

Graduate Certificate in Engineering

Engineering Project Management

****Activity Sequencing:****

The process of determining the order in which project activities will be executed. This is often depicted in a project schedule network diagram, which shows the dependencies between activities.

****Critical Path:****

The sequence of activities in a project schedule network diagram that determines the minimum duration required to complete the project. Any delay in a critical path activity will delay the project completion date.

****Earned Value Management (EVM):****

A project management technique for measuring project performance and progress in an objective manner. It involves comparing the value of work completed to the planned value and the actual cost of that work.

****Gantt Chart:****

A type of bar chart that illustrates a project schedule. It shows the start and finish dates of individual activities and their dependencies.

****Integrated Change Control:****

The process of reviewing all change requests, approving or rejecting them, and managing the implementation of approved changes to minimize their impact on project scope, time, and cost.

****Monte Carlo Simulation:****

A statistical modeling technique used in project management to estimate the probability of completing a project on time and within budget. It involves running multiple simulations of a project, using different assumptions about activity durations and other variables, to determine the range of possible outcomes.

****Network Diagram:****

A graphical representation of the sequence and dependencies of project activities. It shows how activities are connected and the order in which they must be completed.

****Pareto Analysis:****

A technique used in project management to identify the most significant contributors to a problem or issue. It involves ranking factors in order of their impact and focusing on the few that have the greatest impact.

****Project Charter:****

A document that formally authorizes the project and establishes the project manager's authority. It includes the project's objectives, scope, and constraints.

****Quality Management:****

The process of ensuring that a project's products or services meet the required standards and customer expectations. It involves planning, controlling, and improving quality throughout the project.

****Resource Leveling:****

The process of adjusting the start and finish dates of project activities to ensure that the required resources are available when needed. This helps to avoid overloading resources and ensures that the project can be completed within the available budget and time.

****Risk Management:****

The process of identifying, assessing, and controlling risks in a project. It involves developing a risk management plan, monitoring and controlling risks, and taking corrective action when necessary.

****Scope Management:****

The process of defining, planning, controlling, and monitoring the work required to complete a project. It involves developing a project scope statement, creating a work breakdown structure, and managing changes to the scope.

****Stakeholder Analysis:****

The process of identifying and evaluating the interests, influence, and impact of stakeholders in a project. It involves developing a stakeholder management plan to ensure that stakeholders' needs and expectations are met.

****Time Management:****

The process of planning, estimating, scheduling, and controlling the time required to complete a project. It involves developing a project schedule, monitoring progress, and taking corrective action when necessary.

****Triangular Constraint:****

The relationship between project scope, time, and cost. The concept is that changes to one constraint will affect the other two. For example, increasing the project scope will require more time and/or resources, increasing the project cost.

****Value Engineering:****

A systematic approach to improving the value of a project by reducing costs while maintaining or improving functionality. It involves analyzing the project's requirements, functions, and materials to identify opportunities for cost savings.

****Work Breakdown Structure (WBS):****

A hierarchical decomposition of the total scope of work to be carried out by the project team. It provides a framework for planning, organizing, and managing the project.

****Earned Value Analysis (EVA):****

A project management technique that compares the value of work completed to the planned value and the actual cost of that work. It provides objective measures of project performance and progress.

****Float:****

The amount of time that an activity can be delayed without affecting the project completion date. It is the difference between the earliest start time and the latest start time of an activity.

****Gold Plating:****

The practice of adding extra features or functionality to a project beyond what was agreed upon in the project scope. It can lead to project overruns and should be avoided.

****Lessons Learned:****

The knowledge and insights gained from a project that can be used to improve future projects. It involves documenting successes, failures, and recommendations for improvement.

****Make-or-Buy Decision:****

The process of deciding whether to produce or purchase a product or service required for a project. It involves evaluating the cost, quality, and time implications of both options.

****Network Path:****

A sequence of activities in a project schedule network diagram that connects two nodes. It shows the order in which activities must be completed.

****Operational Planning:****

The process of developing detailed plans for how a project's products or services will be operated and maintained after completion. It involves identifying the resources, procedures, and training required to ensure the long-term success of the project.

****Procurement Management:****

The process of acquiring goods, services, or resources from external sources for a project. It involves developing a procurement plan, identifying potential suppliers, soliciting bids, and managing contracts.

****Program Evaluation and Review Technique (PERT):****

A statistical project management technique used to estimate the duration of activities in a project. It involves determining the most likely, optimistic, and pessimistic durations for each activity and calculating the expected duration based on those estimates.

****Project Management Information System (PMIS):****

A system used to collect, store, and disseminate information related to a project. It can include software tools for scheduling, cost control, and risk management.

****Project Management Office (PMO):****

A centralized function that provides project management support, guidance, and oversight. It can be responsible for developing project management standards, providing training and resources, and monitoring project performance.

****Quality Assurance:****

The process of ensuring that a project's products or services meet the required standards and customer expectations. It involves developing a quality management plan, monitoring quality, and taking corrective action when necessary.

****Resource Allocation:****

The process of assigning resources to project activities. It involves determining the resources required for each activity, scheduling their use, and monitoring their availability.

****Risk Identification:****

The process of identifying potential risks in a project. It involves reviewing the project scope, objectives, and constraints to identify factors that could negatively impact the project.

****Schedule Compression:****

The process of shortening the duration of a project schedule without changing the scope of the project. It involves techniques such as fast tracking and crashing.

****Stakeholder Communication:****

The process of communicating with project stakeholders to keep them informed and engaged. It involves developing a stakeholder communication plan, identifying the appropriate communication channels, and delivering timely and accurate information.

****Triple Constraint:****

The relationship between project scope, time, and cost. The concept is that changes to one constraint will affect the other two. For example, increasing the project scope will require more time and/or resources, increasing the project cost.

****Value Analysis:****

A systematic approach to improving the value of a project by reducing costs while maintaining or improving functionality. It involves analyzing the project's requirements, functions, and materials to identify opportunities for cost savings.

****Work Package:****

The lowest level of a work breakdown structure. It represents a discrete piece of work that can be estimated, scheduled, and managed as a single unit.

****Activity:****

A specific task or piece of work that must be completed as part of a project. It has a defined start and end

date and requires resources to complete.

****Baseline:****

The original plan for a project, including the project scope, schedule, and budget. It provides a reference point for measuring project performance and progress.

****Contingency Plan:****

A plan that outlines the actions to be taken in the event of a specific risk or issue. It provides a proactive approach to managing risks and minimizing their impact on the project.

****Critical Success Factors (CSFs):****

The key areas that must be addressed for a project to be successful. They provide a framework for defining project objectives and measuring project performance.

****Deliverable:****

A product or service that is produced as part of a project. It is a tangible output that can be measured and verified.

****Dependency:****

The relationship between two activities in a project schedule network diagram. It shows the order in which activities must be completed and the dependencies between them.

****Duration:****

The amount of time required to complete an activity. It is expressed in work periods, such as hours, days, or weeks.

****Estimate:****

A prediction of the amount of time, resources, or cost required to complete an activity. It is based on historical data, expert judgment, or other factors.