

Handbook
Post Graduate
Diploma
in
Entrepreneurship,
Innovation and
Design Thinking
(PGD-EID)

Centre for Innovation and Entrepreneurship
Jamia Millia Islamia
New Delhi– 110025

PROGRAMME DESCRIPTION: The Post Graduate Diploma in Entrepreneurship, Innovation and Design Thinking hereafter PGD seeks to provide an understanding of business planning techniques that transform ideas into viable commercial businesses. Students will conduct the market, organizational, operational, strategic and financial analyses that are required to produce a venture concept and an actionable business plan. Students will study firms' business planning efforts as well as create a business plan for a START-UP during the practicum.

PROGRAMME THEMES: The PGD focuses on following principal themes:

- How do entrepreneurs create business concepts and solve challenges?
- How does one qualify ideas and strategies in order to effectively select a course of action?
- How are action-oriented plans structured in order to capture opportunity and mitigate risks?

PROGRAMME PEDAGOGY: Apart from theory sessions, classes will include group exercises as well as discussion of readings and cases. Students will analyze and revise actual business plans during the two semesters.

Student's Classroom Contributions: Students are expected to actively participate in every classroom session. You need to be fully prepared with the readings and cases for a given session, if given in advance. Positive participation is another expectation, which includes full attendance, active involvement in all in-class exercises and discussions, and maintenance of a classroom demeanor that encourages the participation of others.

You will be evaluated on the quantity as well as the quality of your contribution and insights.

Quality comments possess one or more of the following attributes:

- (a) Contribute to moving the discussion forward;
- (b) Offer a different, unique and relevant perspective on the issue;
- (c) Build on other comments of others; and
- (d) Include some evidence or analysis of inherent tradeoffs, i.e., demonstrate reflective thinking.

Classroom contributions will include group exercises as well as oral and written assignments on various papers, which you need to pass. Apart from this, emphasis will be on short written commentaries on the business plan investigations, which will be assigned during the semesters. The commentaries will require students to perform triage and remediation on business plans and will be included in the class participation grade. Due to the nature of the course, participation in the in-class group exercises is a required component of class participation.

All students must submit a description of their idea for their START-UP business plan as on when informed. Alternatively, students may indicate an interest in revising an existing START-UP plan. Students should email a Word file as per the delivery instructions contained herein.

Submission Deadlines: Submission deadlines must be taken seriously. First Business Plan Investigation should be submitted within the prescribed due date. Individuals must identify the risk factors associated with the shortlisted START-UP plan {shall be posted on CIE (DIC) Notice board}. Limit your analysis to a three page bullet point list and prepare the additional plans listed in the schedule for discussion in class.

Group business model summaries must be submitted by the prescribed due date. These three to five page documents, excluding exhibits must address the issues and tasks outlined in "Business Model Analysis" {that shall be posted on CIE (DIC) Notice board}.

Second Business Plan Investigation should also be submitted within the prescribed due date. Individuals must prepare a two page list of resources that Shortlisted START-UP will require in order to accomplish their stated objectives. The Shortlisted START-UP document shall be posted to CIE (DIC) Notice board. Prepare the additional plans listed in the schedule for discussion in class.

Written analyses: Students will be required to prepare two written documents that will be graded. All students will analyze and revise a designated START-UP business plan as the midterm assignment. Students may choose one of two options for the final project. First, teams may submit a business plan for a venture that they are contemplating (or have launched). Second, teams that do not have a venture idea may conduct an analysis and revision of an assigned plan.

Both final project options require that students submit a “black book” citing all supporting evidence and documenting analysis of their plan (in the case of the first option) or revised plan (in the case of the second option). The final assignment will be graded on content, substantiation and oral defense of the plan (in the case of the first option) or the revised plan (in the case of the second option).

These assignments should be submitted within the prescribed due dates. They should be a maximum of 10 and 25 pages respectively, excluding exhibits. The case assignments will be graded for content and format. You are required to turn in papers that conform to professional standards of organization, grammar, punctuation, spelling, and paragraph/sentence structure. These 3 assignments must be completed as individuals without consulting others. Late papers will be graded as an ‘F’.

Laptops: Laptops may be required for some of our class sessions.

Delivery: All assignments must be submitted as Microsoft Office files by email to each of the following two addresses: cie@jmi.ac.in and consultantcie@jmi.ac.in . Students must send two separate emails (not one in which the other address receives a copy upon delivery). Papers must also be delivered in physical form to the Office of CIE - JMI.

Honor Code: Students must adhere to the CIE-JMI Honor Code. All students are obligated to report to the instructor any suspected violations of the Code (see <https://www.jmi.ac.in>).

Required Materials: Case Packet; Materials posted to Notice board (including the START-UP Proposals, Shortlisted START-UP and START-UP Final plans (hereinafter “The Business Plan Pack”).

Grading Plan: The course grade will be based on the following components and weights:

Classroom Contributions: 20%

Case Report 1 (individual): 25%

Case Report 2 (group): 50%

Instructor

The resource persons/Consultants: management and entrepreneurship at Centre for Innovation & Entrepreneurship, Jamia Millia Islamia shall be teaching and guiding the courses in entrepreneurship, innovation, design thinking and START-UP Projects.

The Consultants shall be from the Real Business World with hands on experience of all the major functions of Entrepreneurship and Start-Ups.

ACTION LINE TO BE FOLLOWED FOR STARTUP IDEA:**STEP 1 - Ideas and Opportunities**

Case: "START-UP under MSME"

Reading: Writing a Business Plan: The Basics

STEP 2 - Risk Assessment

Case: Business Plan Investigation 1: Shortlisted START-UP (posted to the CIE (DIC) Notice board) Reading: An Introduction to Online Competitive Intelligence Research; Managing Risk: Scanning the Hazy Horizon

STEP 3 - Market Analysis

Case: "START-UP under MSME"

Reading: Note on Market Definition and Segmentation; Market Research: Listen and Learn; Note on Market Research

STEP 4 - Value Propositions

Case: "START-UP Shortlisted"

Reading: Customer Value Propositions in Business Markets

STEP 5 - Business Models

Case: "START-UP Shortlisted/under MSME"

Reading Suggestions: Is It Time to Trade In Your Business Model? Building a Business Model and Strategy: How They Work Together; Idea Mapping

STEP 6 - Resource Assessment

Case: Business Plan Investigation 2: Shortlisted START-UP (posted to Notice board) Qualified START-UP (posted to Notice board)

STEP 7 -Midterm Review

Analyze the business plan. Assess its strengths and weaknesses. Create a revised plan. All analysis and research materials supporting your work must be provided with citations. All calculations and assumptions must be clearly and completely depicted.

The Instructor will meet with each group to review their business model.

STEP 8 - Financial Analysis

Case: "START-UP Finalization"

Reading Suggestions: Building Your Pro-Forma Financial Statements; Note on Financial Forecasting. The Instructor will meet with each group to review analytical issues regarding the business plan projects.

STEP 9 - Business Model Testing

Case: Third Business Plan Investigation Assess the business models for the firms contained in The Business Plan Pack

Reading Suggestions: Strategic Response to Uncertainty; Strategy under Uncertainty; Discovery- Driven Planning; Having Trouble with Your Strategy? Then Map It

STEP 10 - Business Model Redesign

Case: "LBI – Projects under MSME" The Business Plan Pack Reading Suggestions: Action Plans: The Architecture of Implementation; How To Stay On Course: Sensing And Responding to Deviations From Plan; Project Adaptation: Dealing With What You Cannot Anticipate

STEP 11 - Business Plan Analysis and Remediation (instructions shall be posted to CIE (DIC) Notice board)

STEP 12 - Business Plan Presentation and Defense (instructions shall be posted to CIE (DIC) Notice board)

SEMESTER – 1

S. No.	PAPER CODE	TITLE OF PAPER	CREDIT	SESSIONAL	END-TERM
1.	CIEID-101	Business Research and Data Analysis	04	25	75
2.	CIEID-102	Management Accounting and Finance	04	25	75
3.	CIEID-103	Management Concept, Entrepreneurship and Innovation	04	25	75
4.	CIEID-104	Design Thinking and Human Centered Design	04	25	75
Project Work					
S. No.	PAPER CODE	TITLE OF PAPER	CREDIT	ASSIGNMENTS	END-TERM
1.	CIEID-105	Design Prototyping Lab	04	25	75
2.	CIEID-106	Seminars on Ideation	04	25	75

CIEID-101: Business Research and Data Analysis

Unit – 1

08 Lectures

Business Research: An Introduction

Introduction to Basic Concepts; Stages in the Business Research Process; Problem Identification and its importance, Research Objectives, Types of Research; Significance of Business Research in Decision Making; Business Research in Practice; Ethics in Research; Research Bias.

Unit – 2

08 Lectures

Research Designs & Data Types

Classification of Research Designs; Exploratory, Descriptive and Conclusive Research Designs; Causal Research; Primary Data- Nature, Types, Means & Issues in Obtaining Primary Data Secondary Data- Nature, Sources and Advantages.

Unit – 3

08 Lectures

Measurement, Attitude Scales and Questionnaire Design

Concept of Measurement, Scales of Measurement—Their Types & Properties; Measurement of Attitudes & Scaling Procedures; Questionnaire Design and Testing; Questionnaire and Opinionnaire.

Unit – 4

08 Lectures

Sampling, Hypothesis Testing and Data Preparation

Sampling Theory, Designs and Issues; Central Limit Theorem; Hypothesis Testing-Concept & Procedures; Data Preparation Process

Unit – 5

08 Lectures

Data Analytics

Introduction to SPSS; Comparison with MS-Excel; Analyzing data using SPSS—T-test, ANOVA, Correlation & Factor Analysis; Interpretation of results; Reporting Research Findings.

Suggested Readings:

1. Marketing Research by N K Malhotra and S Dash (6th Edn). Pearson.
2. Research Methods for Business by U Sekaran and R Bougie (7th Edn). Wiley
3. Market Research by E Mooi, M Sarstedt and I Mooi-Reci. Springer
4. Research Methodology C R Kothari and G Garg. New Age Int'l Publishers.
5. Marketing Analytics by W L Winston. Wiley.

CIEID-102: Management Accounting and Finance

Unit – 1

08 Lectures

Building a Financial Forecast

Introduction – Basic Accounting Terms; Setting Financial Goals; Understanding Financial Statements – Profit & Loss, Balance Sheet, Cash Flow; Revenue Forecasting; Expense Forecasting; Integrated Financial Model

Unit – 2

08 Lectures

Managing the Financial Resources of a Venture

Monitoring Financial Performance; Day-to-Day Cash Flow Management and Forecasting

Unit – 3

08 Lectures

Sources of Financing

Financing over the Life of a Venture; Start-Up Financing from the Entrepreneur, Friends and Family; Bootstrapping; External Sources of Funds: Equity, Debt; Financing the High-Growth Business

Unit – 4

08 Lectures

Planning for the Entrepreneur's Transition

Business Valuation; Exit Planning

Unit – 5

08 Lectures

Accounting and Finance

Seminar and Workshop by Subject Experts on the application of Accounting and Finance Concepts into the real Business World followed by interactive Question Answer Session.

Text Book

1. Management Accounting, I M Pandey, Indian Institute of Management
2. Accounting and Finance for Managers, Crest Publishing House

CIEID-103: Management Concept, Entrepreneurship and Innovation

Unit – 1

08 Lectures

Management Concepts– Basics

Definitions and Meaning; Nature of Management - Management as an Art and Science; Steps of Management – Planning, Organizing, Directing and Controlling; Levels of Management; Forms of Organisation.

Unit – 2

08 Lectures

Business Management Fundamentals

Strategic Management; Strategy formulation; Goal Setting; SMART Concept of Goals; Managerial Decision Making; People Management; Management by Objective.

Unit – 3

08 Lectures

Entrepreneurship & Innovation – Definition, Objective and Features

Key terminology: Entrepreneurship & innovation; Difference between Entrepreneurship and Traditional Businesses; Entrepreneurs and Intrapreneurs; Technological Entrepreneurship: Characteristics and needs of Innovation

Unit – 4

08 Lectures

Entrepreneurial Theories and Entrepreneurial Environment

Theories of Entrepreneurship; Successful Entrepreneurs and their traits; Types of Entrepreneurs; Entrepreneurial Environment-PESTEL and their effects; Business Environment Analysis.

Unit – 5

08 Lectures

Entrepreneurial Development

Business Planning; Mid-career Dilemmas; Entrepreneurial Growth and Competitive Advantage; Changing Role of Entrepreneurs. Entrepreneurship Development Institute; Entrepreneurship development Programs.

Suggested Readings:

1. Fundamental of Management by S P Robbins, M Coulter and D de Cenzo. Pearson.
2. Principles of Management by P C Tripathi and P N Reddy. McGraw Hill.
3. Innovation and Entrepreneurship by Peter F. Drucker (Special Indian Edition). Routledge
4. Entrepreneurship (11th Edn) by R. Hisrich, M. Peters and D. Shepherd. McGraw Hill
5. Entrepreneurship Development by Sangeeta Sharma. Prentice-Hall India.
6. Guide to Start-Ups by Taxmann.
7. Entrepreneurship Development by S.S. Khanka. S. Chand Publishers

CIEID-104: Design Thinking and Human-Centered Design Prototyping

Unit – 1

08 Lectures

Design Thinking – Introduction

Definitions and Meaning; Design Thinking – as an Art and Science; Stages of Design Thinking – Empathise, Define, Ideate, Prototype and Test; Entrepreneurship Design Thinking

Need of Design and Design Thinking

Writing the Problem Statement; Understanding Stakeholders and Users; Personas, Empathy Maps; Current Scenarios to identify pain points; Ideation and Storyboarding; Deriving Goals from Ideas; Future Scenarios and Moments of Max Impact; Prototyping

Unit – 2

08 Lectures

Design Thinking in Start-Up – 5 stages integration

Empathise – Listening to People involved and the End User Problems Realisation; Define – Listing the Problems and the Root Causes; Ideate – Finding the solutions in the most effective manner; Prototype – Making the samples to Launch; Test – Evolve Offerings

Human-Centered Design - Prototyping : Make it Real

Warm-Up Exercise; Activity: Start with an Idea; Activity: Prototype a Product; Discussion: Feedback from Your Team; Activity: Iterate; Discussion: Debrief

Unit – 3

08 Lectures

Human-Centered Design - Prototyping : Build To Think

Activity: Plan Your Service Prototype; Activity: Create a Journey Map; Activity: Role Play; Discussion: Feedback from Your Friend; Activity: Iterate and Refine Your Plan; Discussion: Debrief

Unit – 4

08 Lectures

Human-Centered Design - Prototyping : Plan For Field Tests

Activity: Prototype a Space; Activity: Plan Your Field Tests; Activity: Sketch It; Activity: Mock It Up; Discussion: Feedback from Your Team; Activity: Iterate and Refine Your Plan; Discussion: Debrief

Unit – 5

08 Lectures

Human-Centered Design - Prototyping : In The Field

Activity: Prototype in Context; Activity: Feedback from Real Users; Activity: Co-Creation; Activity: Iteration on the Fly; Discussion: Debrief; Reflections; Discussion: Moving Forward

CIEID-105: Design Prototyping Lab

<p>Lab – 1 Idea sketching and presentation Sketching 2 point and 3 point perspectives; Form generation and visual rendering using grayscale and colour palette; Composition and visual presentations of ideas and concepts</p>	<p>04 Lectures</p>
<p>Lab – 2 2-D Visual Graphics Photo manipulation and Photo editing; Creation of vector graphics; Introduction to Raster and Vector softwares (Adobe Photoshop, Adobe Illustrator, GIMP)</p>	<p>04 Lectures</p>
<p>Lab – 3 Printed products Mockups and Prototyping Making mockups for testing user interaction of printed material like poster, catalogues, Brochures, etc.</p>	<p>04 Lectures</p>
<p>Lab – 4 User Interface and User Experience Design Low-fidelity website and mobile application prototyping; Mobile Application wireframes and User flow; Website and Mobile Application Prototyping; Introduction to Adobe XD & Invision</p>	<p>04 Lectures</p>
<p>Lab – 5 form generation and 3-D modelling software 3D modelling and simulation using Autodesk Fusion 360 and Solid Works</p>	<p>04 Lectures</p>
<p>Lab – 6 Real Scale Mockup Making and User Testing Low Fidelity mockups using cardboard and wood for user testing and form development</p>	<p>04 Lectures</p>
<p>Lab – 7 3D form generation for tangible products Developing Wood, Styrofoam, Clay and POP form models; Painting and surface treatment of different material like wood, Styrofoam, POP, MDF etc. for high fidelity models.</p>	<p>04 Lectures</p>
<p>Lab – 8 Rapid Prototyping Introduction to 3D printing technology; Modelling for 3D Printing; FDM 3d Printing</p>	<p>04 Lectures</p>
<p>Lab – 9 Laser and CNC router Cutting Form generation for Laser cut and CNC routed products; Introduction to vector softwares for G-Code generation; Laser Cutting and surface etching</p>	<p>04 Lectures</p>
<p>Lab – 10 Product Presentation Techniques Product Photography and Editing; Showcasing product and user interactions; Presentation and assets generation for marketing</p>	<p>04 Lectures</p>

CIEID-106: Seminar on Ideation

4 Unit

The following Topics shall be covered in the Seminars as mentioned below:

IDENTIFY AND REVIEW THE REAL WORLD PROBLEM STATEMENT

How to identify a real-world, complex problem and work through the identified Problem, reframe as necessary and elevate the problem to represent human needs beyond the technological or business needs.

IDEATING AND BUILDING CUSTOMER JOURNEYS

Ideation is a change of mindset, judgment free thinking, responding and a sense of collaboration with other participants. It is essential we see solutions in the form of journeys. This allows for a broader canvas and a holistic view and allows for comparison between what is and what should be.

ASSESSMENT WILL BE BASED ON PRESENTATIONS BY THE STUDENTS DURING THE SEMINARS

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SEMESTER – 2

S. No.	PAPER CODE	TITLE OF PAPER	CREDIT	SESSIONAL	END-TERM
1.	CIEID-201	Legal Environment for Entrepreneurship	04	25	75
2.	CIEID-202	Start-Up formation and Scalability	04	25	75
3.	CIEID-203	Marketing Management and Digital Marketing	04	25	75
4.	CIEID-204	Innovative Technologies for Start-Ups	04	25	75
Project Work					
S. No.	PAPER CODE	TITLE OF PAPER	CREDIT	ASSIGNMENTS	END-TERM
1.	CIEID-205	Seminars on Start-up building	04	25	75
2.	CIEID-206	Interactive Sessions	04	25	75

CIEID-201: Legal Environment for Entrepreneurship

Unit – 1

08 Lectures

Industrial Policy

Type of Firms; Key provisions of Companies Act 2013; Intellectual Property Rights (IPR); Licensing; Small –Scale Industries; Developing Facilities; Exemptions

Unit – 2

08 Lectures

Consumer Protection

Consumer Rights: The Right to Safety, The Right to be Informed, The Right to Choose, The Right to be Heard, The Right to Redressal, The Right to Consumer Education, The Right to a Healthy Environment; Consumer Protection Act: District Forum, State Commission and National Commission

Unit – 3

08 Lectures

Government, Business and Society

Corporate (Business) accountability; Social Responsibility of Business; Policy Statement for Abatement of Pollution: Integration of Government Agencies, Environment Audit, Public Partnership; Corporate Social Audit

Unit – 4

08 Lectures

Changing Marketing Environment and Opportunities

The Marketing Environment; Macro Environment; Micro Environment; Conducting Situation Analysis; Evaluating Portfolio of Opportunities

Unit – 5

08 Lectures

Legal Environment for Business

Incorporation of company: Memorandum, Articles and Registration; Audit and Auditors; Board of Directors (BOD); Inspection and Punishment; Winding up of a Company

Suggested Readings:

1. Law for Entrepreneurs by D Mayer, D Warner, G J Siedel and J K Lieberman.
2. Gazette of India, Govt. of India (GOI online publications)

CIEID-202: Start-Up formation and Scalability

Unit – 1

08 Lectures

Start-Up Ecosystem

General presentation about startup development phases (from formation, to validation to scaling) specifically from the support role's perspective; Key terminology: idea & innovation, entrepreneurship & start-ups; Innovation megatrends; Why startups?; Startup as a category; Understanding & mapping startup ecosystems; Public-private partnerships; Developing startup ecosystems; Maturity levels and measures for startup ecosystems; Measuring and Collecting valuable data; Use of startup data

Unit – 2

08 Lectures

Implementations and applications of Web technologies in Startups

Introduction to web design, Introduction of Languages used in Web development, terminologies of web developments, Content Management System, how to design websites using CMS wordpress, Role of Woo Commerce in Word press based website. How to design E-commerce website without coding. Starting and setting up an online store. Ecommerce and Payment Gateway.

Unit – 3

08 Lectures

Start-Up Project Planning and Analysis

Focus on the formation phase, which is the most crucial phase for co-founding team building; Preparing for the journey: what things to focus on and why?; Value of ideas & how to innovate more systematically; Building BIG visions; Measuring potential; Success & failure factors; Mission, Vision & Strategy; Co-founder team building; Idea / team fit; Shareholder agreement (SHA); Confirming team commitment; Problem / solution fit; Market timing and journey; Planning in short & long term; Evaluating opportunities; Funding options and strategies at this stage; Additional tools & resources for self learning

Unit – 4

08 Lectures

Start-Up Execution at the Incubation Centre

Focus on product/service build and validation phase, which is the most crucial phase for future revenue and profitability generation; What things to focus on and why?; Defining a product and MVP; Defining initial business model; Customer development and future prioritization; Extended team building and funding options; Validation metrics; Methods & tools; Additional tools & resources for self learning

Unit – 5

08 Lectures

Start-Up Project Scalability Report

Focus on scaling phase, which is the most crucial phase for getting serious about building a real and scalable business; What things to focus on and why?; Business planning; Go to market strategies; Born global & internationalization; Scaling metrics (KPI's); Recruiting; Building processes; Funding options; Working with big companies; Methods & tools; Additional tools & resources for self learning

Reference Readings:

1. Guide to Start-Ups by Taxmann.
2. Business Model Innovation – The Organizational Dimension by Nicolai J. Foss & Tina Saebi. Oxford University Press

CIEID-203: Marketing Management and Digital Marketing

Unit – 1

08 Lectures

Introduction to Marketing Management

Core marketing concepts; Differences between marketing and Sales concepts; Marketing Management; Marketing-mix; marketing segmentation; target marketing and positioning; Consumer Decision Making Process.

Unit – 2

08 Lectures

Concepts of Product, Advertising and Branding

Product Concept; Product-mix. Marketing communications; Advertising; Branding; Pricing practices and strategies; factors affecting pricing; Product Life Cycle; Stages of PLC and Innovation.

Unit – 3

08 Lectures

Marketing and Digital Marketing

Innovation Diffusion Process- Innovation, Adopters, Communication Channels, Time and Social System. Introduction to Digital Marketing; Traditional vs Digital Marketing; Digital Marketing and Internet Marketing; Diagnosis of the Present marketing scenario in Digital world.

Unit – 4

08 Lectures

Digital Marketing Techniques

Search Engine Optimization; On-Page and Off-Page Optimization techniques; Social Media optimization; Social Media Marketing- Facebook, Twitter, LinkedIn, Wordpress; Search Engine Marketing and Tools.

Unit – 5

08 Lectures

Social Media Ethics

Social Community; Social Entertainment; Social Media and Privacy Ethics; Informed consent; anonymity; risk of harm; Legalities and Ethics at national and global level; case studies.

Suggested Readings:

1. Marketing Management by P Kotler and K L Keller (15th Edn). Pearson.
2. The New Rules of Marketing & PR by D M Scott. John Wiley and Sons
3. Social Media Marketing by J Miller. Kindle Edition available on Amazon.com

CIEID-204: Innovative Technologies for Startups

Unit – 1

o8 Lectures

Applications of Artificial Intelligence in Businesses

Introduction to Artificial Intelligence, Artificial Neural Network (ANN); Applications of Artificial Intelligence in Businesses. The Non-technical Guide to Machine Learning and Artificial Intelligence.

Unit – 2

o8 Lectures

Introduction to IoT

IoT overview, IoT evolution, difference between M2M and IoT, application of IoT: smarty washing machine, Smart lighting, Smart AC, smarty sleep system, Smart weather system, Smart Gardening, and smart garbage cans, IoT Architecture, IoT technologies, Implementing smart objects, board connection, sensors and actuators, Sensors available in Market, Challenges of IoT

Unit – 3

o8 Lectures

Introduction to Nanotechnology

Introduction to Nanotechnology, Historical background of Nanotechnology, classifications of nanomaterials; Nanowires, Nanoparticles, Quantum dots, green nanotechnology, applications of nanotechnology, Nanomedicine, Nanorobotics.

Unit – 4

o8 Lectures

Conventional and Non-conventional Energy Resources

Introduction to sources of energy, Conventional and non-conventional sources of energy, basic principles of generation of power from sources, environmental concerns. Introduction to Generation, transmission and distribution systems sustainability, renewable energy and source of renewable energy. Introduction to Wind Energy, Introduction to Small Hydropower Energy, Solar Energy: Introduction and Application.

Unit – 5

o8 Lectures

Environment and Environmental Pollution

Introduction, Definition, composition structure, impact of human on environment, impact of environment on human. Introduction and need of clean and environmental technologies. Environmental pollution; air, water, land and noise pollution, solid waste management, social issues and environment.

Sustainable development, resources, conservation, water conservation, rain water harvesting. Human population & environment, population growth, variation among nation, population explosion, environment & human health.

Text Book

1. Artificial Intelligence by Naresh Kumar & Sunil Kumar, Publisher: Satya Prakashan
2. Learning Internet of Things, Peter Waher, Packt Publishing Ltd, 27-Jan-2015
3. Internet Of Things, Bahga, Orient BlackSwan, ISBN: 9788173719547, 8173719543
4. Environmental Science Paperback – 2006 by Y.K. Singh (Author), New Age International Publishers.

CIEID-205: Seminars on Start-up Building (4 Unit)

The following Topics shall be covered in the Seminars as mentioned below:

FIELD RESEARCH AND SYNTHESIS

How to go as a Team on the field and learn about user motivations, concerns, inhibitions and needs.

How the Team Leader should review the approach and offer methods to extract insights from realms of data collected.

THE 3 P'S – PRIORITISATION, PROTOTYPING & PRESENTATION

Creativity and holistic thinking allows for lofty ideals and ideas, it is essential these are prioritised, prototyped and tested on the practicality of implementation. Present findings and solutions.

ASSESSMENT WILL BE BASED ON PRESENTATIONS BY THE STUDENTS DURING THE SEMINARS

CIEID-206: Interactive Sessions 4 Unit

The following Topics shall be covered in the Interactive Sessions as mentioned below:

- Understanding client's business and providing customized solutions to the underlying problem using IT/Internet as a tool
- Importance of Professional Networking in Building Brands
- How to start a Start-Up in India
- Empowerment of Youth for Environment Conservation
- Role of Start-ups in Higher Education
- Grassroots Innovation
- Initial exploration around technologies
- Innovation and Entrepreneurship in creating technologies and products of societal value

ASSESSMENT WILL BE BASED ON PRESENTATIONS BY THE STUDENTS DURING THE SESSIONS

About Centre for Innovation and Entrepreneurship

Jamia Millia Islamia has started a Centre for Innovation and Entrepreneurship (CIE) in 2014 to enthuse spirit of Innovation, incubation and Entrepreneurship among the students and faculty members. CIE has two major divisions Innovation and Technology Management Division and Incubation & Entrepreneurship Development Division. The CIE has been conducting Motivational Talks, Exhibitions of innovators, University wide innovate for a cause competition, Summer Internship etc. Many Innovations Clubs are working under CIE has tied up with Delhi University's Design Innovation Centre and also running a Livelihood Business Incubation Centre at Jamia Millia Islamia with the help of National Small Industries Corporation (NSIC).