

National Council for Innovation and Entrepreneurship (NCIE)

Government of India

45-Day Certificate Programme Syllabus

This is the Innovation & Entrepreneurship Development Programme (IEDP).

Duration: 45 Days (90 Hours)

Workload: 60% Blended (Offline + Online + Practical)

Target Audience: Engineering students (CSE, ECE, EEE, Mechanical, Civil & Humanities and Sciences)

Credits: 3 Credits (Recommended)

Requirements: Student will make continuous evaluations and a project during the course of the class and present a pitch at the end of the course.

COURSE – I

An Innovation, Design Thinking & Start-up Development course.

Course Code

NCIE-IEDP-101

Course Duration

45 Days (90 Hours)

Course Objectives

Through the course, students will be able to:

Know about innovation and entrepreneurial ecosystems.

Implement Design Thinking approaches to addressing real-world problems.

Create new and creative products and services.

- Build entrepreneurial mind-set and leadership skills.
- Create start up ideas using Lean Start-up methodology.

Course Outcomes (Cos)

Upon successful completion, student will be able to:

CO1: To understand the principles of innovation and entrepreneurial mind-set.

CO2: Use Design Thinking to solve a problem.

CO3: Design products from a customer perspective.

CO4: Create Business Model Canvas.

CO5: Pitch up an idea to investors.

Module-wise Syllabus

Module-I

Innovation Ecosystem (Days 1–5)

- Introduction to Innovation
- Innovation Ecosystem in India
- Start-up India Mission
- Atal Innovation Mission
- National Innovation Policy

How does IIC, Incubators, and Accelerators work? What is the role of IIC, Incubators and Accelerators?

Case Studies of successful Indian Start-up

Activity

Idea Identification Workshop

Module-II

Design Thinking (Days 6–12)

- Empathy Mapping
- Problem Identification
- User Research
- Ideation Techniques
- Brainstorming
- Customer Persona

Activity

Design Thinking Sprint

Module-III

Prototype Development (Days 13–22)

- Product Design
- Digital Prototyping
- Wire framing
- Rapid Prototyping
- MVP Development
- User Testing

Activity

Prototype Demonstration

Module-IV

Start-up Development (Days 23–34)

- Lean Start-up
- Business Model Canvas
- Value Proposition Canvas
- Customer Discovery
- Revenue Models
- Team Building

Activity

Business Model Preparation

Module-V

Start-up Launch (Days 35–45)

- Start-up Registration
- DPIIT Recognition
- Funding Opportunities

- Angel Investors
- Venture Capital
- Government Schemes
- Pitch Deck Preparation

Activity

Demo Day

Practical Components

- Idea Validation
- Customer Interviews
- Prototype Building
- Business Model Canvas
- Startup Pitch

Assessment Pattern

Component Marks

Attendance 10

Assignments 20

Practical Activities 20

Prototype 20

Final Startup Pitch 30

Total 100

Recommended Software

- Canva
- Figma
- Miro
- ChatGPT
- Google Workspace
- Notion

COURSE – II

Emerging Technologies, Product Innovation and Entrepreneurship

Course Code

NCIE-IEDP-102

Duration

45 Days (90 Hours)

Course Objectives

Students will

- Understand emerging technologies.
- Develop innovative products.
- Learn digital transformation.
- Commercialize technology.
- Build technology startups.

Course Outcomes

CO1: Give an explanation of emerging technologies.

CO2: Design products using Design technology.

CO3: Build prototypes.

CO4: Identify commercialisation opportunities.

CO5: Make plans for a technology venture.

Module-I

Emerging Technologies (Days 1–8)

- Artificial Intelligence
- Machine Learning
- Internet of Things
- Robotics
- Industry 4.0

- Blockchain
- Cloud Computing
- Cyber Security
- Digital Twins

Module-II

Product Innovation (Days 9–18)

- Product Lifecycle
- Product Design
- User Experience
- Product Validation
- Innovation Frameworks

Activity

Product Ideation Workshop

Module-III

Smart Technologies (Days 19–28)

Branch-specific applications:

CSE

- AI Applications
- Data Science
- Cloud Services

ECE

- Embedded Systems
- IoT Devices

Mechanical

- Smart Manufacturing

EEE

- Smart Grid

Civil

- Smart Infrastructure

H&S

- Digital Business

Module-IV

Entrepreneurship (Days 29–38)

- Start-up Lifecycle
- Product-Market Fit
- Go-to-Market Strategy
- Branding
- Digital Marketing

Module-V

Technology Ventures (Days 39–45)

- Funding
- Technology Licensing
- Incubation
- Start-up India Portal
- Technology Pitch

Laboratory Activities

- AI Tools
- IoT Demonstration
- Product Design
- CAD
- Simulation
- Product Validation

Assessment

Component Marks

Quiz 10

Assignments 20

Practical 20

Product Prototype 20

Final Presentation 30

COURSE – III

Advances in technology and business model innovation. New developments in technology and business model innovation.

Course Code

NCIE-IEDP-103

Duration

45 Days (90 Hours)

Course Objectives

Students will

- Understand commercialization.
- Protect Intellectual Property.
- Develop business models.
- Prepare investment proposals.
- Launch technology ventures.

Course Outcomes

CO1: To be familiar with commercialization process.

CO2: Safeguard and preserve innovation via IPR.

CO3: Create viable business plans.

CO4: Make startups ready for investment.

CO5: Turn research into products.

Module-I

Technology Commercialization (Days 1–8)

- Research to Market
- Innovation Pipeline

Technology Readiness Level (TRL)

- Product Commercialization

Module-II

The training will cover Intellectual Property Rights (Days 9-16)

- Patents
- Copyright
- Trademark
- Industrial Design
- Technology Transfer
- Licensing

Module-III

Business Model Innovation (Days 17–28)

- Business Model Canvas
- Lean Canvas
- Platform Business
- Subscription Models
- Digital Business Models

Activity

Business Model Workshop

Module-IV

Start-up Finance (Days 29–37)

- Bootstrapping
- Angel Investment
- Venture Capital
- Government Funding
- CSR Funding

- Financial Projections

Module-V

Commercialization Strategy (Days 38–45)

- Market Entry
- Go-to-Market Strategy
- Sales Strategy
- Investor Pitch
- Startup Launch

Experiential Learning

- Patent Search
- Market Research
- Financial Planning
- Business Model Canvas
- Investor Pitch Competition

Assessment

Component Marks

Attendance 10

Case Studies 20

Practical 20

Business Plan 20

Investor Pitch 30

Reference Books (All Three Courses): Reference books that are used in all three courses.

The Lean Startup – Eric Ries

1. Business Model You – Kenny U.S. Lee & Alex Ogilvy
2. The book Zero to One by Peter Thiel. The book Zero to One by Peter Thiel.

3. The Strategic Innovation Design Thinking Class is the fourth class in the course.
4. The fourth class is Strategic Innovation Design thinking Class.
5. Technology Services and Support – Joyce and James Lipsman
6. The Business of the Future – Peter F. Drucker
7. AICTE Innovation & Entrepreneurship Policy (AIEP)
8. National Education Policy (NEP 2020)
9. Startup India Learning Program
10. WIPO Academy – Intellectual Property Learning Resources

Pedagogy

- Expert lectures
- Design thinking workshops
- Case studies
- Industry mentoring
- Hands-on prototype development

Field visits to incubators/startups to review their work and offerings

Innovation challenges and hackathons

- Team-based capstone projects
- Final start-up/demo day – Jury evaluation

This is appropriate as a template curriculum framework for a 45-day NCIE Certificate Programme that can be adapted by engineering institutions with practical activities to suit their local context with a shared framework of overarching concepts.