

NSE-844 Innovations and Entrepreneurship in Nanotechnology

Prerequisite: Nil

Category: Elective Course

Existing Course Contents	Proposed Changes
<ul style="list-style-type: none"> • Innovation for sustainability, social entrepreneurship • Innovation for development, and creating and capturing value from innovation and entrepreneurship • Process model of entrepreneurship with clearer links between innovation and entrepreneurship • Training in the commercial aspects of high-technology management is found lacking in a number of areas, when applied to such a new technology • Nanotechnology is differentiated from the major technological booms of the past in IT and biotechnology by its far more interdisciplinary nature and its broader sphere of impact 	<ul style="list-style-type: none"> • Introduction <ul style="list-style-type: none"> ○ Innovation in High-Tech Sector ○ Interdisciplinary Nature and Broad Impact of Nanotechnology Developments ○ Adoption of Nanotechnology Solutions: Challenges and Opportunities ○ Big Market Players vs. Small & Medium Size Enterprises (SMEs) • Successful Nanotechnology Startups <ul style="list-style-type: none"> ○ Companies Performing Value Addition: Additives, Coatings, Sensors ○ Companies Producing Consumables: AFM Tips, TEM Membranes, X-Ray Lenses ○ Fabless Semiconductor / Nanoelectronics Companies: Various Products, Services ○ Other Examples: Water/Liquid Repellant Clothing, Biomaterials, Lab-on-a-Chip • Innovation Opportunities in the Pakistani Context <ul style="list-style-type: none"> ○ Nanotechnology in Agriculture, Food, Water and Textile Sector, Healthcare, Drugs, and Diagnostics, • Business and Legal Aspects <ul style="list-style-type: none"> ○ Government Policies and Support for Innovation ○ Legal Aspects and Regulations

Proposed Weekly Plan for the Concerned Faculty

Week /Lecture	Topic
1-5	Introduction <ul style="list-style-type: none"> • Innovation in High-Tech Sector

	<ul style="list-style-type: none"> • Interdisciplinary Nature and Broad Impact of Nanotechnology Developments • Adoption of Nanotechnology Solutions: Challenges and Opportunities • Big Market Players vs. Small & Medium Size Enterprises (SMEs)
6-11	<p>Successful Nanotechnology Startups</p> <ul style="list-style-type: none"> • Companies Performing Value Addition: Additives, Coatings, Sensors • Companies Producing Consumables: AFM Tips, TEM Membranes, X-Ray Lenses • Fabless Semiconductor / Nanoelectronics Companies: Various Products, Services • Other Examples: Water/Liquid Repellant Clothing, Biomaterials, Lab-on-a-Chip
11-13	<p>Innovation Opportunities in the Pakistani Context</p> <ul style="list-style-type: none"> • Nanotechnology in Agriculture, Food, Water and Textile Sector, Healthcare, Drugs, and Diagnostics,
14-17	<p>Business and Legal Aspects</p> <ul style="list-style-type: none"> • Government Policies and Support for Innovation • Legal Aspects and Regulations