AMRUT Centre of Urban Planning for Capacity Building

A-CUPCB-SPAV

Atal Mission for Rejuvenation and Urban Transformation

Executive Development Program

(EDP_25_03)

Project Management Techniques in Urban Planning

Completion Report

Executive Development Program on Project Management Techniques in Urban Planning

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Completion Report

Program Duration: 09-12 February 2026

Organized by AMRUT Centre for Urban Planning Capacity Building (A-CUPCB) – School of Planning and Architecture, Vijayawada (SPAV)

Principal Instructors

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Patrons

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Executive Summary

The Executive Development Program (EDP) on "Project Management Techniques in Urban Planning" was successfully conducted from February 9-12, 2026, at the School of Planning and Architecture, Vijayawada. The four-day intensive program focused on equipping urban planning professionals with advanced project management methodologies, tools, and techniques essential for contemporary urban development projects. The program featured a balanced combination of lectures, hands-on sessions, and a mini capstone project, providing participants with both theoretical foundations and practical implementation skills.

The program achieved exceptional outcomes with 17 participants completing all requirements. Post-program evaluation revealed outstanding satisfaction levels with an average rating of 4.76/5.0 across all parameters. All participants (100%) indicated they would recommend this training to colleagues, with particular appreciation for the hands-on Microsoft Project training, Earned Value Management sessions, and practical applicability of learned techniques to professional practice.

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Program Overview

Objectives

The primary objectives of the Executive Development Program were:

- To introduce participants to fundamental project management principles and their application in urban planning contexts
- To develop skills in project scheduling using Critical Path Method (CPM) and Program Evaluation and Review Technique (PERT)
- To enhance understanding of resource management, cost control, and project optimization strategies
- To train participants in monitoring and control techniques including Earned Value Management (EVM)
- To provide hands-on experience with industry-standard project management software and tools
- To facilitate practical learning through a mini capstone project simulating real-world urban planning scenarios

Program Structure and Schedule

The program was structured across four thematic days, progressing from foundational concepts to advanced monitoring and control techniques. Each day included a combination of lecture sessions, hands-on training, and practical exercises, culminating in team presentations of capstone projects.

Day 1 — Introduction to Project Management and Planning			
Slot	**Time**	**Mode**	**Session / Activity**
Forenoon	9:30 AM – 10:00 AM	Plenary	Inaugural
	10:00 AM – 11:00 AM	Lecture	Introduction to Project Planning (life cycle, triple constraint, baselines)
	11:10 AM – 12:30 PM	Lecture/Hands-on	Methods for Prioritization of Projects
Lunch	12:30 PM – 1:30 PM	**Lunch Break**	
Afternoon	1:30 PM – 2:30 PM	Lecture	Scope Management & Work Breakdown Structure
	2:45 PM – 5:30 PM	Hands on	Creating a WBS (decomposition, coding); Creating & Setting Up a Project (parameters, timelines, stakeholders); Managing Calendars & Working Time

Day 2 — Project Scheduling			
Slot	**Time**	**Mode**	**Session / Activity**
Forenoon	9:30 AM – 10:30 AM	Lecture	Project Scheduling – CPM
	10:30 AM – 12:30 PM	Hands on	Estimating Task Duration; Applying Task Constraints & Deadlines; Critical Path Identification (float/slack analysis)
Lunch	12:30 PM – 1:30 PM	**Lunch Break**	
Afternoon	1:30 PM – 3:00 PM	Lecture	Risk & Uncertainty in Schedules - PERT
	3:00 PM – 5:30 PM	Hands on	Mini Capstone Begins (Urban Park); Building a Risk Register (causes, triggers, responses); Schedule Risk Techniques (three-point estimates)
Day 3 — Resources, Costs, and Optimization			
Slot	**Time**	**Mode**	**Session / Activity**
Forenoon	9:30 AM – 10:30 AM	Lecture	Resource Management (loading, availability, pools)
	10:30 AM – 12:30 PM	Hands on	Resource Assignment & Availability; Resource Conflicts & Levelling; Defining & Managing Resource Pools; Resource Utilization & Optimization
Lunch	12:30 PM – 1:30 PM	**Lunch Break**	
Afternoon	1:30 PM – 3:30 PM	Lecture Hands on	Costing & Budgeting
	3:30 PM – 4:30 PM	Lecture	Project Crashing
	4:30 PM – 5:30 PM	Hands on	Cost Setup (rates, fixed vs variable, cost accumulation); Schedule Optimization: Crashing (trade-offs, risk impacts); Baseline v2
Day 4 — Monitoring, Control & Reporting			
Slot	**Time**	**Mode**	**Session / Activity**
Forenoon	9:30 AM – 10:15 AM	Lecture	Project Monitoring & Control
	10:15 – 12:00	Lecture	Earned Value Management
	12:00 PM – 1:00 PM	Hands on	Tracking Progress & Variance Analysis; Updating Schedules & Baselines (change requests, re baselining criteria)
Lunch	**1:00 PM – 2:00 PM**	**Lunch Break**	

Afternoon	2:00 PM – 2:40 PM	Lecture	Communications & Stakeholder Reporting – RACI
	2:40 PM – 4:30 PM	Hands on	Mini Capstone Final: Team Presentations
	4:40 PM – 5:00 PM	Plenary	Feedback
	5:00 PM – 5:30 PM	Plenary	Valedictory

Day-by-Day Session Report

Day 1: Introduction to Project Management and Planning

Date: February 9, 2026

Inaugural Session

Time: 9:30 AM - 10:00 AM

Mode: Plenary

The program commenced with an inaugural session led by the Director of SPAV, Prof. Dr. Ramesh Srikonda, who welcomed the 17 participants and emphasized the critical importance of project management competencies in contemporary urban planning practice. He highlighted how India's rapid urbanization and ambitious infrastructure development goals under programs like AMRUT and Smart Cities Mission demand sophisticated project management capabilities. Prof. Dr. Ayon Kumar Tarafdar, Head of ACUPCB, explained how the curriculum was designed to address specific challenges faced by urban planning professionals in managing complex, multi-stakeholder projects with regulatory constraints. The session concluded with participant introductions, fostering a collaborative learning environment that would characterize the entire program.

1: Inaugural session with dignitaries on dais

Session 1: Introduction to Project Planning

Time: 10:00 AM - 11:00 AM

Mode: Lecture

Speaker: Dr. Arpan Paul Singh

This foundational session introduced participants to core project planning concepts including the project life cycle, triple constraint framework (scope, time, and cost), and the concept of project baselines. Dr. Singh provided a comprehensive overview of how project management principles apply specifically to urban planning contexts, using relevant case studies from Indian cities including recent infrastructure projects in Vijayawada and Visakhapatnam. The lecture covered all five process groups—initiation, planning, execution, monitoring and control, and closure—with emphasis on the critical planning phase. Participants learned how the triple constraint operates as an interdependent system where changes in one dimension invariably affect the others. The concept of establishing scope, schedule, and cost baselines was explained as essential for subsequent performance measurement. Dr. Singh illustrated common pitfalls in urban planning projects such as scope creep due to political pressures and unrealistic schedule compression. Interactive discussions addressed how to integrate project management with statutory processes like Environmental Impact Assessments and public consultations.

2. Dr. Arpan Paul Singh delivering lecture

Key Topics Covered:

- Project life cycle phases: initiation, planning, execution, monitoring, and closure
- Triple constraint framework and interdependencies among scope, time, and cost
- Establishing and managing baselines for scope, schedule, and cost
- Integration of project management with urban planning processes
- Common challenges in urban infrastructure project planning

Session 1: Methods for Prioritization of Projects

Time: 11:10 AM - 12:30 PM
Mode: Lecture/Hands-on
Speaker: Mr. Vijesh Kumar

Mr. Vijesh Kumar facilitated an interactive session on project prioritization methodologies, essential for urban planning professionals who must allocate limited municipal resources across multiple competing projects. The session combined theoretical frameworks with practical exercises, beginning with an overview of multi-criteria decision analysis techniques. Participants learned various prioritization methods including benefit-cost ratio analysis, weighted scoring models, and the Analytic Hierarchy Process (AHP).

3. Mr. Vijesh Kumar delivering lecture

Mr. Kumar demonstrated how to structure decision matrices incorporating both quantitative factors (cost, population served, economic benefits) and qualitative considerations (social equity, environmental sustainability, political feasibility). The hands-on component engaged participants in a realistic exercise

where they prioritized a portfolio of eight urban infrastructure projects—including road improvements, park development, drainage upgrades, and street lighting—using a weighted scoring approach.

Key Topics Covered:

- Multi-criteria decision analysis techniques
- Benefit-cost analysis for urban projects
- Stakeholder analysis and prioritization matrices
- Risk-based prioritization approaches
- Hands-on exercise: Prioritizing a portfolio of urban infrastructure projects

Session 2: Scope Management and Work Breakdown Structure

Time: 1:30 PM - 2:30 PM
Mode: Lecture
Speaker: Dr. Arpan Paul Singh

This afternoon session focused on scope management principles and the development of Work Breakdown Structures (WBS), a fundamental tool for organizing project deliverables hierarchically. Dr. Singh emphasized that effective scope management begins with clear scope definition and comprehensive scope statements that document project boundaries, deliverables, constraints, and assumptions. The lecture explained WBS as a deliverable-oriented hierarchical decomposition that organizes project work into manageable components. Participants learned decomposition principles including the 8/80 rule (work packages between 8 and 80 hours), the importance of mutual exclusivity, and achieving 100% coverage of project scope. Dr. Singh demonstrated various WBS coding systems (outline numbering, alphanumeric) and explained how to integrate WBS with Organizational Breakdown Structures (OBS) to create Responsibility Assignment Matrices. Special attention was given to common pitfalls in urban planning projects, including inadequate decomposition of complex activities, confusion between WBS elements and activities, and scope creep resulting from poor baseline management. Case examples from urban park development and traffic intersection improvement projects illustrated proper WBS construction.

Key Topics Covered:

- Scope definition and scope statement development
- WBS fundamentals: decomposition principles and hierarchical structures
- WBS coding systems and numbering conventions

- Integrating WBS with organizational breakdown structures (OBS)
- Common pitfalls in scope management for urban projects

Session 2: Hands-on WBS Development and Project Setup

Time: 2:45 PM - 5:30 PM
Mode: Hands-on Training
Trainers: Dr. Arpan Paul Singh, Mr. Vijesh Kumar

The extended hands-on session provided participants with intensive practical experience in creating Work Breakdown Structures and setting up projects in Microsoft Project software. This nearly three-hour session allowed participants to work through structured exercises under the close guidance of both trainers, who moved throughout the computer laboratory providing individualized assistance. Participants began by developing a comprehensive WBS for an urban park development project, applying the decomposition techniques learned earlier. They practiced WBS coding using outline numbering and learned to distinguish between deliverables and activities. The session then transitioned to Microsoft Project software, where participants created new project files, defined project parameters including start dates and constraints, and learned calendar management—a critical skill for government projects with numerous holidays and variable working patterns. Trainers demonstrated how to create custom calendar templates reflecting Indian government working schedules, manage resource calendars for different categories of workers, and apply calendar exceptions for festivals, weather-related closures, and planned shutdowns. This hands-on experience-built confidence with the software that would be extensively used throughout the remaining program days.

4. Delegates at computer workstations

Practical Activities:

- Creating a WBS for an urban park development project
- Applying decomposition techniques and WBS coding
- Setting up a new project in MS Project software
- Defining project parameters, timelines, and stakeholders
- Managing calendars and working time (working hours, holidays, exceptions)
- Customizing calendar templates for Indian government project contexts

Day 2: Project Scheduling

Date: February 10, 2026

Session 3: Project Scheduling - Critical Path Method (CPM)

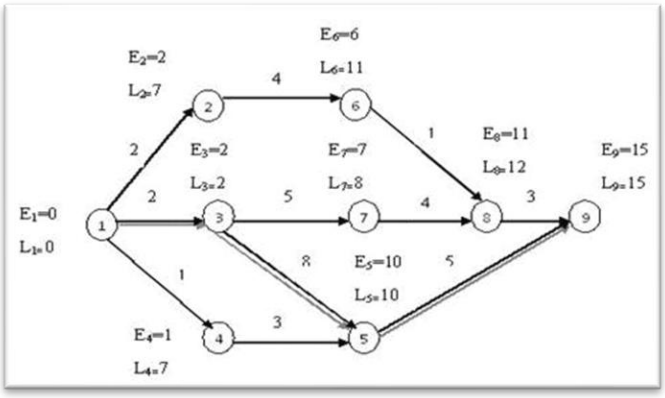
Time: 9:30 AM - 10:30 AM
Mode: Lecture
Speaker: Dr. Arpan Paul Singh

Dr. Singh introduced the Critical Path Method (CPM), one of the most widely used scheduling techniques in project management since its development in the 1950s. The session covered the theoretical foundations of CPM and its application to urban planning projects characterized by complex interdependencies. Beginning with network diagram fundamentals, Dr. Singh explained both Activity-on-Node (AON) and Activity-on-Arrow (AOA) representations, though emphasizing AON as the standard in modern project management software. The lecture progressed through forward pass calculations (determining early start and early finish dates) and backward pass calculations (determining late start and late finish dates), with detailed examples worked on the board. Critical path identification was explained as the longest path through the network determining minimum project duration. Float or slack analysis received particular attention, distinguishing between total float (available without delaying project completion) and free float (available without delaying successor activities). Dr. Singh also introduced schedule compression techniques—fast-tracking (performing activities in parallel) and crashing (adding resources to shorten duration)—explaining when each is appropriate and their associated risks, particularly relevant for time-sensitive urban development projects facing political or seasonal deadlines.

Key Topics Covered:

- Network diagram fundamentals: Activity-on-Node (AON) and Activity-on-Arrow (AOA)

- Forward pass and backward pass calculations
- Critical path identification and interpretation
- Float/slack analysis: total float, free float, and their implications
- Schedule compression techniques: fast-tracking and crashing



5. - CPM network diagram illustration

Session 3: Hands-on CPM Implementation

Time: 10:30 AM - 12:30 PM

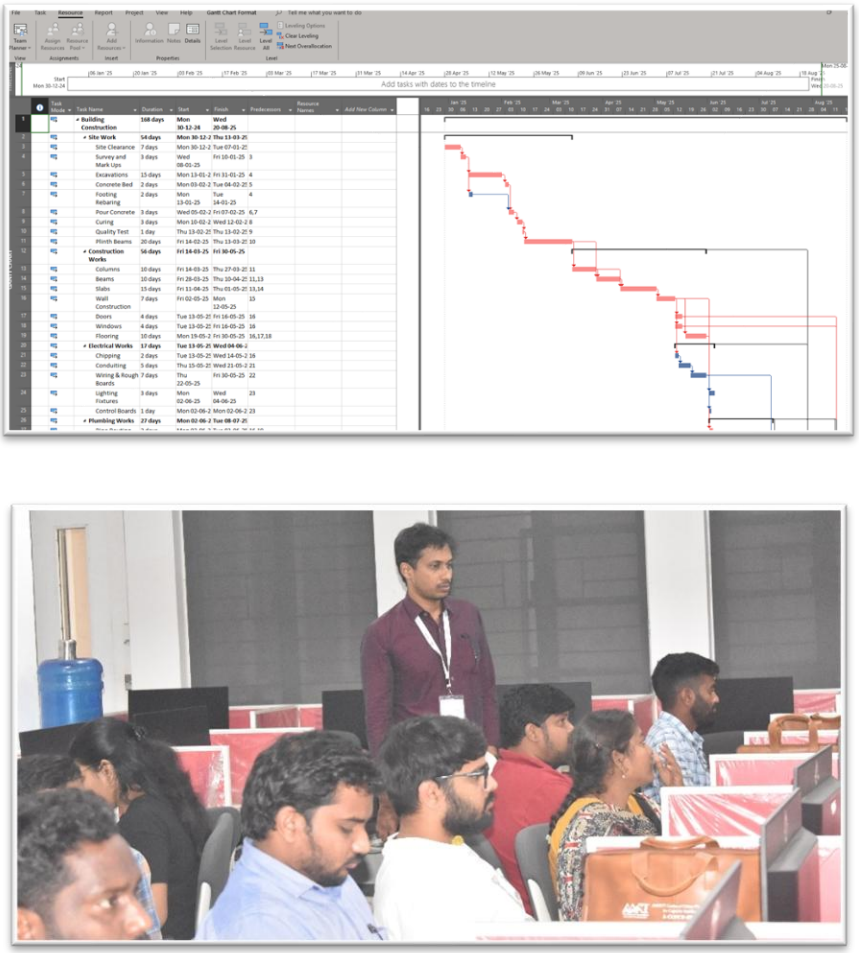
Mode: Hands-on Training

Trainer: Dr. Arpan Paul Singh, Mr. Vijesh Kumar

This extended practical session enabled participants to apply CPM concepts using Microsoft Project software. Mr. Vijesh Kumar guided participants through detailed exercises on task duration estimation, constraint application, and critical path analysis. The session began with participants entering the WBS elements created on Day 1 as tasks in MS Project, then establishing logical relationships (finish-to-start, start-to-start, finish-to-finish, start-to-finish) between tasks based on technical dependencies. Participants learned to estimate task durations using three approaches: historical data from similar projects, expert judgment, and parametric estimation using productivity rates. The training covered application of various task constraints (Start No Earlier Than, Finish No Later Than, Must Start On, etc.) and explained when constraints are necessary versus when they should be avoided to maintain schedule flexibility. Mr. Kumar demonstrated MS Project's Gantt chart views, network diagram views, and critical path highlighting features. Participants practiced identifying the critical path in their projects, calculating float values, and understanding the practical implications—activities with zero float require careful monitoring as any delay directly impacts project completion. The session concluded with exercises analyzing how delays in specific activities would propagate through the schedule.

Practical Activities:

- Estimating task durations using historical data and expert judgment
- Applying task constraints (Start No Earlier Than, Finish No Later Than, etc.)
- Setting deadlines and milestones
- Critical path identification using software tools
- Float/slack analysis and interpretation of scheduling flexibility
- Analyzing impact of delays on project completion



6. Participants analyzing Gantt charts on screens

Session 4: Risk and Uncertainty in Schedules - PERT

Time: 1:30 PM - 3:00 PM

Mode: Lecture

Speaker: Mr. Vijesh Kumar

The afternoon lecture introduced Program Evaluation and Review Technique (PERT) for managing uncertainty in project schedules. Dr. Singh explained how PERT differs from CPM in acknowledging that task durations cannot be known with certainty—a particularly important consideration for urban infrastructure projects that often face unpredictable challenges including weather delays, land acquisition complications, utility conflicts, and contractor performance variability. The lecture covered three-point estimation methodology where each activity is estimated using three scenarios: optimistic duration (best-case scenario), most likely duration (normal conditions), and pessimistic duration (worst-case scenario). Dr. Singh demonstrated calculating expected duration using the weighted average formula (O + 4M + P)/6 and standard deviation using (P - O)/6. The session explained probability analysis using the normal distribution to calculate the likelihood of completing the project by specific dates—valuable information for stakeholders making commitments or planning dependent activities. Dr. Singh illustrated how to conduct sensitivity analysis to identify activities with high uncertainty that warrant additional risk mitigation attention. The lecture concluded with discussing appropriate uses of PERT versus CPM, noting that while PERT provides valuable uncertainty analysis, it requires more estimation effort and may be reserved for particularly uncertain or critical activities rather than applied to every task.

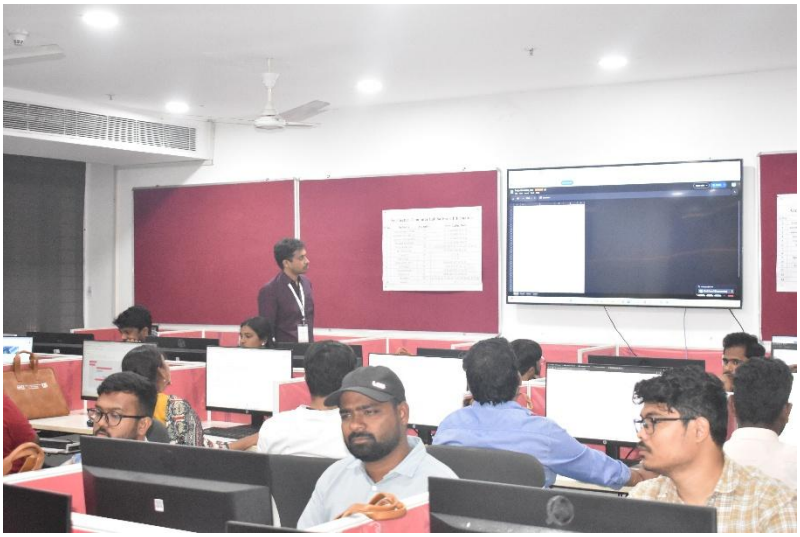
Key Topics Covered:

- Distinguishing PERT from CPM: probabilistic vs. deterministic approaches
- Three-point estimation: optimistic, most likely, and pessimistic durations
- Calculating expected duration and standard deviation
- Probability analysis for project completion
- Risk assessment and contingency planning

Session 4: Risk Register Development and Schedule Risk Analysis

Time: 3:00 PM - 5:30 PM
Mode: Hands-on Training
Trainers: Dr. Arpan Paul Singh, Mr. Vijesh Kumar

The day concluded with an intensive hands-on session where participants began working on their mini capstone project—developing a comprehensive project plan for an urban park. This session focused on building risk registers and applying schedule risk techniques. Trainers introduced the capstone project scenario, providing detailed requirements, constraints, and stakeholder expectations. Participants applied three-point estimates to project tasks in MS Project, learning to use custom fields to capture optimistic, most likely, and pessimistic durations. Trainers provided a conceptual overview of Monte Carlo simulation for comprehensive schedule risk analysis, explaining how specialized software can run thousands of scenario simulations to generate probabilistic project completion forecasts.



7. Coded simulation introduction through Google Colab

Practical Activities:

- Mini capstone project introduction: Urban Park development scenario
- Building a comprehensive risk register (risk identification, assessment, response)
- Identifying risk causes, triggers, and early warning signs
- Developing risk response strategies: avoid, transfer, mitigate, accept
- Applying three-point estimates to project tasks
- Conducting schedule risk analysis using PERT
- Coded simulation introduction through Google Colab

Day 3: Resources, Costs, and Optimization

Date: February 11, 2026

Session 5: Resource Management

Time: 9:30 AM - 10:30 AM

Mode: Lecture

Speaker: Mr. Vijesh Kumar

Mr. Vijesh Kumar delivered a comprehensive lecture on resource management principles, covering resource types, availability constraints, and resource pool management. The session began by distinguishing three resource types in project management: work resources (people and equipment performing tasks), material resources (consumables used in task execution), and cost resources (financial costs not tied to work or materials, such as permits). Mr. Kumar explained resource loading—the process of assigning resources to tasks—and how to model availability constraints including maximum units (percentage of time or capacity available), variable availability patterns (resources available only during certain periods), and shared resources working across multiple projects.

8. Mr. Vijesh Kumar delivering lecture on Resource Smoothing

The concept of resource pools was introduced as essential for organizations managing multiple concurrent projects with shared resources such as engineers, surveyors, and equipment. The lecture covered resource calendars defining when resources are available, accommodating individual schedules,

leave patterns, and skill-based availability. Mr. Kumar concluded by previewing resource over-allocation problems that would be addressed in the subsequent hands-on session.

Key Topics Covered:

- Resource types: work, material, and cost resources
- Resource loading and availability modeling
- Resource pools: creating and managing shared resources
- Resource calendars and availability patterns
- Resource constraints in urban planning contexts

Session 11: Hands-on Resource Management

Time: 10:30 AM - 12:30 PM
Mode: Hands-on Training
Trainers: Mr. Vijesh Kumar, Dr. Arpan Paul Singh

This practical session provided extensive hands-on experience with resource management tools and techniques. Participants worked on resource assignment, conflict resolution, and optimization exercises using their capstone projects. The session began with participants defining their resource pools in MS Project, including various categories of personnel (project manager, civil engineer, landscape architect, surveyors, skilled labor, unskilled labor), equipment (excavators, compactors, surveying instruments), and materials (concrete, plants, irrigation components). Trainers demonstrated assigning resources to tasks and explained effort-driven scheduling where task duration depends on assigned resources. Participants quickly encountered resource over-allocation situations where resources were assigned to exceed their available capacity—indicated by MS Project's red highlighting. The session focused extensively on resolving these conflicts using two primary techniques: resource leveling (automatic schedule adjustment to eliminate over-allocations by delaying tasks or splitting them) and resource smoothing (redistributing work within available float to reduce peak utilization without changing project completion date). Participants learned when each technique is appropriate and practiced manual resource reallocation as an alternative to automatic leveling. The training covered analyzing resource utilization through histogram views and usage tables, identifying underutilized resources that might be reallocated, and balancing competing goals of schedule efficiency and resource efficiency.

Practical Activities:

- Resource assignment to project tasks

- Defining resource availability and capacity constraints
- Identifying resource over-allocations and conflicts
- Resource leveling and smoothing techniques
- Defining and managing resource pools for multi-project scenarios
- Resource utilization analysis and optimization
- Balancing resource efficiency with schedule constraints

Session 6: Costing and Budgeting

Time: 1:30 PM - 3:30 PM
Mode: Lecture and Hands-on
Speaker: Dr. Sudheer Kumar Reddy, Faculty, NICMAR

Dr. Sudheer Kumar Reddy from the National Institute of Construction Management and Research (NICMAR) conducted an engaging two-hour session on project costing and budgeting principles specific to construction and infrastructure projects. His extensive industry expertise provided valuable practical insights beyond textbook theory. The session covered multiple cost estimation methods including analogous estimation (using actual costs from similar past projects), parametric estimation (applying statistical relationships like cost per square meter), bottom-up estimation (aggregating costs of individual work packages), and three-point estimation (incorporating uncertainty). Dr. Reddy explained distinguishing direct costs (specifically attributable to project work, like labor and materials) from indirect costs (overhead, administration, supervision), emphasizing proper cost allocation for accurate project profitability analysis. The lecture covered cost aggregation processes that roll up work package costs through the WBS to produce total project budget, and explained the time-phased budget or cost baseline showing when expenditures are expected. Dr. Reddy demonstrated S-curve analysis showing cumulative cost expenditure over time, useful for cash flow planning and expenditure tracking. The session addressed contingency reserves (for known-unknown risks) versus management reserves (for unknown-unknown risks), and covered rate analysis methodology using Schedule of Rates (SOR) commonly applied in government projects. The hands-on component had participants develop cost estimates for their capstone projects.

Key Topics Covered:

- Cost estimation methods: analogous, parametric, bottom-up, and three-point
- Direct and indirect costs in urban projects
- Cost aggregation and budget development

- Cash flow analysis and S-curve modeling
- Contingency and management reserves
- Budget allocation and approval processes in government projects
- Rate analysis and schedule of rates (SOR) applications

9. Dr. Sudheer Kumar Reddy presenting cost breakdown structures

10. Delegates listening to Dr. Sudheer Kumar Reddy

Session 6: Project Crashing

Time: 3:30 PM - 4:30 PM

Mode: Lecture

Speaker: Dr. Arpan Paul Singh

Dr. Singh's lecture focused on project crashing—the technique of compressing project schedules through strategic resource addition or reallocation. The session emphasized cost-schedule trade-off analysis, particularly relevant for time-sensitive urban projects facing political deadlines, seasonal constraints, or opportunities for early completion bonuses. Dr. Singh explained crashing fundamentals beginning with when and why to crash schedules: hard deadlines (election-driven project inaugurations, seasonal windows for construction), early completion incentives (liquidated savings clauses in contracts), or recovering from delays. The lecture introduced cost-slope analysis where each activity's crash cost (additional expenditure to reduce duration by one time unit) is calculated by dividing the cost increase by duration reduction. Dr. Singh demonstrated systematic crashing methodology: calculate all activities' cost slopes, identify the critical path, crash the critical path activity with lowest cost slope by one unit, recalculate the critical path (as it may have changed), and repeat until the desired completion date is achieved or further crashing becomes impractical. The session distinguished crashing from fast-tracking (performing sequential activities in parallel without adding resources), explaining that fast-tracking typically involves greater risk of rework whereas crashing involves higher cost. Real-world examples from urban infrastructure projects illustrated optimal crashing strategies and the importance of considering risk implications when accelerating schedules.

Key Topics Covered:

- Crashing fundamentals: when and why to crash schedules
- Cost-slope analysis: crash cost per unit time saved
- Identifying activities to crash: critical path focus
- Optimal crashing strategies and cost minimization
- Fast-tracking vs. crashing: comparing schedule compression techniques
- Risk implications of accelerated schedules

Session 6: Hands-on Cost Setup and Schedule Optimization

Time: 4:30 PM - 5:30 PM
Mode: Hands-on Training
Trainer: Dr. Arpan Paul Singh

The day concluded with practical exercises on cost setup and schedule optimization. Participants applied crashing techniques to their capstone projects and established baseline version 2 after incorporating optimizations. The session began with participants setting up cost structures in MS Project by assigning rates to resources (hourly rates for personnel, unit costs for materials, fixed costs for permits or

equipment rental). Dr. Singh demonstrated configuring cost accumulation methods (prorated over task duration versus incurred at start or finish) and explained cost phasing for cash flow analysis. Participants generated cost reports showing total project cost, cost distribution across the WBS, and time-phased expenditure. The optimization component had participants identify crashing opportunities by analyzing their critical paths and calculating cost slopes for critical activities. Working through structured exercises, participants made crashing decisions, added resources to tasks in MS Project, observed duration reductions, and evaluated budget impacts. Dr. Singh guided teams in balancing schedule improvement against cost increase to achieve optimal solutions for their specific project constraints. After completing optimization, participants established baseline version 2 using MS Project's multiple baseline feature, allowing them to preserve both the original baseline (version 1) and the optimized baseline (version 2) for subsequent comparison during the monitoring phase. This exercise reinforced that baseline should be formally updated only after approved changes, maintaining integrity of performance measurement.

11. Delegates solving Cost optimization problems

Practical Activities:

- Setting up cost structures in MS Project: fixed costs, variable costs, resource rates
- Cost accumulation and phasing analysis
- Schedule optimization exercises: identifying crashing opportunities
- Evaluating cost-time trade-offs for critical activities
- Applying crashing decisions and analyzing budget impacts
- Establishing baseline version 2 (post-optimization)
- Comparing baseline versions and documenting changes

Day 4: Monitoring, Control, and Reporting

Date: February 12, 2026

Session 7: Project Monitoring and Control

Time: 9:30 AM - 10:15 AM
Mode: Lecture
Speaker: Mr. Vijesh Kumar

The final day began with an overview of project monitoring and control principles. Mr. Vijesh Kumar explained the importance of systematic tracking and the control cycle for ensuring project success. The session began by distinguishing monitoring (systematic collection and analysis of project performance data) from controlling (taking corrective action based on monitoring results). Mr. Kumar introduced performance measurement frameworks explaining that monitoring without predefined baselines and metrics is meaningless—establishing the critical link back to the baseline development covered earlier in the program. The lecture covered variance analysis as the foundation of control, focusing on schedule variance (comparing actual progress against planned progress) and cost variance (comparing actual expenditure against budgeted expenditure). The control cycle was explained as an iterative process: measure actual performance, analyze variances and trends, decide on corrective actions if needed, act to implement corrections, then measure again. Mr. Kumar emphasized that control is proactive rather than reactive, using leading indicators and trend analysis to anticipate problems before they fully materialize. The session covered change control processes explaining that while some variance is inevitable, significant deviations require formal change requests, impact analysis, and approval before implementation. The importance of maintaining comprehensive documentation and audit trails was stressed, particularly for public sector projects subject to external audit and accountability requirements.

Key Topics Covered:

- Monitoring vs. controlling: definitions and distinctions
- Performance measurement frameworks
- Variance analysis: schedule variance and cost variance
- Control cycle: measure, analyze, decide, act
- Change control processes and change request management
- Documentation and audit trails

Session 7: Earned Value Management

Time: 10:15 AM - 12:00 PM

Mode: Lecture

Speaker: Mr. Ashish Khandelwal, General Manager, Intercontinental Consultants, New Delhi

Mr. Ashish Khandelwal, a senior industry professional from Intercontinental Consultants with extensive experience managing large infrastructure projects, delivered an expert session on Earned Value Management (EVM)—one of the most powerful techniques for integrated project performance measurement. His presentation skillfully blended theoretical concepts with real-world examples from metro rail, highway, and urban development projects across India. The session began with EVM fundamentals, explaining the three core values: Planned Value (PV—budgeted cost of work scheduled), Earned Value (EV—budgeted cost of work actually performed), and Actual Cost (AC—actual expenditure incurred). Mr. Khandelwal explained how these values enable integrated assessment of both schedule and cost performance simultaneously. The lecture covered key performance indicators including Cost Performance Index (CPI = EV/AC, where CPI < 1.0 indicates cost overrun) and Schedule Performance Index (SPI = EV/PV, where SPI < 1.0 indicates schedule delay). Variance analysis was explained through Cost Variance (CV = EV - AC) and Schedule Variance (SV = EV - PV). Mr. Khandelwal demonstrated EVM reporting formats including dashboards with stoplight indicators, trend charts, and executive summaries. He shared case studies showing how EVM provided early warning of cost overruns in a metro construction project, enabling corrective action before the situation became critical. The session concluded discussing EVM integration with government project monitoring systems and its increasing adoption in public infrastructure projects.

12. Mr. Ashish Khandelwal presenting cost breakdown structures

Key Topics Covered:

- EVM fundamentals: Planned Value (PV), Earned Value (EV), Actual Cost (AC)
- Key performance indicators: Cost Performance Index (CPI), Schedule Performance Index (SPI)
- Variance analysis: Cost Variance (CV) and Schedule Variance (SV)
- Forecasting techniques: Estimate at Completion (EAC), Estimate to Complete (ETC)
- EVM reporting formats and dashboards
- Case studies from Indian infrastructure projects
- Integration of EVM with government project monitoring systems

Session 7: Hands-on Progress Tracking and Variance Analysis

Time: 12:00 PM - 1:00 PM
Mode: Hands-on Training
Trainers: Dr. Arpan Paul Singh, Mr. Vijesh Kumar

Participants gained practical experience in tracking project progress, updating schedules, and conducting variance analysis in this intensive one-hour hands-on session. The trainers guided participants through simulating project execution by updating their capstone projects with hypothetical actual performance data. Participants learned to track progress using percentage completion for tasks, recording actual start dates and finish dates for completed activities, and entering remaining duration estimates for in-progress work. MS Project's tracking Gantt view was demonstrated, showing baseline bars (original plan), progress bars (completed work), and current schedule bars (remaining work). Participants practiced calculating and interpreting schedule variances by comparing actual dates against baseline dates, identifying tasks that started late, finished early, or took longer than planned. The session covered applying Earned Value Management within MS Project by generating EVM tables and reports. Participants learned to interpret CPI and SPI values for their projects, understanding that values below 1.0 indicate unfavorable performance requiring management attention. The training addressed evaluating change requests, with participants analyzing how proposed scope additions would impact project schedule and budget. Re-baselining procedures were covered, explaining that new baselines should be established only after formal approval of changes, with clear documentation of what changed and why. Participants practiced documenting corrective actions in their project plans, learning to maintain audit trails essential for project governance.

Practical Activities:

- Tracking progress: updating percentage completion

- Recording actual start and finish dates
- Conducting schedule variance analysis
- Applying Earned Value Management in MS Project
- Interpreting CPI and SPI values
- Evaluating change requests and their impacts
- Re-baselining criteria and procedures
- Documenting corrective actions

Session 7: Communications and Stakeholder Reporting - RACI

Time: 2:00 PM - 2:40 PM
Mode: Lecture
Speaker: Dr. Arpan Paul Singh

Dr. Singh delivered a focused 40-minute lecture on project communications management and stakeholder engagement, introducing the RACI matrix as a practical tool for clarifying roles and responsibilities in project execution. The session began with communication planning fundamentals, emphasizing that communication failures are among the most common causes of project problems. Dr. Singh explained systematic stakeholder identification and analysis, demonstrating the power-interest grid that categorizes stakeholders by their authority level and interest in the project—providing guidance on appropriate engagement strategies for each category. The RACI matrix was introduced as an elegant solution to role ambiguity, defining four roles for each project activity or deliverable: Responsible (person doing the work), Accountable (person ultimately answerable for completion, with authority to approve), Consulted (people providing input through two-way communication), and Informed (people kept updated through one-way communication

Key Topics Covered:

- Communication planning and stakeholder identification
- RACI matrix development and application
- Stakeholder analysis: power-interest grid
- Communication methods and frequency
- Reporting formats for different stakeholder groups
- Managing stakeholder expectations in urban projects

Session 8: Mini Capstone Final Presentations

Time: 2:40 PM - 4:30 PM
Mode: Team Presentations
Participants: Four project teams

The highlight of the final day was the mini capstone project presentations, where four teams presented comprehensive project plans developed throughout the program. Each team had worked on a different urban planning project, applying all techniques learned across the four days—work breakdown structures, CPM scheduling, PERT risk analysis, resource management, cost estimation, Earned Value Management setup, and communications planning. The teams were given approximately 25 minutes each for presentation and Q&A, demonstrating their mastery of integrated project planning. Team 1 presented a city-wide solar street lights installation project covering site assessment methodology, procurement strategy for solar panels and fixtures, installation sequencing across municipal wards, and commissioning procedures including testing and handover. Team 2 presented a tactical urbanism initiative featuring short-term, low-cost interventions including parklet installation in downtown areas, pedestrian-friendly zone demarcation, and temporary public space improvements with community engagement components. Team 3 presented a railway halt station development plan with detailed construction phasing for platform work, passenger amenities (waiting areas, ticketing, toilets), access roads, pedestrian connectivity, and utility connections coordinated with railway authorities. Team 4 presented a central road median landscaping project for a major urban corridor featuring design specifications, planting schedules accommodating seasonal considerations, irrigation system installation, aesthetic lighting, and five-year maintenance planning. Each presentation demonstrated comprehensive application of project management techniques: detailed WBS with appropriate decomposition, network diagrams identifying critical paths and scheduling constraints, resource histograms showing loading and leveling, cost breakdowns with contingency provisions, risk registers with prioritized risks and response strategies, EVM framework with baseline definitions, and RACI matrices clarifying implementation responsibilities. Faculty evaluated presentations on technical accuracy, completeness, practical feasibility, and communication effectiveness. The session generated excellent discussions with peer teams asking probing questions and trainers providing constructive feedback.

Team Projects:

1. **Team 1: Solar Street Lights Installation Project**
   Comprehensive project plan for city-wide solar street light installation, including site assessment, procurement, installation, and commissioning schedules.

2. **Team 2: Tactical Urbanism Initiative**
   Short-term, low-cost urban interventions project plan including parklet installation, pedestrian-friendly zones, and temporary public space improvements.
3. **Team 3: Railway Halt Station Development**
   New halt station construction project with integrated planning for platform construction, passenger amenities, access roads, and utility connections.
4. **Team 4: Central Road Median Landscaping**
   Road median beautification project covering design, planting, irrigation, lighting, and maintenance planning for a major urban corridor.

13. Delegates interacting in teams for the Mini-Capstone project presentation

Each presentation included:

- Work Breakdown Structure
- Network diagram and critical path analysis
- Resource allocation and leveling
- Cost estimation and budget
- Risk register and mitigation strategies
- Earned Value Management setup
- Stakeholder communication plan (RACI matrix)

Feedback Session

Time: 4:40 PM - 5:00 PM

Mode: Plenary

An interactive feedback session was conducted where participants shared their experiences, learning outcomes, and suggestions for future programs through both verbal discussion and written evaluation forms. The 20-minute session provided valuable insights into program effectiveness and areas for enhancement. Participants expressed strong appreciation for the balanced combination of theory and practice, with particular enthusiasm for the extensive hands-on Microsoft Project training that several participants indicated they had no prior exposure to.

14. Delegates giving the feedback

The mini capstone project approach was praised as highly effective for integrating learning across multiple topics and simulating realistic planning challenges. Several participants highlighted Earned Value Management and project crashing sessions as particularly valuable for their professional work. The practical applicability of learned techniques to real-world urban planning scenarios was consistently emphasized. Suggestions offered by some participants focused on program duration, with requests to extend from four days to one week to allow more time for deeper exploration of complex topics like budgeting and resource optimization. Additional recommendations included incorporating more case studies specifically from Indian urban planning contexts and providing follow-up sessions for continued learning after initial training.

15. Delegates giving the feedback

Session: Valedictory Ceremony

Time: 5:00 PM - 5:30 PM

Mode: Plenary

Speakers:

- Dr. Banuchitra, Dean, Research
- Dr. Ayon K Tarafdar, Head - ACUPCB

The program concluded with a valedictory ceremony where Dr. Banuchitra, Dean of Research at SPAV, congratulated participants on their successful completion and emphasized the critical importance of applying these newly acquired project management skills to advance urban planning practice across India. She highlighted how systematic project management approaches contribute to more efficient resource utilization, timely project delivery, and ultimately better urban environments for citizens. Dr. Banuchitra encouraged participants to serve as change agents within their organizations, advocating for structured project management methodologies in urban development initiatives.

Dr. Ayon K Tarafdar, Head of ACUPCB, delivered closing remarks expressing appreciation to faculty members, external resource persons, technical support staff, and participants for their enthusiastic engagement throughout the intensive four-day program. He announced preliminary plans to develop advanced modules on topics like agile project management for urban planning and program/portfolio management, responding to expressed participant interest in continuing their professional development. Certificates of completion were distributed to all 17 participants who successfully met program requirements. The ceremony concluded with group photographs and informal networking, with many

participants exchanging contact information to maintain professional connections established during the program.

16. Dr. Banu Chitra & Dr. Ayon Kumar Tarafdar addressing the delegates during the valedictory ceremony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PROJECT MANAGEMENT TECHNIQUES IN

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17. Certificates and Memento Distribution to the delegates

18. Delegates with Prof. Dr. Ramesh Srikonda, Director, SPAV

Pedagogical Approach

The program employed a blended learning approach combining:

- **Lectures (35%):** Theoretical foundations, concepts, and methodologies delivered by subject matter experts
- **Hands-on Training (45%):** Practical exercises using Microsoft Project software with real-world urban planning scenarios
- **Capstone Project (10%):** Team-based mini capstone project integrating all learning across four days
- **Interactive Sessions (10%):** Discussions, Q&A, peer learning, and feedback sessions

The progressive structure ensured that participants-built competencies systematically, with each session building upon previous learning. The mini capstone project provided an integrative experience, requiring teams to apply multiple techniques to realistic urban planning projects.

Key Learning Outcomes

Participants who completed the Executive Development Program successfully demonstrated:

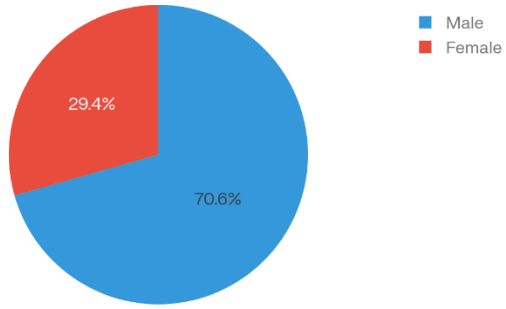
1. Proficiency in developing Work Breakdown Structures for urban planning projects
2. Ability to create and analyze project schedules using CPM and PERT techniques
3. Skills in resource allocation, leveling, and optimization
4. Understanding of cost estimation, budgeting, and cost control principles
5. Competence in applying Earned Value Management for performance measurement
6. Knowledge of risk identification, assessment, and mitigation strategies
7. Practical experience with Microsoft Project software for project planning and control
8. Capability to develop comprehensive project plans integrating scope, schedule, cost, resource, risk, and communication management
9. Understanding of project monitoring, control, and reporting techniques
10. Awareness of stakeholder management and communication planning using RACI matrices

Participant Feedback and Evaluation

A comprehensive feedback survey was administered to all 17 participants upon program completion, collecting both quantitative ratings and qualitative comments across multiple dimensions of program quality. The survey employed a 5-point Likert scale for quantitative assessment and open-ended questions for qualitative insights. The program received exceptional ratings across all evaluated parameters.

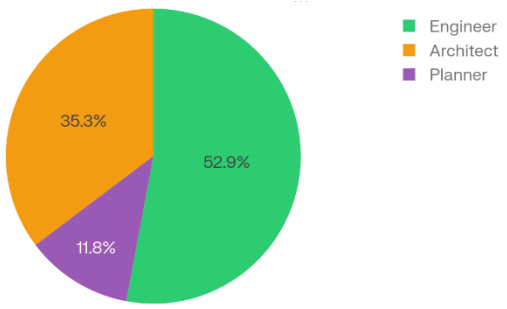
Participant Demographics

Gender Distribution



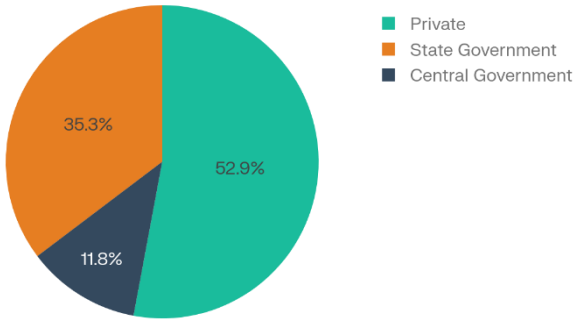
The training had predominantly male participation (70.6%), with female participants representing 29.4% of the cohort.

Professional Background



Engineers formed the largest group (52.9%), followed by Architects (35.3%) and Planners (11.8%), reflecting the program's strong appeal to infrastructure and construction professionals.

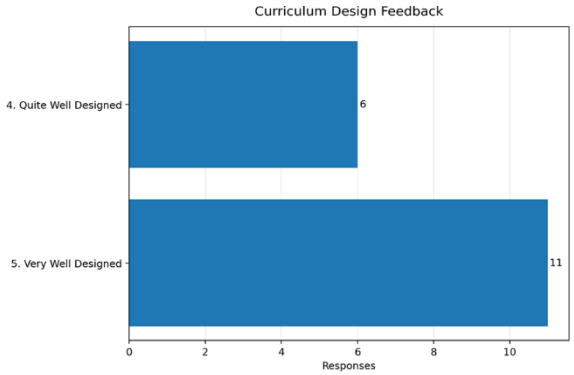
Organizational Affiliation



The training attracted a balanced mix of private sector (52.9%) and government professionals (47.1% combined State and Central), demonstrating cross-sectoral relevance and appeal.

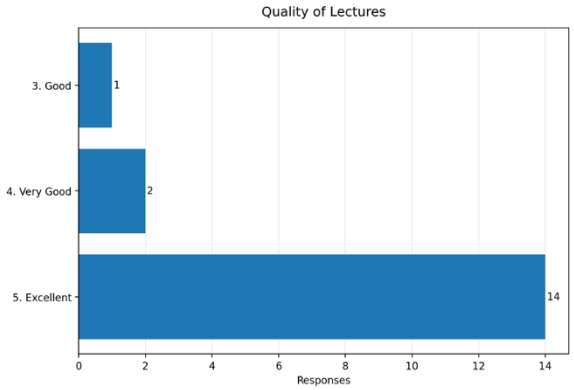
Program Quality Assessment

Curriculum Design



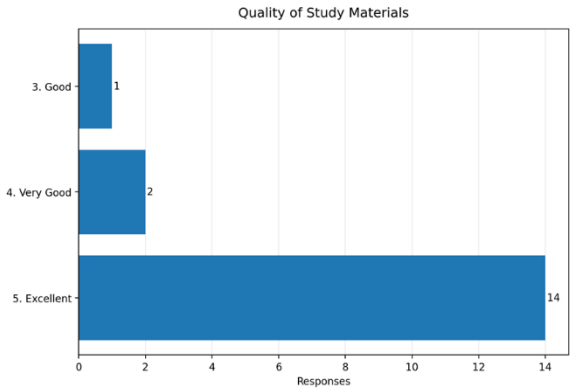
Strong positive response with 64.7% rating the curriculum as "Very Well Designed" and 35.3% as "Quite Well Designed," indicating effective alignment of content with program objectives and duration.

Lecture Quality



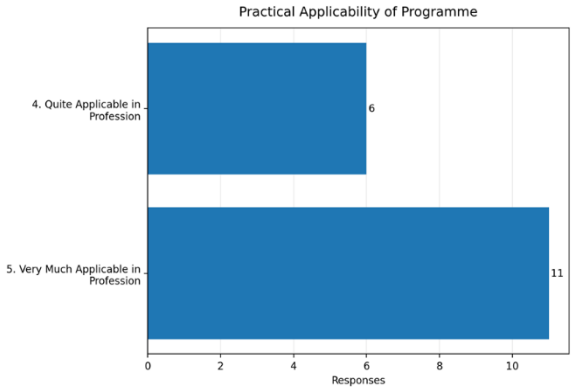
Exceptional performance with 82.4% rating lectures as "Excellent," reflecting high-quality instruction and effective teaching methodologies that resonated with participants.

Study Materials Quality



Study materials received outstanding ratings with 82.4% marking them "Excellent," demonstrating well-prepared, comprehensive, and professionally presented learning resources.

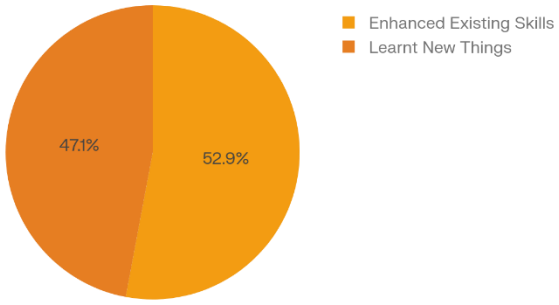
Practical Applicability



Strong professional relevance with 64.7% finding the training "Very Much Applicable" to their profession, validating the program's focus on practical, industry-relevant skills.

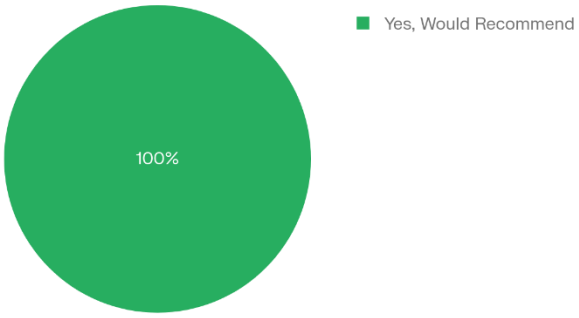
Learning Outcomes and Impact

Learning Achievement



Nearly balanced learning outcomes with 52.9% enhancing existing skills and 47.1% learning entirely new concepts, indicating the program successfully served both experienced professionals and newcomers to MS Project

Recommendation Willingness



Perfect recommendation rate (100%) represents the strongest possible endorsement, indicating exceptional overall satisfaction and program value.

Areas for Improvement

While 76.5% are fully satisfied, 23.5% identified potential improvements, providing valuable insights for program enhancement without indicating significant dissatisfaction. Analysis of open-ended responses revealed two primary themes for program enhancement:

- Multiple participants requested extending the training from its current format to at least one week, citing the need for more time to thoroughly understand complex MS Project functionalities.
- Desire for additional hands-on exercises and real-world case studies, particularly for participants with no prior MS Project exposure.

Programme Highlights

Most Appreciated Components

Participants identified the following as the best aspects of the program:

- MS Project software training and hands-on practical sessions
- Computer lab exercises with real-time application
- Resource management and project crashing concepts
- Professional talks and industry insights
- Earned Value Management (EVM) and strategic management modules

Topics of Future Interest

Participants expressed strong interest in deepening their knowledge in:

- Advanced MS Project functionalities and software integration
- Resource allocation and cost management techniques
- Detailed budgeting and financial project management
- Industrial applications and professional workflows
- Strategic project management methodologies

Report Date: March 07, 2026

Prepared by: Dr. Arpan Paul Singh, PI
Mr. Vijesh Kumar, Co-PI

This completion report documents the successful execution of the Executive Development Program on Project Management Techniques in Urban Planning (February 9-12, 2026) and serves as a record of program design, delivery, outcomes, and participant feedback for institutional documentation, quality assurance, and continuous improvement purposes.