

o Engineering management is the critical bridge that connects technical expertise with the practical skills needed to lead and manage complex projects and teams.

o This helps to track the financial health of projects and organizations and to make informed decisions about resource allocation.

Controlling o Controlling involves measuring performance and comparing it to standards to ensure that work conforms to requirements and brings about the desired outcome.

o They are responsible for the day-to-day operations of the organization, ensuring that tasks are completed efficiently and effectively, and that resources are used wisely.

o If the organization is struggling to keep up with the pace of technological change, the project manager might implement new tools or technologies to improve efficiency and effectiveness.

o Imagine a world where innovative technology is developed but cannot be implemented effectively, or where brilliant engineers struggle to lead and motivate their teams.

o This involves analyzing the data to determine whether the performance is meeting expectations or if there are any areas where improvements are needed.

o For example, an engineering organization might adopt the ISO 9001 standard for quality management or the Six Sigma methodology for process improvement.

Corrective Action o Addressing Communication Gaps: o Improving communication between team members or stakeholders.

o If there is a breakdown in communication between team members, the project manager might implement new communication channels, encourage team members to communicate more frequently, or provide training on effective communication skills.

o It's about utilizing engineering knowledge to create real-world solutions, optimize resources, and drive organizational success.

o They are visionary thinkers who set the direction for the organization, inspire others to achieve their full potential, and drive innovation.

o Taking Corrective Action: o Adjust processes or procedures to improve performance.

o This is a useful method for identifying bottlenecks and improving efficiency.

o This helps to monitor the stability of processes and detect any deviations from expected performance levels.

This may involve: o Adjusting Processes: o Making changes to the way work is done to improve efficiency or effectiveness.

o For example, if a team is consistently falling behind schedule, the project manager might adjust the project plan by adding more resources, re-prioritizing tasks, or changing the schedule.

30 Dr. Iyad Zoukar Lecture 01: What is Engineering Management o Managers: 15.

o This is a critical function in engineering management, as it helps to ensure that projects are completed on time, within budget, and to the required quality standards.

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o This can be done using a variety of tools, such as control charts, performance reports, and feedback surveys.

o This may involve training employees, improving communication, or implementing new tools and technologies.

Setting Standards o Standards should be clearly defined and based on: o Company Expectations: o What the organization expects from its employees and projects.

o Best Practices: o Industry-accepted standards and methodologies for achieving quality and efficiency.

Measuring Performance o Performance can be measured in a variety of ways, including: o Time Study: o Measuring the time it takes to complete a task.

o Rating Scales: o Assessing performance against pre-determined criteria.

o Financial Metrics: o Using financial measures (e.g., cost, revenue, profit) to assess performance.

Corrective Action o Corrective action involves taking the necessary steps to correct any deviations from established standards.

o Re-Training Employees: o Providing additional training or guidance to improve skills and

knowledge. o If employees are consistently making mistakes or failing to meet performance standards, the project manager might provide additional training or coaching. o Implementing New Tools or Technologies: o Introducing new tools or technologies to enhance performance. o This is where engineering management comes in, providing the framework for success.

3 Dr. Iyad Zoukar Lecture 01: What is Engineering Management 2. Leader vs. Manager o Focus on daily operations and efficiency. o They buy into a vision, follow directions, administer innovation, look inside the organization, get work done, solve problems, and effectively use resources.

Dr. Iyad Zoukar 31 Lecture 01: What is Engineering Management 16. o Standards should be specific, measurable, achievable, relevant, and time-bound (SMART).

33 Dr. Iyad Zoukar Lecture 01: What is Engineering Management 17. o For example, a company might have standards for communication, teamwork, and ethical behavior.

34 Dr. Iyad Zoukar Lecture 01: What is Engineering Management 18. o Control Charts: o Tracking data over time to identify trends and patterns.

35 Dr. Iyad Zoukar Lecture 01: What is Engineering Management 19. 36 Dr. Iyad Zoukar Lecture 01: What is Engineering Management 19. o Leaders: o Focus on long-term vision and inspire others. o Setting Standards: o Establish clear expectations for performance. o Comparing Results: o Identify deviations from standards. o Customer Requirements: o What the customer needs and expects from the product or service. Controlling o Track actual results and compare them to standards. o For example, a customer might require that a product meet specific performance standards or be delivered within a certain timeframe. o This can be used to evaluate employee performance, project progress, or product quality. o They look outside the organization, set the work, bring change, and set standards