# NAAN MUDHALVAN – PROPOSAL

Project-based experiential learning program for Arts & Science Colleges by IBM Career Education

**Table of Contents**

## 1. Overview

Naan Mudhalvan is a flagship initiative of the Tamilnadu government, implemented through the Tamil Nadu Skill Development Corporation (TNSDC), to provide students with various skill training based on current industry demand for talent. The initiative assists students in learning in-demand skills that will prepare them for employment in the industry.

As part of Naan Mudhalvan initiative, IBM is proposing a project-based experiential learning program for the 6th semester students of BSc and BCA groups from Govt., Govt. aided and private colleges across the state of Tamil Nadu as part of the Naan Mudhalvan initiative.

## 2. Objectives

- To empower the students with technical skills to require solving a real-world challenge
- To train the students on the approach to building solutions by applying critical thinking and problem-solving capabilities in a collaborative environment.
- To mentor the students in building proof-of-concept solutions by applying design thinking concepts.
- To introduce the standard project development methodologies followed in the industry to the students
- To develop the professional skills like teamwork, leadership qualities, communication in the students
- To enhance the employability of students in order to get them internships and job opportunities

## 3. Program Details

This program is a mandatory, 3 months immersive project-based learning program delivered as a course in the curriculum. 6th Semester students from Bachelor of Science (B.Sc.) and Bachelor of Computer Applications (BCA) from Government, Government Aided and Private colleges are the beneficiaries of the program.

Project Based Learning is introduced to the students to give them hands-on experience on open-source digital technologies while they learn an end-to-end journey to solve a problem. By the end of this course, the student understands the approach to solve a problem in collaborative learning environment while being guided by mentors from Industry and College

**Highlights of the Program:**

- Total 60 Hrs. of project-based learning engagement
- 30 Hrs. of virtual live instructor-led, hands-on training on leading technologies such as
    - Artificial Intelligence,
    - Software Testing
    - Data Analytics & Visualization
    - Front-End Web Development
- 30 Hrs. to develop the solutions for the real-world use cases in various business domains like healthcare, finance, retail, fashion, agriculture, transportation, manufacturing, etc.
- 20 use cases identified to build innovative solutions by implementing leading technologies.
- Team based development activity build their professional skills
- Use case specific mentoring support to handhold the students during the development process.
- Training the students on design thinking, agile methodologies, and project development process.

- 12 hrs. of knowledge sessions for the faculty on design thinking, agile methodologies, and project development process.
- Hands-on with open-source technologies and digital tools
- Master classes for the students and faculty on best industry practices
- Evaluation of project submissions by evaluators
- Dashboard Access to the various stakeholders to track the progress
- Certificate of completion along with assessment report for students

**Outcomes of the Program**

On completion of the course, the students will be able to

- Understand the leading technologies and apply them for solving real-world problems
- Understand the concepts of design thinking and agile methodologies
- Develop professional skills like teamwork, time management, communication and project management skills
- Understand various digital tools & best practices followed in the industry
- Develop the products from scratch i.e. idea to working prototype
- Industry course completion certificate from IBM

### 4. Program Milestones
Following are the major milestones of the project. Refer to annexure-1 for the detailed project plan.

- Set-up the platform to onboard various stakeholders
- Organize the program orientation session for principals & faculty
- Onboard the principals, college SPOCs, faculty mentors and faculty evaluators
- Organize the program orientation session for students
- Onboard the students on to the platform
- Use case orientation sessions for the students
- Team formation & project enrollment
- Team approval & faculty mentor, evaluator assignment
- Conduct Agile & Design Thinking sessions for students which can be attended by faculties too
- Training batch selection & team assignment
- Technical training sessions for students
- Knowledge sessions for faculty
- Design thinking & Agile training sessions for students
- Project development by student teams
- Project mentoring sessions
- Project submission by the student teams
- Project approval by the mentors
- Project evaluation by the evaluators & score submission
- Leaderboard generation
- Issuing certificate of completion
- Program success meeting & closure.

### 5. Stake Holders

Key stakeholders and their responsibilities are listed below.

| Organization | Role & Responsibility |
| --- | --- |
| Tamil Nadu Skill Development Corporation | Role: Owner of the Program<br><br>Responsibilities:<br><br>● Approval for the program structure and execution methodology<br>● Project Budgeting & Financing<br>● Facilitating interaction with universities<br>● Onboarding of the colleges (principal & faculty)<br>● Collecting the information of beneficiaries (students) and validation<br>● Integration of Naan Mudhalvan platform with program platform<br>● Coordination with stakeholders like ministry of education, higher education council etc.<br>● Branding & Promotion of the program across various channels |
| IBM | Role: Platform & Execution Partner<br><br>Responsibilities:<br><br>● Set-up the platform to drive the student learning journey<br>● Prepare the training curriculum<br>● Create the 20 usecases on the platform along with collaborative work environment<br>● Conduct Agile & Design Thinking sessions for students<br>● Coordination with college level stakeholders<br>● Online live instructor-led training<br>● Project mentoring via various channels<br>● Email campaigns & notifications on the program<br>● Review and Approval of project submissions<br>● Evaluation of approved projects & scoring<br>● Certification of completion<br>● Weekly reports on the program |
| University | Role: University Partner<br>Responsibilities:<br>● Communication with affiliated colleges<br>● Circulars / notifications to colleges on program<br>● Assigns a university SPOC for the program<br>● Coordinates with college SPOCs for the timely completion the program |
| College | Role: College Partner<br>Responsibilities:<br>● Assign a College SPOC for the program<br>● Assign faculty mentors & evaluators for the program<br>● Implement the program as part of academic calendar<br>● Ensure the availability of resources - Labs, Internet, Projectors etc.<br>● Ensure the attendance of students in technical training sessions |

| | • Support students in project development<br>• Attend the knowledge sessions<br>• Evaluation of submitted projects |
|---|---|

## 6. Scope of Work
Scope of work includes the following activities

### A. Platform & Project-based learning content
a. Dedicated infrastructure for the platform
b. Integration of Naan Mudhalvan portal with platform
c. Dedicated micro-site for each college
d. Setting-up roles & permissions for the users/stakeholders
e. Creation of four learning tracks for students - refer Annexure-2 for training curriculum
    i. Artificial Intelligence
    ii. Software Testing
    iii. Data Analytics & Visualization
    iv. Front-End Web Development
f. Creation of project workspace for 20 use cases - Refer Annexure-3 for sample list of use cases
g. Creation of 20 project specific mentoring channels
h. Creation of training calendar for faculty & students on the platform
i. Setting up the email templates & email campaign engine on the platform
j. Setting up the dashboards for various stakeholders
k. Customization of the reports as per project requirements
l. Customization of evaluations metrics and scorecard
m. Creation of technical assessments on the platform
n. Customization of certificate of completion
o. Setting-up support channels

### B. Operational Support (Platform level & On the ground)
a. Organizing the program orientation sessions for the Principals & faculty
b. Organizing the program orientation sessions for the students
c. Organizing the platform orientation sessions for the faculty & students
d. Registration of college SPOC, mentor and evaluators
e. Coordination with principals for the approval for SPOC, Mentor and Evaluators
f. Student invitation emails & onboarding
g. Coordination with college SPOCs to add alternate emails for the students with wrong emails ID's
h. Coordination with college SPOCs for team approval, modifications etc.
i. Coordination with college SPOCs for the assignment of mentor and evaluators
j. Orientation session for the faculty on the training calendar & training batch selection
k. Coordination with college SPOCs for the training batch selection & team assignment
l. Coordination with faculty mentors for the timely submission of project deliverables.
m. Onboarding of industry mentors and evaluators

n. Assigning teams to industry mentors & evaluators
o. Orientation sessions for the industry mentors and evaluators
p. Monitoring the 20 project channels to ensure the communication between students and industry mentors
q. Coordination with trainers to deliver the training as per schedule
r. Coordination with industry mentors for the approval activities
s. Coordination with industry evaluators for the evaluation of submitted projects
t. Weekly report generation & circulation to various stakeholders
u. Support through various channels - Telephonic, Chat, Emails
v. Physical visits to the campuses for extended support if necessary.
w. Coordination with University SPOC for the timely notifications to the colleges
x. Coordination with TNSDC technical & support team

## C. Technical Training, Mentoring and Evaluation

a. Training curriculum creation for 4 technology tracks
b. Conduct Agile & Design Thinking sessions for students
c. Identifying 20 use cases and relevant content creation on the platform
d. Training calendar creation for the program
e. 30 Hrs. of technology training for 4 technologies in 12 batches, so total 48 parallel batches, total 1440 hrs. Of technical training - refer Annexure-4 for detailed training batches & timings
f. 14 Hrs. of knowledge sessions for the faculty on design thinking, agile methodologies, digital tools and project templates. Refer Annexure-5 for the list of knowledge sessions.
g. Answering the queries on 20 project channels between 9am - 9pm by the mentors - Maximum response time 24 Hrs.
h. Organizing alternate day AMA (Ask me Anything Sessions) for the students & faculty during the project development
i. Organizing the platform orientation sessions in Tamil medium
j. Uploading the recordings of sessions to dashboards of students & faculty
k. Review and approval of the project deliverables by the industry mentors
l. Evaluation of the projects submitted by the students & scoring

## 7. Project Timeline

The weekly timeline of the project is listed below with tentative dates. Refer annexure-1 for detailed milestones, activities, and timelines.

| Month | Week | Milestone | Stakeholders |
|---|---|---|---|
| Jan' 23 | Week(-2) - Week (0) | Platform set-up and micro-sites for colleges | TechTeam |
| Jan' 23 | Week-1 | Launch, Principal & faculty orientation session | Principals and Faculty |
| Jan' 23 | Week-2 | Onboarding of college SPOCs, mentors and evaluators | Faculty |

| Month | Week | Milestone | Stakeholders |
|---|---|---|---|
| Jan' 23 | Week-2 | Invitation to students & onboarding | Students |
| Jan' 23 | Week-3 | Student orientation sessions & Replay | Students |
| Jan' 23 | Week-4 | Team formation & Project enrollment | Students |
| Feb' 23 | Week-5 | Team Approval by the College SPOC | College SPOC |
| Feb' 23 | Week-6 | Training Batch Selection by College SPOC & Assignment of teams to the batches | College SPOC |
| Feb' 23 | Week-7 | Commencement of Technology Training Sessions | Students |
| Feb' 23 | Week-7 | Commencement of Faculty Knowledge Sessions | Faculty |
| Mar' 23 | Week-12 | End of Technology training sessions | Students |
| Mar' 23 | Week-12 | End of Faculty Knowledge Sessions | Faculty |
| Mar' 23 | Week-13 | Commencement of Project Development | Students |
| Mar' 23 | Week-13 | Commencement of AMA Sessions | Students & Faculty |
| April' 23 | Week-16 | End of Project Development | Students |
| April'23 | Week-16 | End of AMA Sessions | Students & Faculty |
| Apr'23 | Week-17 | Commencement of Project Evaluations | Faculty & Industry Evaluators |
| Apr'23 | Week-20 | End of Project Evaluations | Faculty & Industry Evaluators |
| May'23 | Week-21 | Evaluation report submission | Management |
| May'23 | Week-22 | Certificate Generation for Students & Faculty | Students & Faculty |
| June '23 | Week-23 | Overall Report Submission & Project Closure | Management |

## 8. Project Execution Methodology

Project execution methodology has been designed considering the infrastructural challenges in the colleges and the academic calendar.

**Key points in consideration:**

a. Program will be delivered as a mandatory course for all the students

b. University / college allocates 8 hrs. In a week / three sessions of each 2.5 hrs in a week to deliver the technology training and mentoring sessions.

c. Total 4 weeks will be provided for the technology training and 4 Weeks + 3 Dedicated days for project development

d. Training will be delivered online by an instructor via zoom meetings.

e. Mentoring will be provided to student team via online AMA sessions and project communication channels by industry mentors

f. Colleges will be allocating the batches as per the training batches listed in the annexure-4

g. College assigns a single point of contact (SPOC) & faculty mentors to drive this program on the ground

h. College shall assign one mentor for every 8 teams i.e. 32 students per each mentor

i. Colleges shall have a computer lab of atleast 30 computers with minimum required configuration and good internet connectivity to provide training to 120 students.

## 9. Project Team & Org Chart:
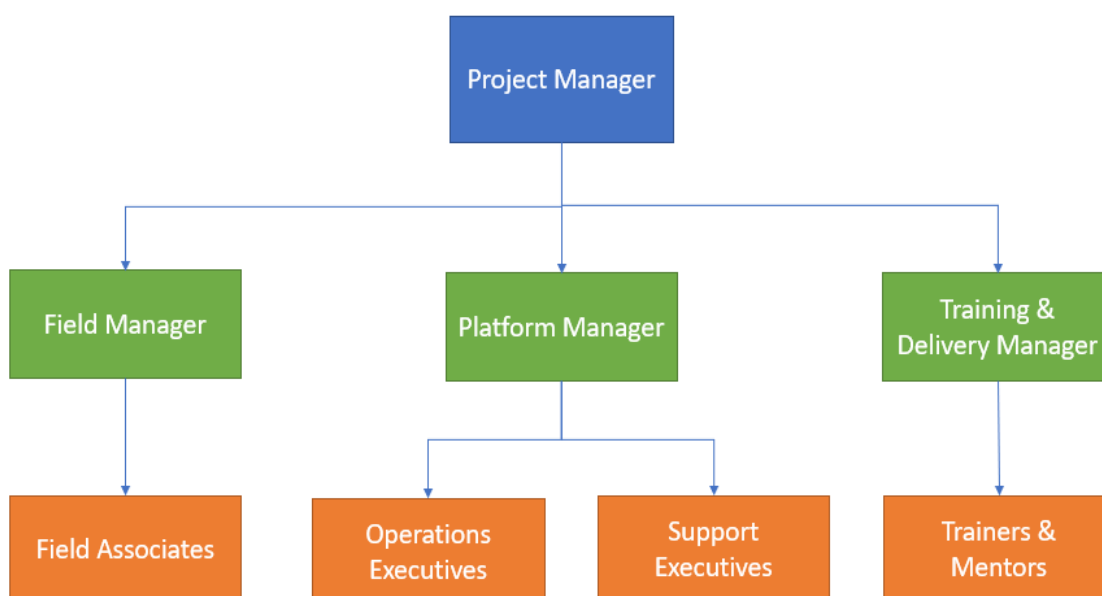


The number of team members for each role will be decided in the later stage of proposal.

## 10. Service Assumption

Assumptions related to in-scope services and/or components include:

- This program is for a minimum of 25000 students
- For every 30 students there is available a faculty who would act as mentor
- There is available a faculty evaluator for every 30 students who would do individual faculty evaluation
- Program has been offered as mandatory course as part of the curriculum and weekly 5 – 6hrs. will be provided in the academic calendar
- All the learners are equipped with computer/laptop with necessary configuration (Minimum Intel Core i3 or equivalent, 4GB RAM, Windows 10 / Linux
- All the learners are equipped with internet connection with necessary bandwidth (Minimum 10 MBPS download speed)
- All the learners are having minimum coding skills e.g. Python or Java
- All the learners are having minimum knowledge on any database

Payment and Terms

| Min. No of Students | Service Description | | Unit Price (INR) |
|---|---|---|---|
| 25,000 | IBM Career Education Project based learning program as defined in this document | | 990 |

A total of sum of INR 2,47,50,000/-

- The prices shall be exclusive of all applicable taxes, duties and levies and shall be charged as per actuals.
- Payment would be 100% in advance before the commencement of the program.
- The quotation is valid for 30 days from date of submission.
- Even if the student registration is less than 75,000, the minimum charge would be INR \ taxes. At any stage if there are additional students, both the parties will mutually agree on the commercials & corresponding details will be agreed by signing a PCR.

**Annexure-1**

**Project Schedule - L1**

| Month | Week | Milestone | Stakeholders |
|-------|------|-----------|--------------|
| Jan' 23 | Week(-2) - Week (0) | Platform set-up and micro-sites for colleges | TechTeam |
| Jan' 23 | Week-1 | Launch, Principal & faculty orientation session | Principals and Faculty |
| Jan' 23 | Week-2 | Onboarding of collegeSPOCs, mentors and evaluators | Faculty |
| Jan' 23 | Week-2 | Invitation to students & onboarding | Students |
| Jan' 23 | Week-3 | Student orientation sessions & Replay | Students |
| Jan' 23 | Week-4 | Team formation & Project enrollment | Students |
| Feb' 23 | Week-5 | Team Approval by the College SPOC | College SPOC |
| Feb' 23 | Week-6 | Training Batch Selection by College SPOC & Assignment of teams to the batches | College SPOC |
| Feb' 23 | Week-7 | Commencement of Technology Training Sessions | Students |
| Feb' 23 | Week-7 | Commencement of Faculty Knowledge Sessions | Faculty |
| Mar' 23 | Week-12 | End of Technology training sessions | Students |
| Mar' 23 | Week-12 | End of Faculty Knowledge Sessions | Faculty |
| Mar' 23 | Week-13 | Commencement of Project Development | Students |
| Mar' 23 | Week-13 | Commencement of AMA Sessions | Students & Faculty |
| April' 23 | Week-16 | End of Project Development | Students |
| April'23 | Week-16 | End of AMA Sessions | Students & Faculty |
| Apr'23 | Week-17 | Commencement of Project Evaluations | Faculty & Industry Evaluators |
| Apr'23 | Week-20 | End of Project Evaluations | Faculty & Industry Evaluators |
| May'23 | Week-21 | Evaluation report submission | Management |
| May'23 | Week-22 | Certificate Generation for Students & Faculty | Students |

| June '23 | Week-23 | Overall Report Submission & Project Closure | Management |

Note: Project Schedule L2/L3 will be submitted in later stage of the proposal.

**Annexure-2**
**Curriculum for Technical Trainings**

| Technology Track | Topics covered | Training Hours |
|---|---|---|
| Artificial Intelligence | <ul><li>Introduction to Artificial Intelligence</li><li>Python for Artificial Intelligence</li><li>Data Wrangling Techniques</li><li>Introduction to Neural Networks</li><li>Tensorflow & Keras</li><li>Convolutional Neural Networks</li><li>Natural Language Processing</li><li>Build and Deploy AI Applications</li></ul> | 30 Hrs. |
| Software Testing | <ul><li>Basic concepts of software testing</li><li>Software development life cycle</li><li>Test process & Test levels</li><li>Test scenario writing</li><li>Test case writing</li><li>Test Execution and Bug Reporting</li><li>Testing Reports: Test Progress & Test Summary Report</li><li>Basics of Agile & Agile Testing</li><li>Using JIRA for Agile Testing</li><li>Mobile Testing basics</li><li>API Testing Fundamentals, Postman</li><li>SQL for Software Testers</li><li>Introduction to GitHub</li></ul> | 30 Hrs. |
| Data Analytics & Visualizations | <ul><li>Introduction to Data Analytics</li><li>Python for Data Analysis</li><li>Extract data from database, txt files, webscrapping</li><li>Data Visualization using Matplotlib, seaborn</li><li>Data Visualization using Plotly</li><li>Data Visualization using Pygal, Bokeh etc.</li><li>Build Visualization Dashboards & Stories</li></ul> | 30 Hrs. |
| Front-End Development | <ul><li>Introduction to Front-End Web Development</li><li>Concepts of UX Design</li><li>HTML5 - Basics to Advanced</li><li>CSS - Basics to Advanced</li><li>JavaScript - Basics to Advanced</li><li>JQuery</li><li>Modern Java Script (ES6) for React</li><li>React Js</li><li>Building Responsive webpages with React Js</li></ul> | 30 Hrs. |

**Annexure-3**
**Sample Use Cases for Project Development**

| Technology Track | Use cases |
|---|---|
| Artificial Intelligence | ● Fake News Detection Using NLP<br>● AI-based localization and classification of skin diseases |
| Software Testing | ● Testing a E-commerce portal<br>● Testing a to-do application<br>● Testing a chat application<br>● Testing a ticket booking website |
| Data Analytics & Visualizations | ● Exploratory Data Analysis of Rainfall in Chennai<br>● Corporate Employee Attrition Analytics & Visualization |
| Front-End Development | ● Developing webpages for To-Do Application<br>● Developing webpages for recruitment portal |

Note: Complete details of the 20 usecases will be provided in the later stage of proposal.

**Annexure-4**
**List of Knowledge Sessions for Faculty**

| Knowledge Session | Description | No. of Hours. |
|---|---|---|
| KS-1 | Knowledge sessions on design thinking | 2 Hrs. |
| KS-2 | Knowledge session on agile methodologies | 2 Hrs. |
| KS-3 | Knowledge session on project development process and evaluation metrics | 2 Hrs. |
| KS-4 | Knowledge on Project deliverables & GitHub | 2 Hrs. |
| KS-5 | Knowledge session on Problem statement definition, Ideation & Idea Prioritization | 2 Hrs. |
| KS-6 | Knowledge session project design, architecture and planning | 2 Hrs. |
| KS-7 | Knowledge session on Coding best practices, testing and deployment | 2 Hrs. |