

Construction Quality and Productivity Management

Code CEM-811	Credit Hours 3-0
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Course Description

The course is aimed at offering students' insight into management issues and principle of construction quality and productivity. It is pragmatic in its approach and will afford the student not only opportunities to learn, but also to observe these principles in practice and to practice them in the "real" world of their daily lives. The student will learn how to observe, investigate and analyze quality and productivity principles in the construction world, in the academic world, and in their own lives.

Reference books:

1. Watson, P., & Howarth, T. (2012). Construction quality management: Principles and practice.
2. Routledge.Rumane, A. R. (2010). Quality management in construction projects. CRC Press.
3. Olomolaiye, P., Jayawardane, A., & Harris, F. (1998). Construction productivity management. Longman.

Prerequisites:

Nil

ASSESSMENT SYSTEM FOR THEORY

Quizzes	10%
Assignments	10%
Mid Terms	25%
Term Project	10%
ESE	45%

Teaching Plan

Week No.	Topics	Learning Outcomes
1	TQM Introduction	<p>Students will gain a foundational understanding of Total Quality Management (TQM) principles.</p> <p>They will learn the key concepts and terminology associated with TQM and its role in enhancing organizational performance.</p> <p>Students will explore the historical development of TQM, significant awards (such as the Deming Prize and Malcolm Baldrige National Quality Award), and current trends in quality management. This will help them appreciate the evolution and recognition of quality practices.</p> <p>Students will understand the purpose of TQM and its four main processes: defining quality, ensuring quality (Quality Assurance), controlling quality (Quality Control), and improving quality.</p> <p>They will learn how these processes interrelate to achieve continuous improvement.</p>
2-6	The Role of Leadership in Total Quality Management and Standards Implementation	<p>Students will understand the critical role of leadership in TQM.</p> <p>They will learn how effective leadership drives a quality culture, engages employees, and ensures the successful implementation of quality initiatives. Students will learn about the ISO 9000 series of quality management standards and their significance.</p> <p>They will also explore Quality Function Deployment (QFD) as a tool to translate customer requirements into specific product or service specifications.</p>
7-8	Advanced Quality Management Techniques: Benchmarking, Six Sigma, and Lean Six Sigma	<p>Students will be introduced to Six Sigma, including its core concepts, success factors, and methodology (DMAIC).</p> <p>They will understand how Six Sigma aims to reduce variation and improve quality through data-driven decision-making.</p> <p>Students will explore Lean Six Sigma, which combines Lean manufacturing principles with Six Sigma methodologies.</p> <p>They will learn how this approach aims to improve efficiency by eliminating waste and enhancing quality.</p>
9	MID-TERM EXAM	
10-12	Applying Six Sigma Methodologies and Differentiating Quality Assurance and Quality Control in Project Management	<p>Students will understand the application of Six Sigma methodologies to both small and large projects.</p> <p>They will learn how to scale Six Sigma tools and techniques to fit project size and complexity.</p> <p>Students will differentiate between Quality Assurance (QA) and Quality Control (QC).</p> <p>They will understand how QA focuses on preventing defects, while QC involves identifying and correcting defects in products or services.</p>

13-17	Measuring and Improving Productivity and Quality: Techniques, Metrics, and Strategies	<p>Students will explore different methods and techniques for measuring productivity and quality. They will learn about measurement levels, including task-level, project-level, and industry-level metrics, and how to apply them effectively.</p> <p>Students will explore strategies and techniques for productivity improvement. They will learn how to identify productivity bottlenecks and implement effective solutions to enhance overall efficiency and output.</p>
18	End Semester Exams	