

NIRMA UNIVERSITY

Institute:	Institute of Technology, School of Engineering
Name of Programme:	BTech in Civil Engineering
Course Code:	4CL201CC25
Course Title:	Professional Practice
Course Type:	Core
Year of Introduction:	2025-26

L	T	Practical Component				C
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Course Learning Outcomes (CLOs):

At the end of the course, the student will be able to –

1. analyse the need of estimation and understand the role of various stake holders (BL4)
2. determine the quantity of residential building components (BL5)
3. estimate the quantity of RCC elements for various infrastructures (BL5)
4. justify the cost of material, man power and carry out rate analysis (BL5)
5. apply the knowledge of specification, valuation, tendering and contracting for construction projects (BL3)

Unit	Contents	Teaching hours (Total 45)
Unit-I	Introduction Introduction of the construction project team, the role of owner, engineer, contractor, quantity surveyor, purpose of estimation, methods of estimation, unit and rules for measurement.	04
Unit-II	Quantity Estimation of Residential Projects Quantity estimation of excavation, back-filling, brickwork in foundation and plinth, PCC, DPC, Brickwork in Super Structure, slab, beam, column, staircase, weather shed, lintel, wooden work, steel work, plastering, painting, flooring, skirting, coping.	10
Unit-III	Quantity Estimation of Infrastructure Projects and Preparation of Bar bending Schedule Road: Quantity estimation of earthwork, sub-grade, sub-base, base, and surface course. bridges: quantity estimation of pile, pile cap, pier, pier cap, girder, slab, crash barrier etc.; Preparation of Bar Bending Schedule for RCC foundation, staircase, beam, column, slab, retaining wall, weather shed, lintel etc.	13

Unit-IV **Rate Analysis** 05

Purpose, factors, methods, schedules of rate, preparation of rate analysis for various civil engineering items.

Unit-V **Introduction to Specification, Tendering, Contracting and Valuation** 13

Specification: Objectives, importance, types, specification for material and workmanship. Tendering: types, pre-qualification of contractors, preparation, submission, opening, scrutiny, award of contract, rejection, contract documents; Contracts: Types, validity, forms, termination, legal aspects, conditions of contract.

Valuation: Definition, Purpose, different forms of value, methods.

Self-Study: The self-study contents will be declared at the commencement of the semester. Around 10% of the questions will be asked from self-study contents.

Suggested Readings/
References:

- Jimmie Hinze, *Construction Contracts*, McGraw Hill.
- Dutta B.N., *Estimating & costing in Civil Engineering*, UBS Publishers.
- Patil B.S., *Civil Engineering Contracts*, University Press.
- Kohli D.D. & Kohli R.C., *Estimating & Costing*, S.Chand Publication.
- Rangwala S.C. and Rangwala K.S., *Estimating, Costing and Valuation*, Charotar Publishing House.
- Chakraborti, M. *Estimating, Costing, Specification and Valuation in Civil Engineering*. Chakraborti Publisher.
- Birdie G.S., *Estimating & costing*, Dhanpat Rai Publishing.
- Joseph T. Bockrath, *Contracts and the Legal Environment for Engineers and Architects*, McGraw Hill.
- Kwaku, A., Tenah, P.E. Jose M.Guevara, P.E., *Fundamentals of Construction Management and Organisation*, Printice Hall,
- Clough R, Sears G, Sears K. *Construction Contracting – A practical guide to company management*. John Wiley & Sons

Laboratory Work: Laboratory work will be based on the above syllabus with minimum 06 experiments/exercises to be incorporated.

Suggested List of Experiments:

Sr. No.	Name of Experiment/Exercise	Hours
1.	Framing of a tender notice	04
2.	Quantity calculation of a residential project	12
3.	Quantity calculation of RCC elements of structure	08
4.	Preparation of a bar bending schedule for RCC element	02
5.	Rate analysis for building components	02
6.	Valuation	02