GANPAT UNIVERSITY

FACULTY OF ENGINEERING & TECHNOLOGY

Programme	Diploma Engineering				Branch	Civil Engineering			
Semester	VI				Version	1.0.0.0			
Effective from Academic Year		2020-21			Effective for the batch Admitted in			July 2018	
Subject code	1CI2602		Subject Name		QUALITY CONTROL & MONITORING				
Teaching scheme					Examination scheme (Marks)				
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	2	0	1	0	3	Theory	40	60	100
Hours	2	0	2	0	4	Practical	30	20	50

Pre-requisites:

- The students must have knowledge of subject surveying, construction technology and concrete technology.
- The students must have exposure of various activities going on construction project.
- The students must have knowledge of mathematics especially in statistics.

Course Learning Outcomes:

The course content should be taught and implemented with an aim to develop different skills leading to the achievement of the following competencies and course learning outcomes:

CO1. Learn the fundamentals of quality management for construction projects, including quality assurance, quality control, and quality function deployment through the development of a project quality management plan.

CO2. Learn to apply basic principles of quality management for construction projects.

CO3. Check the quality in civil construction works

CO4. Identify the variations in quality of civil works & Use of various standard codes in civil construction works.

The practical should be carried out in such a manner that students are able to acquire different learning outcomes from covered course.

Course Content

Name of UNIT	Unit Content	Unit Learning Outcomes	Marks	Hr
UNIT – 1 TOTAL QUALITY MANAGEMENT (TQM) IN CONSTRUCTION	1.1 Concept of quality control, Quality assurance , Quality management 1.2 Aims of TQM 1.3 Development and design concept of TQM 1.4 Accuracy and precision in observation, reading calibration 1.5 Finding area by different methods and instruments	1a Explain features of TQM 1b Apply various quality checks 1c Distinguish between quality control and quality assurance 1d List precious to be taken for accurate measurement	10	05
UNIT – 2 CONSTRUCTION QUALITY CONTROL INSPECTION PROGRAM	2.1 Duties, responsibilities , qualification of staff in organization 2.2 Quality of Materials 2.3 Checklist for different construction activities such as Masonry, plastering, plastering, concrete construction, reinforcement work, formwork, doors and windows, plumbing & drainage work.	2a Describe various aspects of QCIP 2b Explain QC aspects of various construction activities 2c List tests for ensuring quality of cement and bricks 2d List test to ensure the quality of concrete.	10	05

		2e List precautions to be taken for ensuring better quality of RCC 2f List dos and don'ts for ensuring quality in plumbing and drainage work.		
UNIT – 3 STATISTICAL QUALITY CONTROL & MONITORING	3.1 Statistical Quality Control 3.2 Quality Measurement: Attributes and Variables 3.3 Statistical Process Control (SPC) Methods 3.4 Control Charts for Attributes: p-Charts - Proportion Defective c-Charts - Number of Defects Per Unit 3.5 Control Charts for Variables 3.6 Other Types of Attribute-Sampling Plans 3.7 Acceptance Sampling	3a Describe statistical quality control methods. 3b Explain variables and attributes related to control charts. 3c Explain SPC and its importance 3d Describe different types of Attribute-sampling plans 3e Explain acceptance sampling. 3f Interpret different type of charts	15	08
UNIT – 4 QUALITY STANDARDS	4.1 Quality standards in construction related to Building materials and other inputs for construction processes. 4.2 Quality standards for Construction outputs, products and services. 4.3 Indian Standard Code (a) Methods of referring it (b) Use of IS for quality references 4.4 National Building code (NBC 2005) (a) Why to refer & How to refer (b) Methods of referring it & application. 4.5 Study of International Organization forStandardization (ISO) (a) ISO-9000, ISO14000 & certification procedures.	4a Use various quality standard codes from its application point of views. 4b List important clauses with range of acceptable parameters related to quality of cement, bricks, steel and concrete as given in quality standards. 4c List important provisions of Indian standards about different construction activities. 4d Explain the main features of ISO 9000 and ISO 14000 standards	10	04
UNIT – 5 SUSTAINABLE BUILT ENVIRONMET ENERGY EFFICIENT BUILDING	5.1 Green building 5.2 Definition – Green Building, Green Construction, Sustainable building 5.3 Goals of Green building 5.4 Advantages and disadvantages 5.5 Certification Agencies – GRIHA, LEED(Highlights & Criteria) 5.6 Life cycle assessment (LCA)	5a Explain concepts and goals of green building. 5b Describe provisions to be made for green building.	10	04
UNIT – 6 QUALITY FORMATS	6.1 Need of Documentation 6.2 Importance of quality format 6.3 Various types of documents required on construction projects i.e cement register, AAC Block register, sand register, aggregate	6a Importance of documentation 6b Description of quality formats	05	04

	register, block chemical register, concrete and steel register, steel receive register, steel test register, tentative steel stock, goods receive register, account statement, hindrance register, daily progress report, rebaring work, planning, attendance register, pour card, cash expense requirements, concrete cube register , labour reort, Calibration Record, Concrete Compressive Strength Test Results, etc.			
		Total	60	30

List of Practical / Exercise		
No.	Unit	Name of Practical/ Exercise
1	I	Prepare Charts highlighting important features of TQM as applicable to construction.
2	II	Prepare various construction check lists for processes as well as for material quality
3	III	Solve 8 examples related to statistical quality control and statistical process control
4	IV	Prepare charts of important clauses of NBC & ISO
5	V	Visit nearby Green Building & make a visit report comparing it with non-green building
6	VI	Prepare report of different quality formats with discretion

List of Text Books			
No	Title of Books	Authors	Publication
1	Total Quality Management	G.Kanji	Springer Science & Business Media
2	Fundamentals of Quality Control and Improvement	Amitva Mitra	Wiley India Private Limited
3	National Building Code, ISO 9000/14000 and other standards		

List of Reference Books			
No	Title of Reference Books	Authors	Publication
1	National Building Code, ISO 9000/14000 and other standards		

Link of Learning Web Resource	
1	www.nptel.ac.in
2	http://ndrfandcd.gov.in/Cms/NATIONALBUILDINGCODE.aspx
3	http://en.wikipedia.org/wiki/Green_building_in_India