

GUJARAT TECHNOLOGICAL UNIVERSITY

CIVIL (CONSTRUCTION ENGINEERING AND MANAGEMENT)(14)

QUALITY CONTROL AND SAFETY MANAGEMENT IN CONSTRUCTION

SUBJECT CODE: 2711407

M.E. 1st SEMESTER

Type of course: Core

Prerequisite: --

Rationale:--

Teaching and Examination Scheme:

Teaching Scheme			Credits C	Examination Marks						Total Marks
L	T	P		Theory Marks		Practical Marks				
			ESE (E)	PA (M)	PA (V)		PA (I)			
					ESE	OEP	PA	RP		
4	2	0	5	70	30	30	0	20	0	150

Content:

Sr. No.	Topics	Teaching Hrs.	Module Weightage
1	Construction Organization Types of Organization-Inspection, Control and enforcement-Quality Management Systems and Method- Responsibilities and authorities in Quality assurance and Quality control of Architects, Engineers, Contractors, and Consultants,	8	10
2	Quality Management Quality policy, Objectives and methods in construction industry-Consumer satisfaction-Ergonomics-Time of Completion-Statistical Tolerance-Taguchi's concept of quality-Codes and standards-Documents-Contract and construction programming-Inspection procedures-Processes and products-Total QA / QC Programme and cost implication	8	20
3	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 Failure Mode Analysis. Standardization - Selection Of New Materials-Influence Of Drawings, Detailing And Specification Based On Codal Provisions	12	25
4	Construction Accidents Injury And Accidents-Definitions-Unsafe Act -Unsafe Condition-Causes, Investigations And Prevention Of Accidents, Hazards, Type Of Industrial Hazards-Nature, Causes And Control Measures, Hazard Identifications And Control Techniques -HAZOP, FMEA, FMECA. - Cost of Construction Injuries-Legal Implications Safety Programmes - Introduction to the Concept of Safety- Need- Safety Provisions in the Factory Act-Laws related to the Industrial Safety-Measurement Of Safety Performance, Safety Audit, Problem Areas In Construction	10	25

	Safety-Elements of an Effective and Safety Programme-Job site Safety assessment- Safety Meetings-Safety Incentives		
5	Safety Organization Safety Policy, Safety Record Keeping, Safety Culture-Safe Workers-Safety and First Line Supervisors-Safety and Middle Managers-Top Management Practices, Company Activities and Safety-Safety Personnel-Sub contractual obligation, Project Coordination and Safety Procedures	8	20

Reference Books:

1. James, J.O Brien, "*Construction Inspection Handbook - Quality Assurance and Quality Control* ", Van Nostrand, New York, 1989.
2. Kwaku A., Tenah and Jose M.Guevera, "*Fundamental of Construction Management and Organization* ", Prentice Hall of India, 1995.
3. Juran Frank, J.M. and Gryna, F.M. " *Quality planning and Analysis* ", Tata McGraw Hill, 1982.
4. Hutchins. G., "ISO 9000 ", Viva Books, NewDelhi, 1993.
5. Clarkson H. Oglesby, "*Productivity Improvement in Construction* ", McGraw Hill 1989.
6. John L.Ashford, " *The Management of Quality in Construction* ", E & F.N Spon, New York, 1989.
7. Steven McCabe, "*Quality Improvement Techniques in Construction* ", Addison Wesley Longman Ltd.,
8. England, 1998.
9. Jimmy W.Hinze, "*Construction Safety* ", Prentice Hall Inc., 1997.
10. Richard J. Coble, Jimmie Hinze and Theo C. Haupt, "*Construction Safety and Health Management*",Prentice Hall Inc., 2001.

Course Outcome:

After learning the course the students should be able to:

1. Apply Concepts Of Quality And Assurance And Control Techniques In Construction.
2. Develop Quality Management Systems.
3. Perform Occupational & Safety Hazard Assessment.
4. To Prepare Safety And Health Programs.
5. Develop Safety Culture in Construction firms