



Lok Jagruti Kendra University
University with a Difference

Diploma in Civil Engineering



Course Code:025050602

Construction Contracts & Quality Control

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|--------------------------------|------------------------------------------|------------------------------|-----|--------------------|-----------|-----|
| Programme / Branch Name | | Diploma in Civil Engineering | | | | |
| Course Name | Construction Contracts & Quality Control | | | Course Code | 025050602 | |
| Course Type | HSSC | BSC | ESC | PCC | OEC | PEC |

Legends: HSSC: Humanities and Social Sciences Courses
 ESC: Engineering Science Courses
 OEC: Open Elective Courses

BSC: Basic Science Courses
 PCC: Program Core Courses
 PEC: Program Elective Courses

1. Teaching and Evaluation Scheme

| Teaching Hours / Week | | | | Evaluation Scheme | | | |
|-----------------------|---|---|--------------|-------------------|----------|----------|-------|
| L | T | P | Total Credit | CCE | SEE (Th) | SEE (Pr) | TOTAL |
| 3 | 0 | 2 | 4 | 50 | 50 | 50 | 150 |

Legends:

L: Lectures T: Tutorial P: Practical
 CCE: Continuous & Comprehensive Evaluation
 SEE (Th): Semester End Evaluation (Theory)
 SEE (Pr): Semester End Evaluation (Practical)

2. Prerequisites

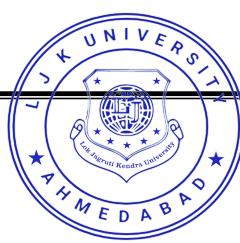
- ✓ Construction Project Management

3. Rationale

Contract management is vital for project success and routine operations. This syllabus is prepared to develop an understanding of the contract management process and quality control in construction work. Contracting professionals' skills and knowledge directly contribute to the success and growth of the organization and their careers. Quality control is the process that ensures that a building or any other construction project meets the required standards. Quality control is necessary because it helps to ensure that all aspects of the construction work are up to code. Quality in the construction work confirms that there were no safety hazards and no problems with how well the building will stand up over time. This course is prepared for diploma students of civil engineering in such a way that the students will get basic knowledge about the contract management process and ensures the high quality of construction work.

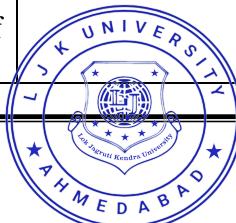
4. Objectives

- ✓ To gain knowledge of types and conditions of contracts.
- ✓ To understand the concepts of contract and tender documents.
- ✓ To know the tendering process for any construction work.
- ✓ To maintain a proper record of the accounts and understand the technical terms used in accounts.
- ✓ To understand the importance of quality in construction and apply total quality management in construction works.
- ✓ To understand the concepts of statistical process control.
- ✓ To gain knowledge of quality standards.



5. Contents

| Unit No. | Unit Name | Topics | Learning Outcomes | % Weightage | Hours |
|----------|---------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------|
| 1. | Contracts, Tenders and Contract Management | 1.1. Definitions 1.2. Essential Requirements of a Valid Contract 1.3. Forms of Contract 1.4. Types of Contracts 1.5. Termination of Contracts 1.6. Contract Documents 1.7. Qualification of Contractors 1.8. Contract between Owner and Engineer 1.9. Work Executed without a Contract 1.10. Contract Management 1.11. Meaning of Tender 1.12. Classification of Tenders 1.13. Tender Notice 1.14. Advertisement of Tender 1.15. Tender Form 1.16. Mode of Submission of Tender 1.17. Opening of Tenders 1.18. Scrutiny of Tenders 1.19. Acceptance of Tender 1.20. Revocation of Tender 1.21. Unbalanced Tender 1.22. E-tendering 1.23. Liquidated Damages 1.24. Mobilization Fund 1.25. Direct and Indirect Costs | <ul style="list-style-type: none"> • Gain Knowledge of Types of Contracts. • Understand the Concepts of Contract Documents. • Gain Knowledge of Tender Process. • Prepare Tender Notice for any Construction Work. | 30 | 12 |
| 2. | Conditions of Contract | 2.1. Definition 2.2. Object 2.3. Importance 2.4. Peculiarities 2.5. General Provisions 2.6. Typical Clauses of the Conditions of Contract 2.7. Escalation Clause 2.8. Conditions of Contract in Outlines | <ul style="list-style-type: none"> • Gain Knowledge of Conditions of Contracts. • Understand the Important Conditions Required for any Contract. | 15 | 6 |



| | | | | | |
|----|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|
| 3. | Accounts | 3.1. General 3.2. Stores 3.3. Difference between Accounts of Stock & Tools and Plants 3.4. Issue Notes 3.5. Note Book 3.6. Vouchers 3.7. Hand Receipts 3.8. Unstamped Receipts 3.9. Receipt of Money 3.10. Treasury Challan 3.11. Cash Book 3.12. Credit Note 3.13. Work-Abstract 3.14. Register of Works 3.15. Appropriation and Re-appropriation 3.16. Materials at Site Accounts 3.17. Administrative Approval and Technical Sanction 3.18. Measurement Book 3.19. Muster Roll 3.20. Completion Report 3.21. Imprest 3.22. Daily Reports 3.23. Deposit Works 3.24. Record of Bills 3.25. Advance Payment and Secured Advance Payment 3.26. Piece-work System of Payment 3.27. Inventory 3.28. Work-slip and Work-abstract 3.29. Site Order Book | <ul style="list-style-type: none"> • To Maintain a Proper Record of the Accounts. • Understand the Technical Terms used in Accounts. | 20 | 10 |
| 4. | Construction Quality | 4.1. Definition of Quality 4.2. Total Quality Management 4.3. Basic Concepts of TQM 4.4. Basic Principles of TQM 4.5. Quality Council 4.6. Quality Statements 4.7. Deming's Principles 4.8. TQM- Difficulties and Barriers | <ul style="list-style-type: none"> • Understand the Importance of Quality in Construction. • Knowledge of Total Quality Management. | 15 | 6 |

| | | | | | |
|--------------------|----------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|----|-----------|
| 5. | Statistical Process Control and Quality Standards | 5.1. Statistical Process Control 5.1.1. Introduction 5.1.2. Some Essential Concepts 5.1.3. Seven Tools of Quality 5.1.4. Quality Control Charts | <ul style="list-style-type: none"> • Understand the Concepts of Quality Control. • Gain Knowledge of Quality Standards. | 20 | 8 |
| | | 5.2. Quality Standards 5.2.1. Introduction 5.2.2. What is ISO 9000? 5.2.3. Q.S. 9000 Requirements | | | |
| Total Hours | | | | | 42 |

6. List of Practicals / Exercises

The practicals/exercises have been properly designed and implemented in an attempt to develop different types of skills so that students can acquire the competencies/programme outcomes. Following is the list of practicals/exercises.

| Sr. No. | Practical / Exercises | Key Competency | Hours |
|--------------------|--------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|-----------|
| 1. | Prepare a report on contract documents containing all the terms and conditions for any construction work. | Understand the Contract Documents. | 4 |
| 2. | Prepare a report on types of contract for any construction work. | Understand the Types of Contract. | 2 |
| 3. | Study any contract documents of any construction firm and analyse its strength and weakness. | Identify the Strength and Weakness of Contract Documents. | 4 |
| 4. | Prepare a tender notice for any construction work. | Knowledge of Tender Notice. | 2 |
| 5. | Prepare a detailed report on tendering process of any civil work. | Understand the Tendering Process. | 2 |
| 6. | Visit to any construction firm and discuss for understanding its accounting procedures and prepare a report on it. | Knowledge of Accounts. | 2 |
| 7. | Visit any ongoing construction sites and prepare a report on quality checks. | Understand the Quality Checks. | 4 |
| 8. | Prepare a list showing various codes used in civil construction activity. | Knowledge of Codes. | 2 |
| 9. | Conduct site visit to a large construction project and discuss different quality controls on their sites. | Understand Quality Control Methods. | 2 |
| 10. | Conduct site visit to any construction project and prepare a detailed report on quality control issues. | Understand Quality Control Issues. | 4 |
| Total Hours | | | 28 |



7. Suggested Specification Table with Hours

| Unit No. | Chapter Name | Distribution of Topics According to Bloom's Taxonomy | | | | | |
|----------|---------------------------------------------------|------------------------------------------------------|-----|-------|-----|-----|------|
| | | R % | U % | App % | C % | E % | An % |
| 1. | Contracts, Tenders and Contract Management | 10 | 70 | 15 | 5 | 0 | 0 |
| 2. | Conditions of Contract | 10 | 80 | 10 | 0 | 0 | 0 |
| 3. | Accounts | 10 | 75 | 15 | 0 | 0 | 0 |
| 4. | Construction Quality | 10 | 70 | 20 | 0 | 0 | 0 |
| 5. | Statistical Process Control and Quality Standards | 30 | 40 | 15 | 0 | 15 | 0 |

Legends: R: Remembering U: Understanding
 App: Applying C: Creating
 E: Evaluating An: Analyzing

8. Textbooks

- 1) Construction of Structures & Management Works by Ketki Dalal, Charotar Publications.
- 2) Total Quality Management by Dr. S. Kumar, Laxmi Publications Pvt. Ltd.

9. Reference Books

- 1) Construction Project Management by K.K.Chitkara, Tata McGraw-Hill.
- 2) Construction Planning and Management by P.S. Gahlot, B.M. Dhir, New Age International(P) Limited.
- 3) Construction Management and Accounts by V.N. Vazirani, S.P. Chandola, Khanna Publishers.
- 4) Fundamentals of Quality Control and Improvement by Amitava Mitra, John Wiley & Sons, Inc., Hoboken, New Jersey.

10. Open Sources (Website, Video, Movie)

- 1) Quality Control Manual by Gujarat Engineering Research Institute.
[\(https://guj-nwrws.gujarat.gov.in/downloads/tc_manual_on_quality.pdf\)](https://guj-nwrws.gujarat.gov.in/downloads/tc_manual_on_quality.pdf)
- 2) National Building Code, ISO 9000/14000 and other standards.
- 3) www.slideshare.net
- 4) www.nptel.ac.in

