern nanotechnology tools if used judiciously in future, have the ability to offer sustainable development along with the optimal, precision and more effective use of chemicals. In this course, I will be sharing my journey from basic agriculture to modern day nanoparticle based agriculture practices.

ABOUT INSTRUCTOR :

Prof.Mainak Das is a faculty of IIT Kanpur India in the department of biological sciences & bioengineering since April 26 2010. He did his bachelors degree (1989-1994) in agriculture from College of Agriculture Indore. Thereafter he did his post graduate degree (1994-1997) in animal physiology from National Dairy Research Institute Karnal India. Following his post graduate studies, he worked as researcher in IISc Bangalore India (1997-1999), University of Neuchatel, Switzerland (1999-2000), University of Clemson, USA (2000-2004) and in University of Central Florida, USA (2004-2010). He did his doctoral studies from College of Medicine of University of Central Florida (2004-2008), while working as a full time employee of the university. He introduced the regular physiology course for the PG students in IIT Kanpur in 2011. He has wide interest in physiology, sensors, energy and bioelectronics and maintains an active research team at IT Kanpur, India. Prof. Das has been working on cell culture technologies, serum free medium development and defined cell culture systems for last 20 years. He has expertise in long term culturing of excitable cells. His doctoral thesis is a complex problem of modern cell culture technology, titled:'Tissue Engineering The Motoneuron To Muscle Segment Of The Stretch Reflex Arc Circuit Utilizing Micro-fabrication,Interface Design And Defined Medium Formulation'.

COURSE PLAN :

Week 01 : History of agriculture and the role of chemicals in modern agriculture
Week 02 : Overview of nanotechnology
Week 03 : Application of nanotechnology in modern day agriculture practices I
Week 04 : Application of nanotechnology in modern day agriculture practices II
Week 05 : Application of nanotechnologies in animal production
Week 06 : Nanotechnology and shelf life of agricultural and food products
Week 07 : Nanotechnologies for water quality and availability
Week 08 : Green nanotechnology and the role of good governance and policies for effective nanotechnology development