



Gyanmanjari
Innovative University

Course Syllabus
Gyanmanjari Institute of Technology
Semester-1

Subject : Quality Control and Safety - METCP11504

Type of course: Minor Stream

Prerequisite: NIL

Rationale: In the construction industry, quality control and safety are critical for ensuring the durability, reliability, and safety of structures. Quality control involves systematic inspections, testing, and compliance with established standards and specifications to ensure that materials and workmanship meet required levels of quality. This helps prevent structural failures, reduces the need for costly rework, and ensures projects are completed on time and within budget.

Safety is paramount in construction due to the high-risk nature of the work. Implementing rigorous safety protocols, such as proper training, use of personal protective equipment (PPE), and adherence to safety regulations, helps prevent accidents, injuries, and fatalities on-site. A strong safety culture not only protects workers but also enhances productivity and morale.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks					Total Marks
CI	T	P		C	Theory Marks		Practical Marks		
			ESE		MSE	V	P	ALA	
4	0	2	5	60	30	10	20	30	150

Legends: CI-Class Room Instructions; T – Tutorial; P - Practical; C – Credit; ESE - End Semester Examination; MSE- Mid Semester Examination; V – Viva; CA - Continuous Assessment; ALA- Active Learning Activities.

Continuous Assessment:

Sr. No	Active Learning Activities	Marks
1	Case study Prepare the construction quality management of actual construction site And upload on GMIU Web Portal.	10
2	Analysis of quality control	10



	Prepare the quality control with various techniques of actual construction site. And upload on GMIU Web Portal.	
3	Case Study Prepare the report on the construction accident. And upload on GMIU Web Portal.	10
Total		30

Course Content:

Sr. No	Course content	Hrs	% Weightage
1	Construction Quality Introduction to quality - Importance - Types – Inspection - Control and enforcement-Quality Management Systems - Responsibilities and authorities in Quality assurance - Architects, Engineers, Contractors and Consultants. Quality Standards and Statistical Methods Planning and control of quality - Tools and techniques for quality management - Inspection of materials and machinery - Quality audits-Statistical quality control - Tools ,Control charts -Acceptance sampling, Specification and tolerances.	15	25%
2	Quality Management Quality policy - Objectives and methods -Consumer satisfaction-Ergonomics-Time of Completion-Taguchi's concept of quality- Quality standards/codes in design and construction (ISO: 9000) - Quality System Documents – Quality related training – Implementing a Quality system – Third party Certification. Quality Assurance and Control Objectives-Regularity agent-Owner, Design, Contract and Construction Oriented Objectives, Methods-Techniques and Needs Of QA/QC-Different Aspects of Quality-Appraisals, Factors Influencing Construction Quality-Critical, Major Failure Aspects and Analysis.	17	29%
3	Construction Accidents Injury and Accidents- Causes, Investigations and Prevention of Accidents, Hazards – Types, Nature, Causes and Control Measures - Identifications and Control Techniques - Cost of Construction Injuries-Legal Implications - Site management with regard to safety –Safety training and implementation - Construction safety and health manual. Safety Policy Need- Safety provisions -Factory Act-Laws related to the Industrial Safety-Measurement of Safety Performance, Safety Audit, Problem Areas in Construction Safety-Elements of an	17	28%



	Effective Safety Programme-Job site Safety assessment- Safety Meetings-Safety Incentives		
4	Safety Organization Safety Policy, Safety Record Keeping, Safety Culture-Safe Workers-Safety and First Line Supervisors- Middle Managers- Top Management Practices, Company Activities and Safety-Sub contractual obligation, Project Coordination and Safety Procedures	11	18%
	Total	60	100

Suggested Specification table with Marks (Theory):60

Distribution of Theory Marks (Revised Bloom's Taxonomy)						
Level	Remembrance (R)	Understanding (U)	Application (A)	Analyze (N)	Evaluate (E)	Create (C)
Weightage	NA	NA	NA	NA	NA	NA

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Course Outcome:

After learning the course, the students should be able to:	
CO1	Explain the importance of quality and quality management methods in construction.
CO2	Construct the appropriate quality control charts and discuss the role of such charts in monitoring a process.
CO3	Develop an appropriate quality assurance plan to assess the ability of the service to meet its required national and international quality standards.
CO4	Apply the concepts of quality assurance and control techniques in construction.
CO5	Identify the causes, investigations and prevention of accidents in the construction jobsite.
CO6	Discuss about the various laws related to construction safety and worker's compensation insurance premium.
CO7	Create the awareness about the role of safety in all the levels of management.

List of Assignment

Assignment and tutorial base on above mention topic.



Instructional Method:

The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.

From the content 10% topics are suggested for flipped mode instruction.

Students will use supplementary resources such as online videos, NPTEL/SWAYAM videos, e-courses, Virtual Laboratory

The internal evaluation will be done on the basis of Active Learning Assignment

Practical/Viva examination will be conducted at the end of semester for evaluation of performance of students in laboratory.

Text Books:

1. Brian Thorpe and Peter Sumner(2016), Quality Assurance in Construction, Routledge
2. Steven McCabe, (2016), Quality Improvement Techniques in Construction: Principles and Methods, Routledge

Reference Books:

1. Abdul Razzak Rumane, (2017), Quality Management in Construction Projects, CRC Press
2. Tim Howarth and David Greenwood, (2017), Construction Quality Management: Principles and Practice, Routledge
3. Chung H.W., (2011), Understanding Quality Assurance in Construction: A Practical Guide to ISO 9000 for Contractors, Routledge.

